
Presentation By
Dr. P. Siva Kumar, M.Sc., B.Ed., Ph.D.,
Guest Faculty

Department of Geography
Bharathidasan University
Tiruchirappalli - 620 024

# Introduction

- **Geography has evolved into a very diverse and adaptable subject, with a wide range of topics to study. Economic Geography's major goal, as stated, is to evaluate man's economic achievement in terms of production and consumption in relation to his surroundings. We must evaluate the functions that this branch of geography serves in order to determine its relative relevance.**
- In the light of new and extended views of geography, place names, natural environments, and the influence of natural environments on man's activity have become obsolete and undesirable beliefs.
- Today's geography is the study of geographic differences on the earth's surface; as such, it is a spatial or areal science that deals with interactions among geographic variables. Economic geography is the most developed of the major branches of geography.
- Although it is a branch of Human Geography, it now has its own status in geographical studies and deals with areal variations in man's economic activity on the earth's surface.
- Among the numerous sciences of geography, economic geography has undergone significant changes in the last fifty years, resulting in a variety of specialized areas, such as agricultural, industrial, and transportation geography. In this unit we will be talking about the meaning, definition, nature and scope of Economic geography. We would start with the basic understanding of the field of Economic geography including the definitions, nature and scope of the discipline.

# Definitions of Economic Geography

- According to **Hartshorn and Alexander**: "Economic Geography is the study of the spatial variation on the earth's surface of activities related to producing, exchanging and consuming goods and services. Whenever possible the goal is to develop generalizations and theories to account for these spatial variations."
- According to **J. MacFarlane** describes Economic Geography as the study of "influence exerted on the economic activity of man by his physical environment, and more specifically by the form and structure of the surface of the land, the climatic conditions which prevail upon it and the spatial relations in which its different regions stand to one another."
- According to **Dudley Stamp**, Economic Geography "involves consideration of the geographical and other factors which influence man's productivity, but only in limited depths, so far as they are connected with production and trade."
- Professor **E. W. Zimmermann** pointed out that, Economic Geography deals with the economic life of man with relation to environment.
- As early as in 1882, the German scholar, **Gotz** had defined economic geography as "a scientific investigation of the nature of world areas in their direct influence of goods".

# Nature of Economic Geography

- The nature and causes of development and underdevelopment, emphasizing the interrelationships between the less and more developed worlds and putting the mode of production at the centre;
- The link between economic systems and geography, particularly in interpretations of capitalism's spatial impacts and role in the development of the world economy;
- The impact of technological advancements and the development of new industrial areas
- The use of discursive, qualitative, and realist explanations that acknowledge that each economic agglomeration and development is entrenched locally in its own socio-institutional environment;
- The economic dimensions of class, race, and gender, emphasizing and at times criticizing how economic institutions rely on discrimination based on these three groups;
- The role of 'non-economic' forces in the economic process, such as cultures, institutions, and social behaviors;
- New explanations for the location of economic activity have been proposed, based on economic man's assumptions and optimization;
- The introduction of the concept of the decision-maker and the satisfier in the behavioral approach has changed the ideas; and iv. The concept of sustainable development in resource use etc.

# Scope of Economic Geography

- Economic geography was defined by the German scholar Gotz in 1882 as "a scientific analysis of the character of world territories in their direct influence on goods."Despite the fact that Gotz was the one who coined the term "economic geography," his influence was limited to Germany. Because the abstract principles of the time were not developed, they could not be connected to economic geography. Economic geography owes its development as an academic topic to the British public's interest in business. It's worth noting that George Chisholm, the pioneer of contemporary economic geography, intended to instill a sense of intellectual curiosity in the study of geographic facts.
- J. McFarlane: "Economic geography is the study of the influence of man's physical environment on his economic activities, particularly the form and structure of the land surface, the climatic conditions that prevail upon it, and the place relations in which its various regions stand to one another."
- R.E. Murphy: "Economic geography has to do with similarities and differences from place to place in the ways people make a living."
- R.N. Brown: "Economic geography is that aspect of the subject which deals with the influence of the environment – inorganic and organic – on the activities of man."
- E.B. Shaw: "Economic geography is concerned with problem of making a living, with world industries, with basic resources and industrial commodities."
- N.J.G. Pounds: "Economic geography is concerned with the distribution of man's productive activities over the surface of the earth."

# Development of Economic Geography

- i. The nature and causes of development and underdevelopment, emphasizing the interrelationships between the less and more developed worlds and putting the mode of production at the centre;
- ii. The link between economic systems and geography, particularly in interpretations of capitalism's spatial impacts and role in the development of the world economy;
- iii. The impact of technological advancements and the development of new industrial areas
- iv. The use of discursive, qualitative, and realist explanations that acknowledge that each economic agglomeration and development is entrenched locally in its own socio-institutional environment;
- v. The economic dimensions of class, race, and gender, emphasizing and at times criticizing how economic institutions rely on discrimination based on these three groups;
- vi. The role of 'non-economic' forces in the economic process, such as cultures, institutions, and social behaviors;
- vii. New explanations for the location of economic activity have been proposed, based on economic man's assumptions and optimization;
- viii. The introduction of the concept of the decision-maker and the satisfier in the behavioral approach has changed the ideas; and iv. The concept of sustainable development in resource use etc.

# Classification of Economy

(a) natural resources (b) human resource

(A) Natural resources: All substances are the product of natural resources of the earth. Since nature is the mother of these resources. Hence they are called natural resources.

(B) Human resources:

Human resources are the most important besides natural resources, because without human labor, natural resources have no value. Humans change their environment and use the substances found in it for their needs. As a result of his hard work, agricultural commodities are produced somewhere in the world today, then development of mineral materials and manufacturing industry is possible somewhere. The use of natural resources found on earth requires human thought, its organization and labor.

# LOCAL ORGANIZATION

- Different economic territories are interconnected by the regional functional organization and take the shape of an economic landscape. Sangam (Uniform) and Nodal - The interlinking of economic territories creates regional functional organization, according to A.K. Philbrick

(1) Unit of Occupance to Economic Industry,

(2) Focality,

(3) Localization,

(4) Inter connection,

(5) Spatial Discontinuity and Continuity,

(6) Central Organization and Parallel Relationship

# SPATIAL ORGANIZATION

- Spatial functional interaction is a mutually functional interaction between different economic regions of the world. This type of interconnection is necessary for the development of economic regions. In the era of modern specialization and production on a large scale, any economic work affects the whole world and is itself influenced by other economic-socio-political conditions of the world. Therefore, no economic region can remain separate from other states. In fact, incentives for a particular type of production in a particular state and means of producing it can be obtained not only from a remote region directly from the same state and the goods produced can be consumed in the same way. This regional functional interaction is the basis of economic development.
- Territorial functional interaction is both transverse and perpendicular, that is, there is interaction between different economic regions of the same hierarchy level and there is a similar relationship between regions at different levels of the state hierarchy. The expression of regional organization of the economic system is through such infinite regional functional interaction. Although such interrelationships and the functional structural patterns resulting from them are often not in tangible form visible, they are important geographical elements.
- Edward L. According to Edward L. UIman, the study of world and regional interactions is the axis of geographical study. Their function of regional interaction is regional functional interaction in which many interconnected sequences of regional functional organization arranged in economic functional hierarchy in different industries ie regional structure of economic landscape, such as interconnection of real important human elements between different regions of the world. This developed functional hierarchy arises from the increasing volume and complexity of units of economic industry on a large to small scale, as well as the parallel relationships and functional interconnections of central organizations.

# GEOGRAPHICAL ECONOMIC ACTIVITIES

- The following activities are studied under Geographical Economic Activities.
- The concept of economic landscapes.
- Economic landscape is not a static but dynamic element
- Existing economic landscape reflects the resource structure, economic processes and stage of economic development.
- Location and localization of economic activities.
- Spatial functional interaction
- Regional economic development.

- **The concept of economic landscapes** - The most basic concept of economic geography is that of economic landscape. The economic landscape is characterized by distinct economic characteristics of a particular region, that is, a regional economic personality. The overall nature of various elements, commodities, equipment, etc. related to various aspects of economic activities of any state, such as agriculture, industry, mining, trade, etc., emerge in the economic landscape. In this way, the landscape of the regional economy is represented in the economic landscape. The concept of economic landscape originated from the German word Landschaft.
- According to the German scholar Rudolf Wetgens, the ultimate goal of economic geography is to determine economic landscapes and its practical purpose is to achieve maximum efficiency in the use of nature by humans for economic purposes

- **Economic landscape** is not a static but dynamic element- in this concept, economic landscape on one side and man On the other hand, if it affects the immediate economic functions, then on the other hand, it gets affected and also changes.
- The existing economic landscape generally represents the compiled form of man's past economic work. Under this concept, every important economic progress and economic processes of different periods of human beings are marked to be marked. In some areas, the impression of economic work of this very ancient period is also visible. Therefore, to understand and explain the present form of an economic landscape, it is necessary to think about its systematic development.

- Existing economic landscape; the resource structure, economic processes and the stage of economic development - Sorting method. Somewhere a particular economic element or method arises, just like the economic activity, there is rejuvenation in the economic landscape, which revives the process of economic development and the new development process is imprinted on the pre-existing economic landscape.
- The revival in the economic landscape is due to the arrival of new people in some part, the rise of new culture and the invention of new techniques of resource utilization. New technologies are sometimes invented in a revolutionary but sometimes revolutionary manner. Revolutionary changes in socioeconomic environment and institutions can also lead to revival of the economic landscape

- **Regional economic development:** The concept of regional economic development reflects the practical aspect of economic geography. It was only in 1920 that Drayor described economic geography as a practical approach. The concept of regional economic development emphasizes proper utilization of resources and maximum production through regional economic integration.
- The basic objective of economic geography is to explain the variation in the level of economic development in different regions. This requires measurement and analysis of various aspects of economic development. According to Prof. Ullman, the basic purpose of regional research in economic geography is to determine and explain the level of current economic development of a particular state.
- In this context, discussion of progress in resource accessibility - rarity and cultural - technical field is more important than other states in particular state. For regional economic development, the associated and balanced resource utilization of different states is essential as regional functional interaction and regional functional organizations will be in proper form only.

# SYSTEMATIC ACTIVITIES

- The analysis of the internal elements of the economic landscape requires the help of another basic concept. This concept is related to the status and placement of economic activity. The economic landscape is a set of several economic activities. That is why the concept of position and placement has the most importance in economic geography. The use of maps is essential for studying the status of various economic functions.
- Economic Work - Specific condition and placement conditions And the study of the elements attracts the most attention of economic geographers and they are trying to explain the status of the economic works, the placement and distribution model, and the rendering of general principles. For this, both regional and systematic approaches are used. This new element or method becomes chronologically most influential in its expansion area and the old elements and methods start disappearing, however remains of ancient elements and methods which bear witness to the nature of the past economic system.
- The present characteristics of an agricultural or industrial state develop from time to time. There is also the beginning, expansion, development, maturity and attainment of such regions in order. J. C. Beaver (J.C. Weaver) has used the trilogy of Structure, Process and Stage to explain the economic landscape. The structure includes the characteristics of the resource base. It consists of both natural and human resources. According to the stage of economic development, in various parts of the world, the young stage of economic development, the mature stage and the old stage are available.

# SPATIAL ACTIVITIES

- Spatial functional interaction is a mutually functional interaction between different economic regions of the world. This type of interconnection is necessary for the development of economic regions.
- In the era of modern specialization and production on a large scale, any economic work affects the whole world and is itself influenced by other economic-socio-political conditions of the world.
- Therefore, no economic region can remain separate from other states. In fact, incentives for a particular type of production in a particular state and means of producing it can be obtained not only from a remote region directly from the same state and the goods produced can be consumed in the same way. This regional functional interaction is the basis of economic development.
- Territorial functional interaction is both transverse and perpendicular, that is, there is interaction between different economic regions of the same hierarchy level and there is a similar relationship between regions at different levels of the state hierarchy.

- **The expression of regional organization of the economic system is through such infinite regional functional interaction. Although such interrelationships and the functional structural patterns resulting from them are often not in tangible form visible, they are important geographical elements.**
- Edward L. According to Edward L. UIman, the study of world and regional interactions is the axis of geographical study. Their function of regional interaction is regional functional interaction in which many interconnected sequences of regional functional organization arranged in economic functional hierarchy in different industries ie regional structure of economic landscape, such as interconnection of real important human elements between different regions of the world.

# SECTORS OF ECONOMY: AN INTRODUCTION

- The practical side of economics is economy. An economy is a system with which the resources available in the country are exploited and new resources are created. Through the economy, an effort is made to bridge the gap between unlimited need and limited resources so that the consumer is more satisfied, the producer gets more profit and the maximum social welfare for the society is ensured. Generally, to document the economic activities of the entire economy, it is divided into three sectors – 1- Primary Sector 2- Secondary Sector 3- Third or Service sector

***SECTORS OF ECONOMY***

**Primary sector:**

- Under this, accounting of the natural areas of the economy includes the following areas such as -
- Agriculture, Forestry, Fishing (fishing), Mining (vertical excavation) and quarrying (inelastic excavation)

**Secondary sector:**

- Under this sector, the production of manufactured goods of the economy is mainly accounting for -
- Construction, where a permanent asset is to be built: e.g.,
- House Manufacturing where an item is produced: e.g., bread, etc.
- Work related to electric gas and water supply etc

**Third or Service sector:**

- This sector provides its useful service to the primary and secondary sector of the economy.
- Transport and Communications, Banking, Insurance, Storage business, Community service etc.
- In addition, the economy is divided on many other grounds. It can be outlined as follows -

**Item area:**

- The primary sector and the secondary sector are collectively called the commodity sector, which includes the production of physical goods.

**Non item area:**

- The service sector of an economy is also called non-goods sector.

**Organized sector:**

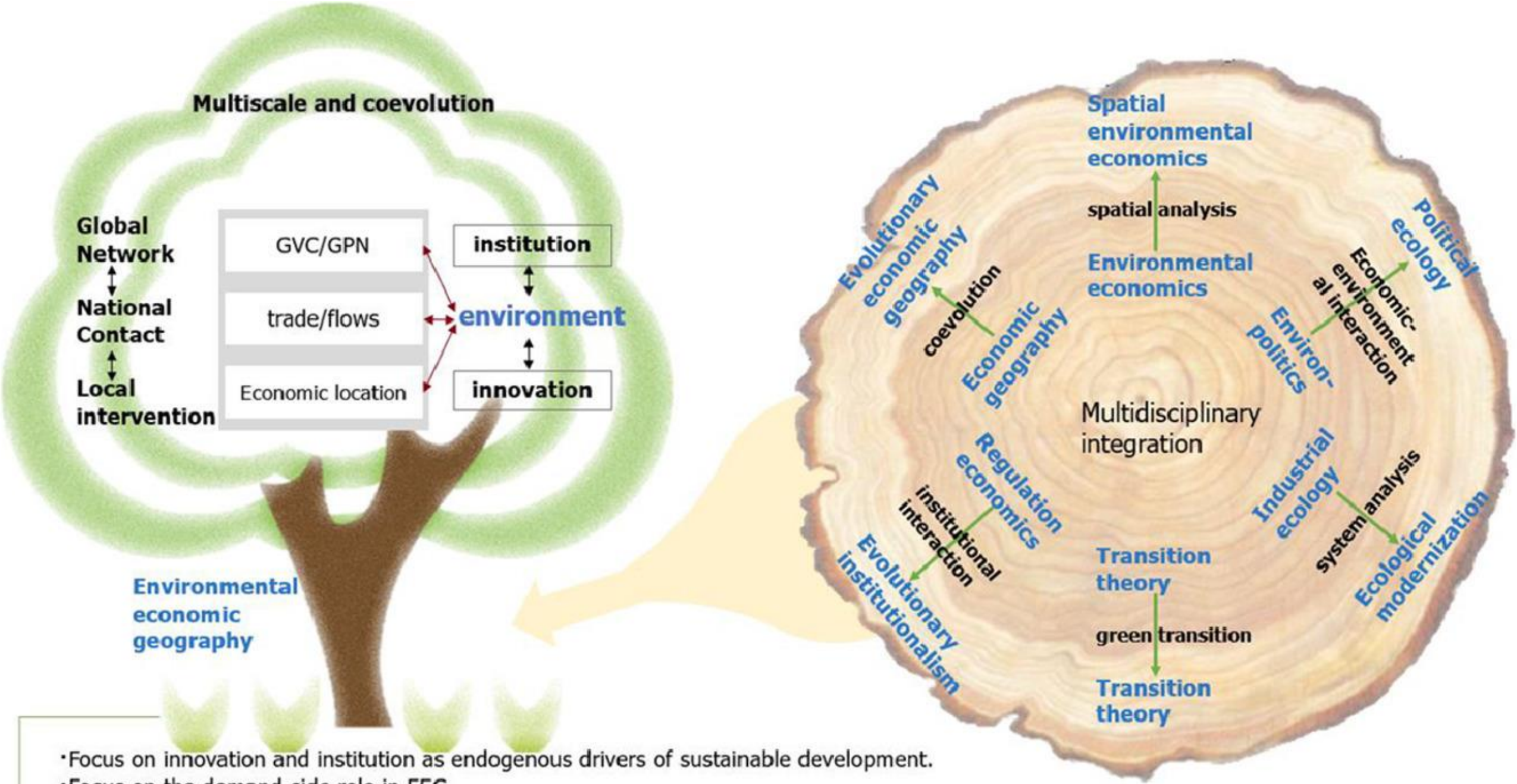
- Under this comes all those units, which regularly do accounting for their economic activities, about 9 percent of the Indian economy is from this sector.

**Unorganized sector:**

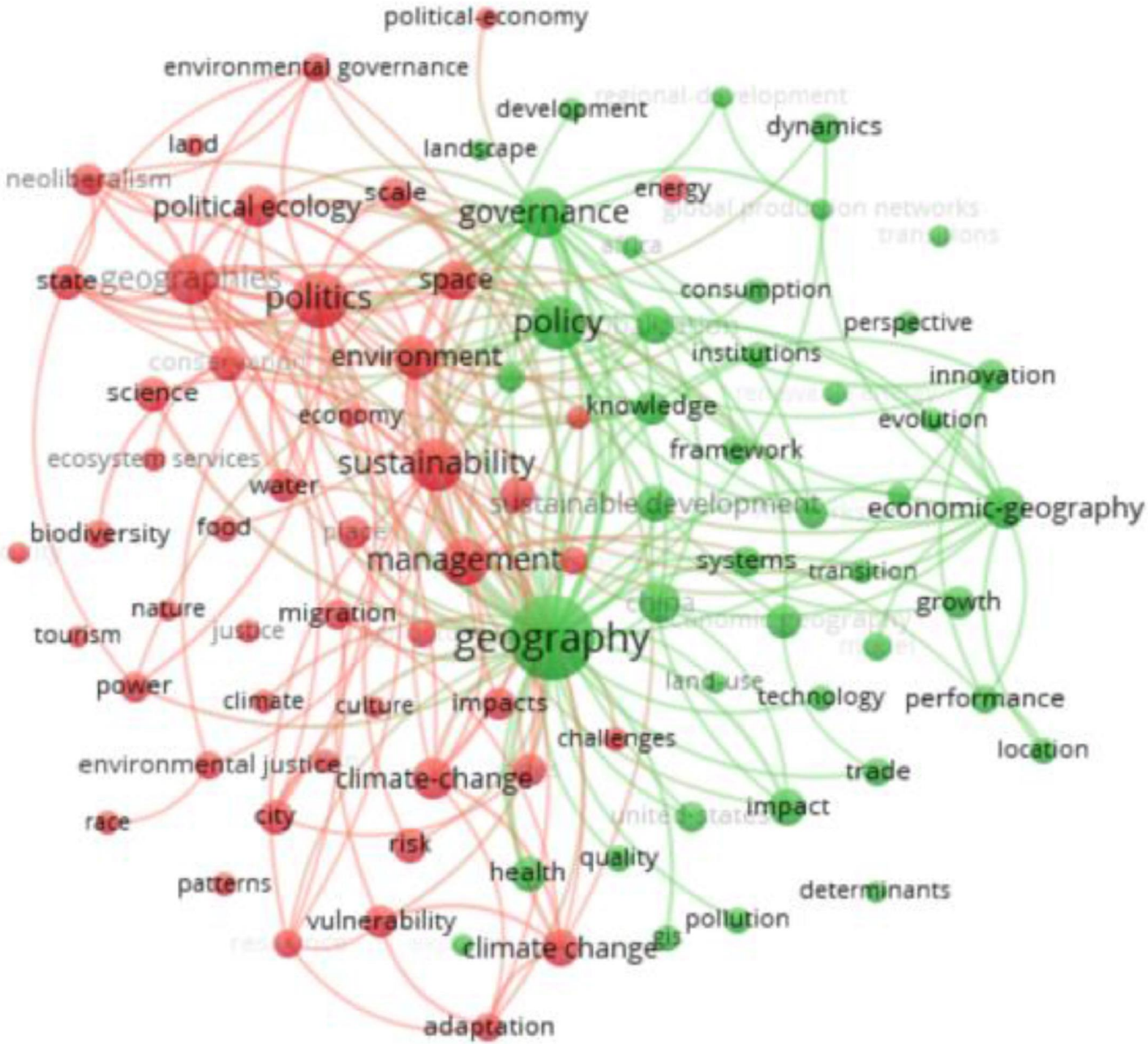
- Under this come all the units which do not keep any accounts of their economic activities; Such as hawkers, khomache, retail vegetable shops, daily laborers etc. Its contribution to the Indian economy is around 91 percent

# Impact of economic activities on environment

- Healthy ecosystems are the foundation for sound economies, sustaining and enhancing human life with services ranging from food and fuel to clean air and water. As such, ecology has an important role to play in society's efforts to improve the quality of life throughout the world. Although ecological scientists have neither the remit nor the capacity to judge the right of people to grow their economies, they do have the expertise and the responsibility to identify the ecological consequences of current and alternative growth strategies, recognizing that:
- Human activities can degrade ecosystems, diminishing ecosystem services of value to society (loss of natural capital)
- Many ecosystem services such as clean air are public goods—they are freely and indiscriminately available to all members of a community, giving stakeholders little incentive to maintain them.
- In cases where ecosystem services do have a market value (e.g. food and fiber), economic activities may have ecological impacts that are not captured in market prices (environmental externalities)
- Society's ablity to predict the consequences of ecoystem change is limited (environmental uncertainty) but can be improved with newmodelling and forecasting tools




- Focus on innovation and institution as endogenous drivers of sustainable development.
- Focus on the demand-side role in EEG.
- Advancing basic research and theory development in EEG.
- Promoting intersectional research between EEG and other disciplines.




**Keywords co-occurrence analysis**

More attention is paid to labor force, ignoring the important role of environmental factors.

Began to pay attention to the impact of natural resources on economic activity.

Environmental conditions are regarded as the influencing factors directly affecting the location selection of production activities.

Research on environmental issues is often theory-oriented, focusing on specific industry sectors or case studies.

**Establishment stage of environmental topics in economic geography**

The concept of EEG is put forward by incorporating environmental topics into the framework of new economic geography.

**Development and exploration stage of EEG**

Integration of EEG and GPN, evolutionary economic geography, and sustainable transformation.

**Take-off stage of EEG and multidisciplinary integration**

**Economic Geography**

**1950s** **1960s and 1970s** **1980s** **1990s** **2000s** **2010s**

**Other Disciplines**

Ecological Economics

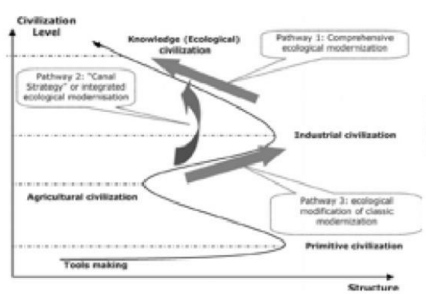
Environmental Politics

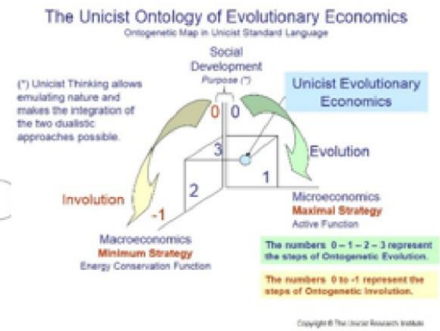
Ecological Modernization

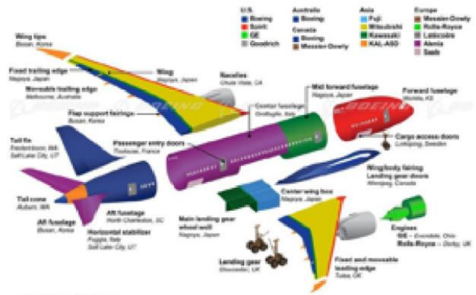
Evolutionary Growth Theory

GVC/GPN

Sustainability Transition




**Theoretical development for environmental economic geography**

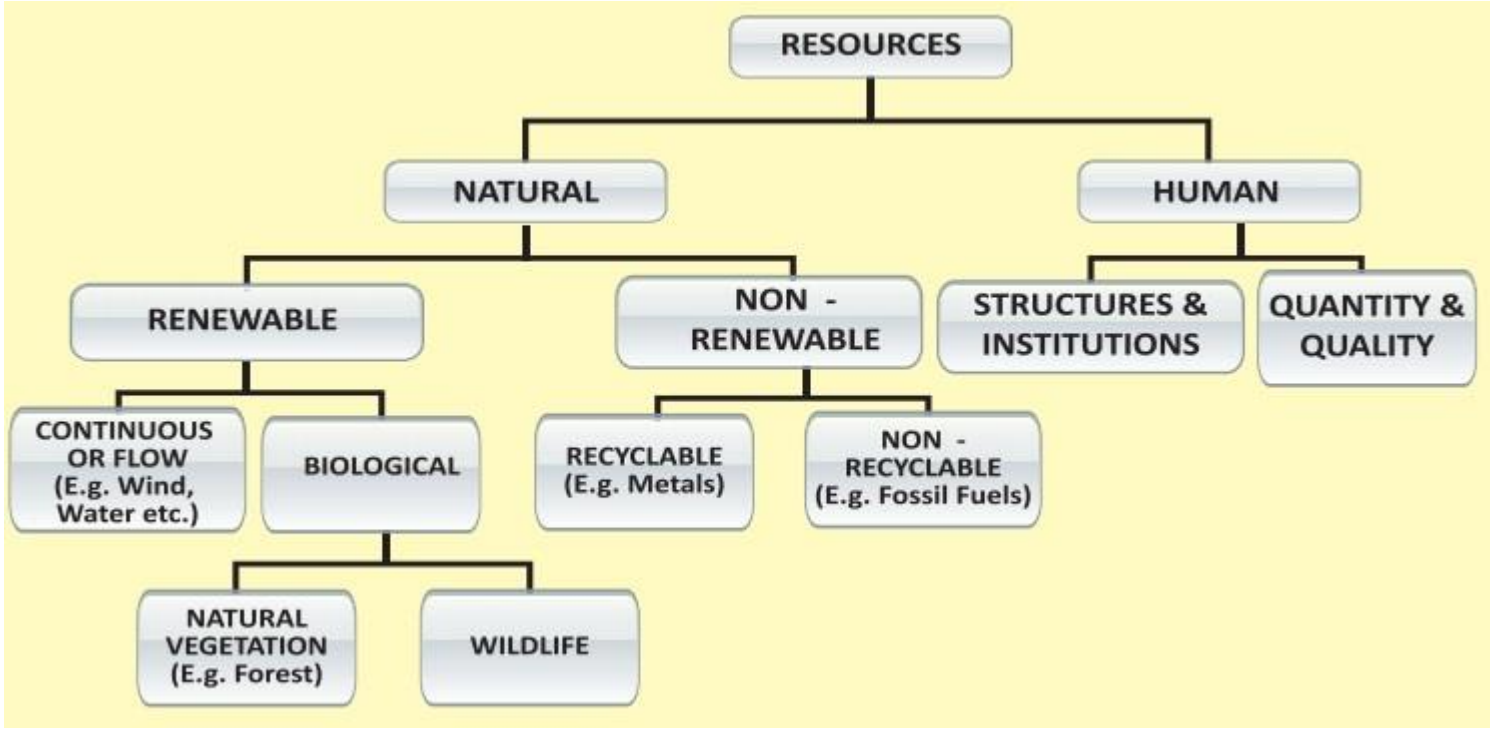
The interaction between human economic activities and environment has experienced a process from externalization of cost and external governance to internalization of cost. The process of globalization gradually considers technological innovation, market, policy system, organizational scale, cultural strength, and other influencing factors, and attaches importance to the study of spatial dimension.

Meanwhile, the research topic of internalizing negative environmental externalities has gradually completed from internalizing market pricing based on classical environmental economics and institutional economics to achieving pollution reduction and environmental protection through policy regulation, institutional evolution, and technological innovation.

- EEG focuses on the interaction and synergistic evolutionary mechanisms between the economy and the environment and discusses how economic activities can reduce environmental damage through institutional evolution and technological innovation. It also talks about the judgment of the "greening" transition brought about by the inherent mechanisms of a range of techno-economic paradigms. Environmental issues and institutional policies affect the industrial location and structure, as well as the responses of corresponding regional-interested and environmental-interested subjects. Producers' attention to the development of green technology has gradually influenced the optimization of regional industrial structure and the improvement of industrial green efficiency. Demand-side preference for green products changes the market share of the industrial system and the spatio-temporal pattern of the global market, which is of great significance to realizing economic transformation.
- EEG and evolutionary EG use path-dependent and path-breaking processes to explore social and environmental associations from a multi-scale and coevolutionary perspective. It has become the basis of an innovative theoretical system integrating physical and human geography approaches. However, it is worth noting that the current EEG research is characterized by fragmentation, multi-angle as well as systematic and theoretical insufficiency.

# Resources

- A **resource** is any physical or virtual entity of limited availability, or anything used to help on earn a living



# livestock

- Recognising the different roles played by livestock in the developing and the developed world is essential to understand the impact of livestock on livelihoods, economic development and the environment. The importance of this paper lies in providing a balanced account of the roles of livestock in developing countries.
- We are at a moment in time where our actions could be decisive for the resilience of the world food system, the environment and a billion poor people in the developing world, let alone for the fate of our planet. The society has realised that there are significant pressures on the world's food and ecological systems, where the alterations of global biogeochemical cycles could be irreversible and where new drivers, such as climate change, are likely to exert additional pressures for sustainably feeding 9 billion people in the future. At the same time, and especially in the developing world, the demand for livestock products is increasing, thus adding additional pressures on the world natural resources.

# Livestock and its socio-economic roles in developing countries

**Table 1** *Number of livestock keepers living below US$2 per day*

| Region/sub-region | Number of poor livestock keepers ('000) |
|---|---|
| Sub-Saharan Africa | 319 908 |
| Central Africa | 29 815 |
| Western Africa | 132 742 |
| East Africa | 104 816 |
| Southern Africa | 52 534 |
| South Asia | 606 967 |
| India | 546 012 |
| Bangladesh | 60 955 |
| Total | 926 875 |

*Sources*: Staal *et al.*, 2009 (updated from Thornton *et al.*, 2002).

**Table 2** *Global trade in livestock products*

| | World exports | | Share of total production (%) | |
|---|---|---|---|---|
| Product | 1980 | 2006 | 1980 | 2006 |
| Meat | 9.6 | 32.1 | 7.0 | 11.7 |
| Pig | 2.6 | 10.4 | 4.9 | 9.8 |
| Poultry | 1.5 | 11.1 | 5.9 | 13.0 |
| Bovine | 4.3 | 9.2 | 9.1 | 14.2 |
| Ovine | 0.8 | 1.1 | 10.6 | 7.7 |
| Dairy | 42.8 | 90.2 | 8.7 | 12.7 |
| Eggs | 0.8 | 1.5 | 3.1 | 2.2 |

FAO = Food and Agricultural Organization.
*Source*: FAO (2009).

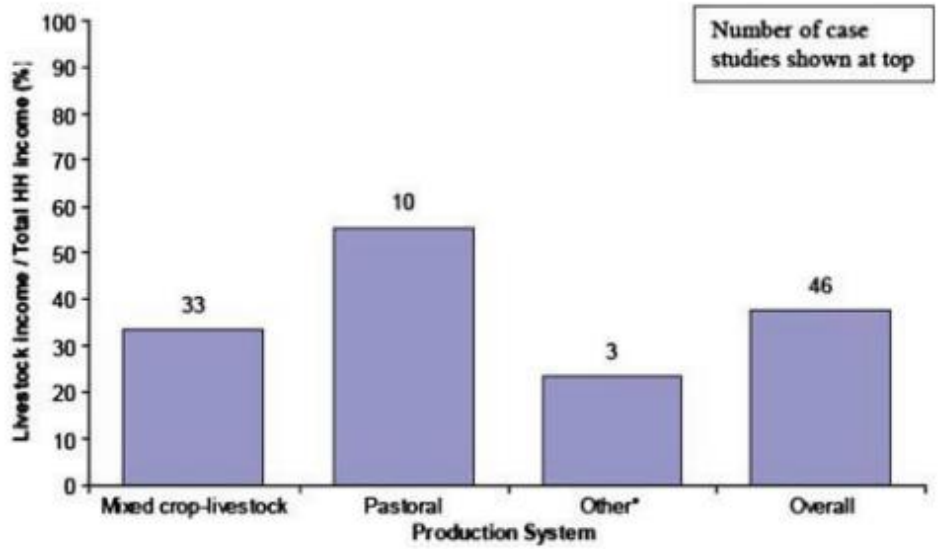



**Figure 1** Average income derived from livestock in different production systems. Data from 92 case studies from the developing world. *Source:* Staal *et al.* (2009).

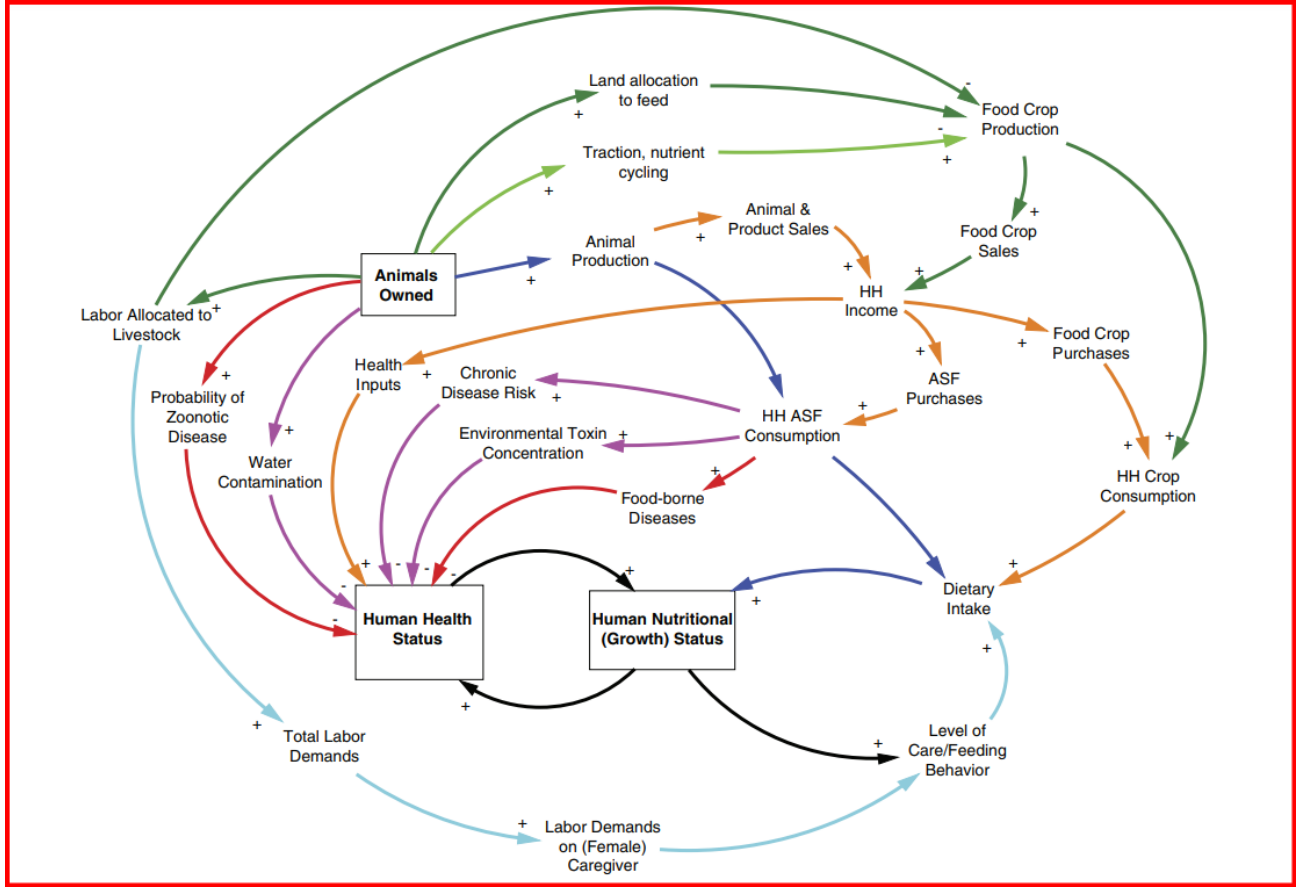



Figure 2 An example of the complex interaction between humans, livestock and diseases. Source: Randolph et al. (2007)

**Table 3** *Contribution of greenhouse gas emissions from livestock*

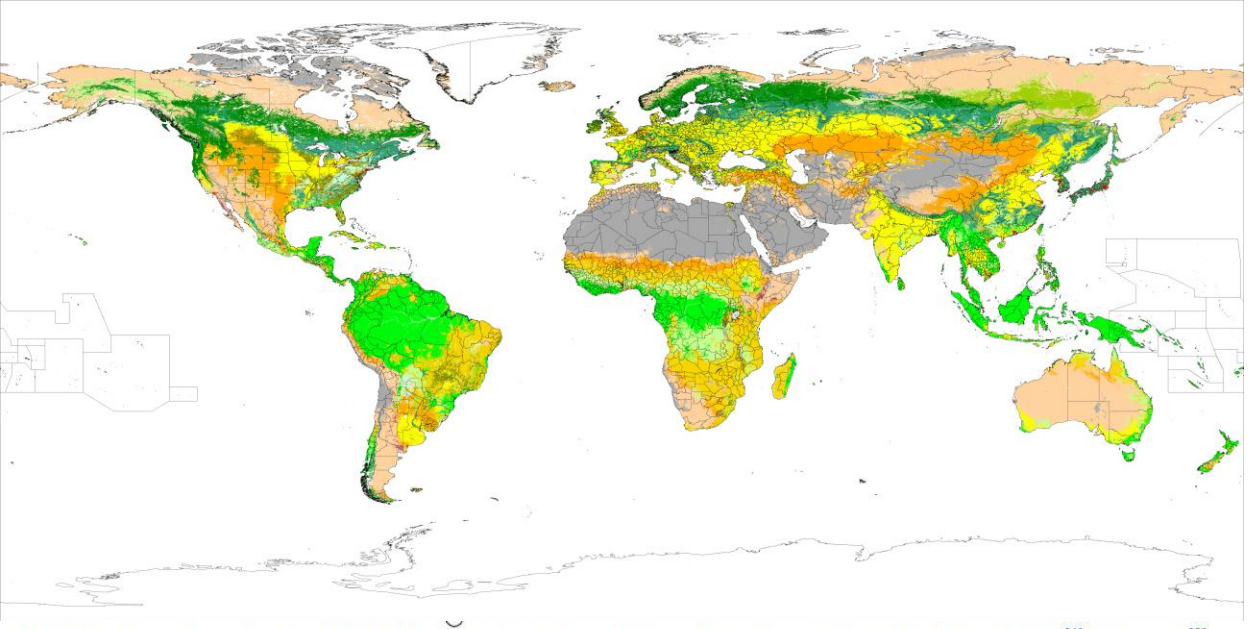
| | Estimated emissions[1] | | Estimated contribution by species[2] | | | |
|---|---|---|---|---|---|---|
| Step in animal food chain | (Gigatonnes) | (% Of total livestock sector emissions) | Cattle and buffaloes | Pigs | Poultry | Small ruminants |
| Land use and land-use change | 2.50 | 36 | ■ ■ ■ | ■ | ■ | ns |
| Feed production[3] | 0.40 | 7 | ■ | ■ ■ | ■ ■ | ns |
| Animal production[4] | 1.90 | 25 | ■ ■ ■ ■ | ■ | ■ | ■ ■ |
| Manure management | 2.20 | 31 | ■ ■ | ■ ■ ■ | ns | ns |
| Processing and transport | 0.03 | 1 | ■ | ■ | ■ ■ | ns |

FAO = Food and Agricultural Organization; ns = not significant.
[1]Estimated quantity of emissions expressed as $CO_2$ equivalent.
[2]■ = lowest to ■ ■ ■ ■ = highest.
[3]Excludes changes in soil and plant carbon stocks.
[4]Includes enteric methane, machinery and buildings.
As presented in FAO (2009). Adapted from Steinfeld *et al.*, 2006.

# Linking ecosystem services and disservices from livestock with opportunities from payment for environmental schemes

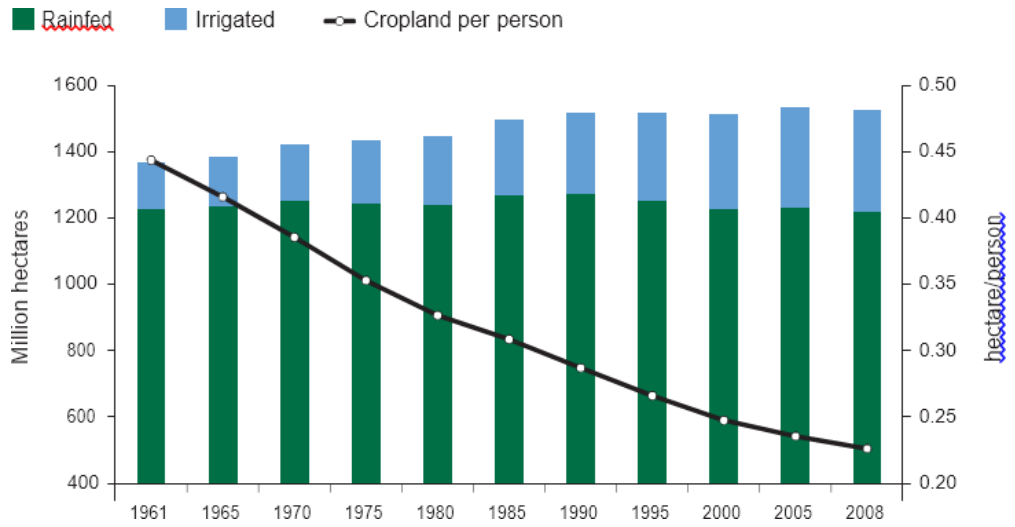
| | Ecosystem services | | |
|---|---|---|---|
| Production systems | Climate regulation | Biodiversity conservation | Water conservation and hydrological services |
| Pastoral or grazing systems | Access to PES can be driven by restoration of degraded lands and implementation of sustainable grazing land management, which presents also the great potential for stocking carbon.<br>On optimally grazed lands, carbon accrual is greater than in ungrazed or overgrazed (Conant and Paustian, 2002). Also greater livestock density reduces biomass removal by fires | Positive biodiversity effects are achievable by: reducing stocking density; protecting migration corridors; maintaining the seasonal dispersal areas; refraining from poaching wildlife and reporting poaching by others; protecting natural vegetation on land and avoiding fencing or sub-dividing land; restricted grazing | PES schemes for water for livestock are in general designed to target the reduction of land-use change caused, for example, by extensive cattle grazing in forest (forest degradation diminishes water quality and quantity and increases risks associated with landslides and flooding) |
| Mixed crop-livestock systems | Access to PES schemes can be driven by: adoption of improved feed supplement that can lead to emissions reduction; adoption of improved pastures with high density trees and fodder banks that reduce land degradation; switching to organic fertilizer to increase capacity of stocking carbon; integrated livestock and manure management | Positive biodiversity impacts achievable by: reducing stocking densities; application of sustainable management practices to reduce environmental degradation and protecting natural vegetation on land; trees planting and sustainable soil management (zero grazing and fodder and manure production) | PES schemes are in general designed to target the reduction of land-use change caused, for example, by extensive cattle ranching in the upper part of a catchment (cloud forest may be threatened and a downstream dam may run the risk of siltation reducing his useful lifespan). Participants can be paid to not cut trees or clear forest on enrolled land.<br>In more intensive livestock systems, participants may be paid to limit livestock contamination (mainly determined by nutrients loading) |

PES = payment for environmental services.
Adapted from Silvestri *et al.* (2012).



MOD12C1 17 land cover classes defined by the International Geosphere Biosphere Programme (IGBP) Class definition[1] Color Code[2]

**Color code** Water | Evergreen Needleleaf Forest | Evergreen Broadleaf Forest | Deciduous Needleleaf Forest | Deciduous Broadleaf Forest | Mixed Forest | Closed Shrubland | Open Shrubland | Woody Savannas | Savannas | Grasslands | Permanent Wetlands | Croplands | Urban and Built-Up | Cropland/Natural Vegetation Mosaic | Snow and Ice | Barren or Sparsely Vegetated




# Types of Rainfed Production Systems and Regions

| System | Characteristics and Examples |
|---|---|
| Rain-fed agriculture: **highlands** | Low productivity, small-scale subsistence (low- input) agriculture; a variety of crops on small plots plus few animals. |
| Rain-fed agriculture: **dry tropics** | Drought-resistant cereals such as maize, sorghum, and millet. Livestock often consists of goats and sheep, especially in the Sudano-Sahelian zone of Africa, and in India. Cattle are more widespread in southern Africa and Latin America. |
| Rain-fed agriculture: **humid tropics** | Mainly root crops, bananas, sugar cane, and notably soybean in Latin America and Asia. Maize is the most important cereal. Sheep and goats are often raised by more impoverished farmers while cattle are held by wealthier ones. |
| Rain-fed agriculture: **subtropics** | Wheat (the essential cereal), fruits (e.g., grapes and citrus), and oil crops (e.g., olives). Cattle are the most dominant livestock. Goats are also essential in the southern Mediterranean, while pigs are dominant in China and sheep in Australia. |
| Rain-fed agriculture: **temperate** | Principal crops include wheat, maize, barley, rapeseed, sugar beet, and potatoes. In the industrialized countries of Western Europe, the United States and Canada, this agricultural system is highly productive and often combined with intensive, penned livestock (mainly pigs, chickens, and cattle). |

# Thanking You