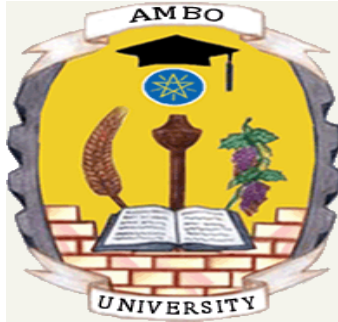


**AMBO UNIVERSITY WOLISO CAMPUS
SHOOL OF BUSINESS AND ECONOMICS**



DEPARTMENT OF AGRICULTURAL ECONOMICS

Course Title: Farming System and Livelihood Analysis

Course Code: Agec2084

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1. System perspectives

1.1. Concept of system: What is System?

The term "System" is derived from the Greek word systema. It means an organized relationship among functioning units or components. We can define a System as a combination of resources or functional units working together to accomplish a given task. The term "working together" in system definition is very important as all the components are interrelated and interdependent and it cannot exist independently. As the definition says, these components interact with each other to accomplish a given task, which is actually the objective of the system. The following figure gives us all the basic components of a system as it is understood in systems theory.

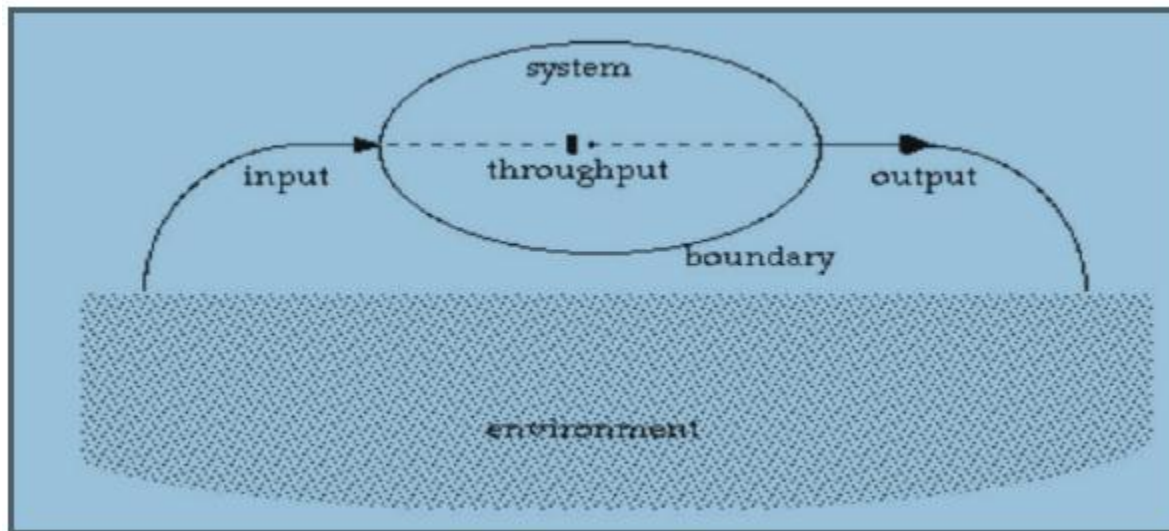


Figure 1: Basic Components of System in accordance with Systems Theory

Source: Developed based on Checkland (2000).

From the above figure 1, you can see five terms such as input, output, throughput, boundary and environment. Our system, as living organisms for example, it needs inputs like oxygen, water, food etc from environment and provides outputs like carbon dioxide, urine, excrete wastes etc to survive. When we change inputs to outputs there is an intermediate process or physiological process which is called throughput. Our boundary is our skin that separates us from environment. This is where the concept of system was first emerged in biology. The concept of working together shows that our body is made up from different systems such as circulatory, expiratory,

digestion etc systems. If one of our systems is affected, it will affect our overall performance that is interdependency. Therefore, the whole (e.g. our body) cannot be subdivided into independent subsystems.

1.2. Systems' common terms

Interdependence-of objects and their attributes- independent elements can never constitute a system

Holism-emergent properties not possible to detect by subsystem analysis should be possible to define by a holistic approach or by study whole.

Goal seeking - systemic interaction must result in some goal or final state

Inputs and Outputs-in a closed system, inputs are determined once and constant; in an open system additional inputs are admitted from the environment

Transformation-of inputs into outputs-this is the process by which the goals are obtained

Entropy - the amount of disorder or randomness present in any system

Regulation-a method of feedback is necessary for the system to operate predictably

Hierarchy - complex wholes (super systems) are made up of smaller subsystems

Differentiation-specialized units perform specialized functions like our brain, CPU in computer, household in farming system

Equifinality-alternative ways of attaining the same objectives (convergence) from different inputs, output is the same.

Multifinality- attaining alternative objectives from the same inputs (divergence)

1.3. System's Classification

There is no universally accepted classification. For simplicity of understanding, system can be classified into three broad families; vis-à-vis natural, social, and artificial systems. Have a look at them.

1. Natural systems—are those systems that exist in nature. They consist of all the materials (both physical and biological) and interrelated processes occurring to these materials.

They exist independent of humankind. Our role in relation to natural systems is to try to understand them and, as need be, make use of them. We also increasingly attempt to duplicate them, in part or whole; but at this point they become, by definition, man-made or artificial systems.

2. Social systems are more difficult to define. Essentially, they consist of the entities forming animate populations, the institutions or social mechanisms created by such entities, and the interrelationships among or between individuals, groups, and communities, expressed directly or through the medium of institutions. Social systems involve relationships between animate populations (individuals, groups, communities), not between things. The concern here is with human social systems as they relate to or impinge upon farming, and the term social system is used broadly to include institutions i.e. the rule of the game and relationships.

There is a certain degree of ambiguity in defining social systems. As an example, the law of property is in its essence a social system. It is viewed as consisting of concepts, principles and rules; it is a pure social system independent of natural systems. However, it also presupposes the existence of property, including natural physical things such as land.

But if there is no land or issue of land is changed, the law must be disappeared or changed in line with change in land issue. Here, social system is unclear because it is not observable like natural system. Therefore, social system is deliberate mental construct that people create through debate, negotiation and consensus to solve problems.

3. Artificial systems do not exist in nature. They are of human creation. Artificial systems include agricultural systems. They are constructed from either or both of two kinds of elements i.e. from natural and social systems. In this regard, dairy cooperative (cooperative is social and dairy is agriculture or natural) can be taken as the other example for artificial system.

Other classifications

Systems within the three broad divisions or their multitudinous subdivisions can be further classified according to system 'type'. Among these are found;

Static or dynamic; depending on whether or not they change over time in response to internal or external influences. Here, dynamic systems or sensitive to changes in situations compared to static systems.

Open or closed; depending on whether or not they interact with their environment. In the real world every system is open, mathematicians, physicists, chemists etc. assume the system are

closed but, they are open. E.g. when we mix chemicals we only assume some of them and write the formula for our understanding, but there are many reactions that we ignore due to fear of complexity or to make close system.

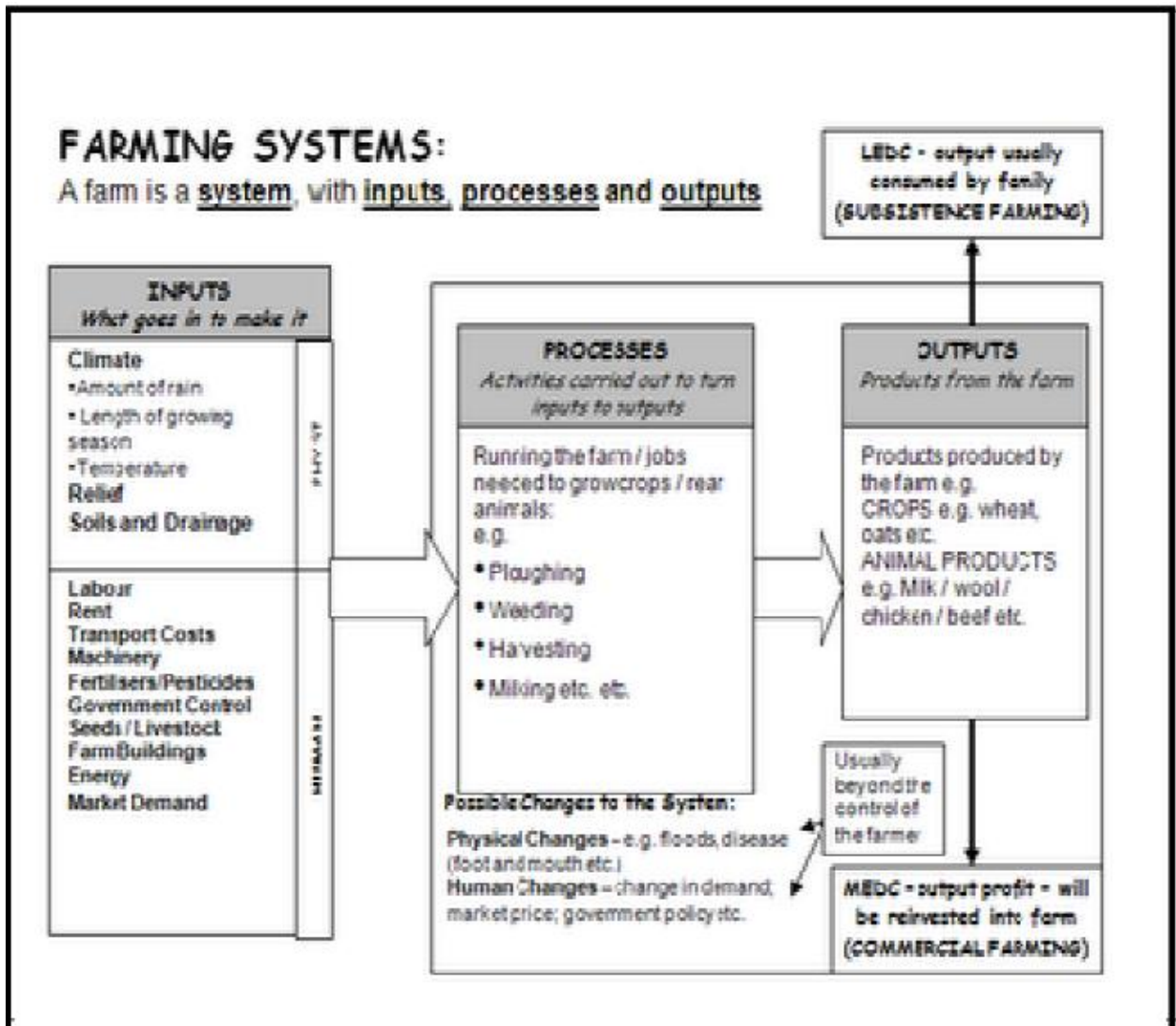
Abstract or concrete; depending on whether or not they are conceptual or physical in nature.

Abstract is invisible or conceptual i.e. social systems. Concrete systems are observable.

2. The concept of farming system

2.1. Basic Concepts of farming Systems

A farm is a system in that it has inputs, processes and outputs. Depending on the type of farming e.g. arable/pastoral, commercial/subsistence, the type and amount of inputs, processes and outputs will vary. Income through arable farming alone is insufficient for bulk of the marginal farmers. The other activities such as dairying, poultry, sericulture, apiculture, fisheries etc. assume critical importance in supplementing their farm income.



Time and space concept

Time concept relates to increasing crop intensification in situation where there is no constraint for inputs. In rainfed areas where there is no possibility of increasing the intensity of cropping, the other modern concept (space concept) can be applied. In space concept, crops are arranged in tier system combining two or more crops with varying field duration as intercrops by suitably modifying the planting method.

Income through arable cropping alone is insufficient for bulk of the marginal farmers. Activities such as dairy, poultry, fish culture, sericulture, bio-gas production, edible mushroom cultivation, agro-forestry and agri-horticulture, etc., assumes critical importance in supplementing farm income. It should fit well with farm level infrastructure and ensures full utilization of by-products. Integrated farming system is only the answer to the problem of increasing food production for increasing income and for improving the nutrition of small scale farmers with limited resources.

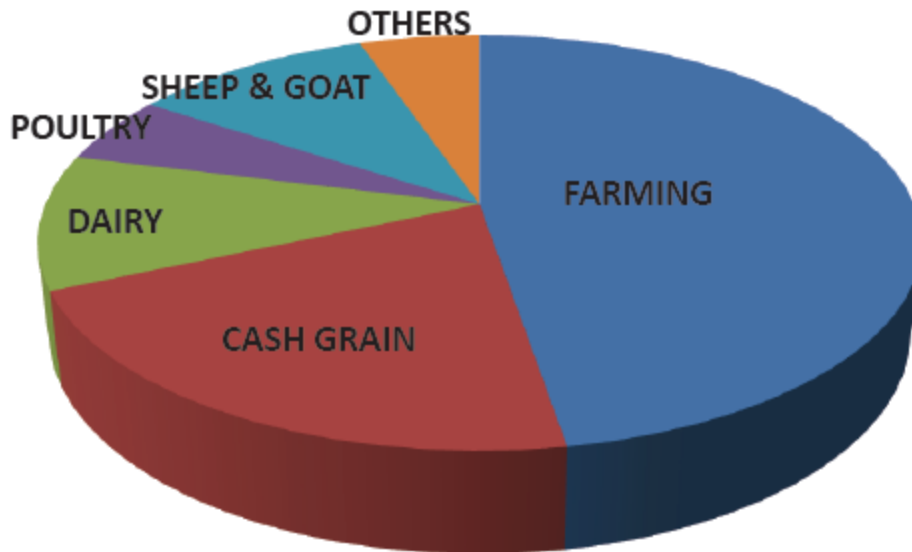
2.2. Major types of farming system

Dear student, in a later part the previous section, we have seen that farming systems can be classified based on such things as inputs and outputs. In this topic, we discover how farming systems can be classified based the composition of enterprises carried out on the farm, and interest of farmers', and technological inputs employed. Let's see these different types of farming systems.

1. Diversified Farming System

A farm on which no single product or source of income equals as much as 50% of the total receipt is called a diversified or general farm. On such a farm, the farmer depends on several sources of income.

Possible Sources of Income in Diversified Farming System



Dear Learners, a system becomes custom in certain community in due process of recognizing its multiple advantages. Diversified farming system has also its own disadvantages. Below are put both advantages and disadvantages of diversification.

The advantages include;

- Better use of land, labour and capital: Better use of land through adoption of crop rotations, steady employment of farm and family labour and more profitable use of equipment are obtained in diversified farming;
- Business risk is reduced due to a crop failure or unfavorable market prices; and
- Regular and quicker returns are obtained from various enterprises throughout the year etc.

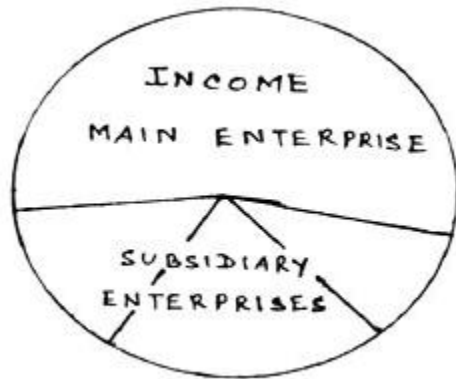
Some of the disadvantages are;

- Marketing is insufficient unless the producers arrange for the sale of their produce on cooperative basis;
- Because of various jobs in diversified farming a farmer can effectively supervise only limited number of workers;
- Better equipping of the farm is not possible because it is not economical to have expensive implements and machinery for each enterprise and;
- There are chances when some of the leaks in farm business may remain undetected due to diversity of operations etc.

2. Specialized Farming System

Under specialized farming, 50% or more income is derived from one single source. See the following figure.

Composition of Income Sources in Specialized Farming System



We may best consider specialization as the production of majorly one commodity for market, so that the farmer depends largely on a single source of income. This trend is evident when economic conditions are fairly uniform for a long period.

According to the definition, a farm on which 50% or more of the income are from sugarcane would be classified as sugarcane farming system, and the one yielding 50% or more of its income from vegetables would be called a vegetable farm. In Ethiopia, we may find evidences of such specializations.

The advantages of specialized farming system are:

- Better use of land:*** It is more profitable to grow a crop on a land best suited to it. For example, rice cultivation on a swampy land;
- Better marketing:*** Specialization allows better assembling, grading, processing, storing, transporting and financing of the produce;
- Better management:*** The fewer enterprise on a farm are liable to be less neglected and sources of wastage can easily be detected;
- Less equipment and labour are needed:*** A coffee farmer needs only special machinery and comparatively less labour for raising coffee than mixing many and;
- Efficiency and skill is increased:*** Specialization allows a man to be more efficient and expert at doing a few things etc.

The disadvantages are:

- There is a greater risk of failure of crop and market and may ruin farmers;
- Productive resources like land, labour and capital are not fully utilized;
- Fertility of soil cannot be maintained properly for lack of suitable rotation;
- By products of the farm cannot be fully utilized;
- Farm returns in cash are not generally received more than once a year and;
- General knowledge of farm enterprises becomes limited etc.

3. Mixed Farming System

Mixed farming is a combination of crop production with a sufficient amount of livestock production. It refers to that type of diversified agriculture in which a farmer invariably devotes to livestock production as a complementary enterprise. To differentiate mixed farming from diversified farming, there should be a substantial size of herds being kept by the farmers contributing to income and consumption of the household.

The advantages of mixed farming system include;

- It helps in maintaining soil fertility;
- It tends to give balanced labour load throughout the year for the farmer and his family;
- It permits the proper use of farm by-products;
- It provides for greater chances of intensive cultivation and;
- It often gets higher returns on farm business etc.

4. Ranching Farming System

The word ranching does not come under the specification provided for the farm, i.e. it is not in the control of any owner nor is it enclosed by any boundary. Ranching means practice of grazing animals specially sheep and goat, and is always on public land. Sometimes, such land is utilized for raising dairy stock. It is then known as dairy ranch. Ranching is very common in Australia and Tibet. In Ethiopia, there are still pocket areas where ranching is common (e.g. Somali region and most of the agro-pastoral areas). Ranching is gradually disappearing because of the increasing pressure on agricultural land.

5. Dry-land Farming System

Dry land farming generally refers to an area which receives less than 50 mm of annual rainfall.

Areas where rainfall is up to 75 mm but is in coincidence with high temperature and greater wind velocity, resulting into a heavy loss of water may also be considered under this category. The major farm management problem in these tracts, where crops are entirely dependent upon rainfall, is the conservation of soil moisture. Farmers all over the world, where dry land farming is practiced help plants to save enough of water to mature the crop. By good tillage they increase the infiltration of such rain as received by the fields. They remove weeds to prevent the transpiration of moisture through their leaves.

6. Mechanized Farming System

The mechanical operation on a farm is called farm mechanization. It includes the use of manual implement, and modern machines used in various farm operations like tractor ploughing, tubewell irrigation, harvesting and threshing by combine harvesters and threshers, spraying by sprays and the like. In post-harvest operations, mechanization includes processing of products such as wheat milling, cold storage, oil expelling, cane crushing and so on. Dear learners; mechanized farming systems are common in, for instance, Arsi and Bale zones where large areas are cultivated by state and investors.

7. Marginal Farming System

The marginal farmer does not always consider economic criterion in evaluating crop performance, because his or her first concern is food for the farm family. As such, he or she has nothing to market except on occasions when things force them to get some cash. Marginal farming is characterized by the following factors:

- The farms or holding are tiny with greater pressure of population on the land;
- The resource structure is hopelessly poor with the result that the farmer cannot give a proper direction to the allocation and utilization of resources;
- The products are consumed directly by the household and not exchanged in market;
- There is a complementary relationship between enterprises as some of them will have to be raised for by-products for cattle maintenance without consideration for loss or profit and;
- Product price fluctuations have marginal effect on the production of crops, etc.

□ Dear learners, to this end, we have to remind you that there could be many more criteria to classify farming systems into different types. In most of developing regions, for instance, we can identify between rain fed and irrigated farming systems based on the water base available for production.

2.3. Components of Farming Systems

Components of farming systems are the enterprises that require due attention in the research & development processes, and they directly or indirectly influence household's management, preferences, and decision makings. The potential enterprises which are important in farming system in the way of making a significant impact of farm by generating adequate income and employment and providing livelihood security are as follows:

□ **Crop Production:** Crop production is an important farming practice in countries like ours.

Cropping systems based on climate, soil, size of plots, food habits, market incentives, technological and institutional inputs available, and water availability have to be evolved for realizing the potential production levels through efficient use of available socio-economic and physical resources.

□ Dear Learners, we can classify crop production systems based, for instance, on climate; as highland (humid), and lowland crop production systems. Discuss with your friend on the possible classifications of crop production systems; e.g. based on size of plots available to the farming household.

□ **Dairy Farming Systems:** Dairy farming is an important source of income to farmers.

Besides, dairy farming is an important source of milk for home consumption, farmyard manure, and fuel products. The later has attracted attention recently as biogas developments are underway.

□ **Goat and Sheep Rearing Systems:** Sheep and goat rearing systems are very common in Ethiopia. Except in some cases, sheep is mostly reared in the highlands and mid altitudes, while goats are mostly seen in lowland areas of the country.

□ **Poultry Production Systems:** Poultry is one of the fastest growing food industries in the world. Poultry meat accounts for about 27% of the total meat consumed worldwide and its consumption is growing at an average of 5% annually. Poultry industry in Ethiopia is relatively a

new agricultural industry. Till very recently, it was considered a back yard profession in Ethiopia. Now, there are farms and farmers who generate income dominantly from poultry production.

□ **Apiculture:** Apiculture is the science and culture of honeybees and their management.

Apiculture, in Ethiopia, is mostly a subsidiary occupation and it is an additional source of income for farm families.

□ **Agro-forestry Farming Systems:** Is a collective name for land use systems and technologies, in which woody perennials (trees, shrubs, palms, bamboos etc) are deliberately combined on the same land-management unit as agricultural crops and animals. Agroforestry is important for meeting fodder, fuel wood and small timber of farmers, conserving soil and water, maintenance of soil fertility, controlling salinity and water logging, positive environment impact and alternate land use for marginal and degraded lands. Selection of proper land use systems conserve biophysical resources of non-arable land besides providing day-to-day needs of farmer and livestock within the farming system. The system is known to be practiced in closely all highland corners of our country.

2.4. Determinants of Farming Systems

Farming systems types are determined by a variety of factors, which allow analysts and development workers an opportunity to broadly categories areas and prescribe a loose set of possible projects, while acknowledging the heterogeneity that exists within these categories. The following sub-section will be a short review of the factors that determine a farming system.

- *Natural Resources and Climate*
- *Science and Technology*
- *Trade Liberalization and Market Development*
- *Policies, Institutions, and Public Goods*
- *Information and Human Capital*

Assignment! Dear student, discuss in detail on the above mentioned issues!

3. Farming Systems Research and Development (FSR/D)

- Farming system can be defined in many ways. In order to avoid confusion, let us first define the terms system & farming system.
- A system is a set of components that work together to achieve the overall objective of the whole system.

E.g.: Digestive system, respiratory system, circulatory system, urinary system and nervous system...etc.

- For effective functioning of the human body, all the sub-systems function harmoniously.
- Understanding of the various components & their actual interactions is useful in order to address the problems that one may face.
- In rural areas, watershed represents a useful system for hydrologists, regions for geographers, and village/family systems for sociologists.
- In FSR, the system theory is used to explain the complexity of the agricultural production to identify and understand the components that contribute to the production process.
- Any farm is part in a hierarchy of systems belonging first to the larger system of the rural areas.
- The farm as a system consists of a set of related systems which form a hierarchy of systems; microorganisms in the soil are sub-systems of the soil system.
- The soil system is again a sub-system of the crop production system & again the crop system is a sub-system of the farm system.
- The concepts of farming system involve the entire complex of development, management, and allocation of resources.
- The processing & marketing of the products are also directly related to the systems that produces them.
- Therefore, a farming system refers to a collection of distinct functional activities or enterprises such as crops, livestock, processing & investment.

Many definitions exist for the term farming system.

- The common one is the arrangement of farming enterprises that are managed in response to physical, biological & socio economic environment.

- Environment refers to rainfall, soil characteristics, vegetation, population size & distribution, & social and economic infrastructures.

3.2 Characteristics of FSR & Development

1. Farm Oriented- FSR & Development are farm oriented. Research & extension starts with the understanding of the farmer & the farm family, resource base, env't within w/c he/she operates & how he/she manipulates resources to fulfill needs.

- In the process, problems of fulfilling the farming HH's objectives are identified. This involves focusing on groups of farmers whose problems are to be solved.

2. System Oriented

- The components of farming (cropping, livestock...etc) are to be seen as part of a bigger farming system.
- Resources flow among the components or sub-systems makes them inter-dependent.
- Therefore, changes in one affect the other, positively or negatively.

3. Problem solving- in order to improve the efficiency of the system, it is important to understand the problems of the farming households for fulfilling their objectives.

4. Participatory- FSR requires partnership b/n farmers and extensionists – such partnership allows them to have insight in to the farming system to obtain firsthand information from farmers on performance of technologies and farmers' attitude technologies.

5. Inter-disciplinary

- Requires the knowledge of various disciplines, team of scientists from various related & relevant disciplines.
- Thus, the FSR & development process is multi-disciplinary in nature & interdisciplinary.

6. Complementary

- It packages knowledge generated by basic & applied research.
- Provides feedback to the experiment all solution & enables the research staff to develop suitable technologies to address the farmers' problems.

7. Links research with extension & other development agencies.

- For effective design, implementation and dissemination, it is vital to establish the necessary forward and backward linkages with private sectors, NGOs, and policy makers.

- This helps in better focusing of research and in getting assistance in implementation and evaluation, in receiving feedback and in identifying input needs.

8. Enables better management of risk.

- Small farmers have effective strategies to manage risk. Scientists also gain a better understanding of the risk associated with farming and any potential technological solution.
- This helps in designing technologies that fit within the farmers' risk management capacity.

9. Deals with suitability of resources and household economy.

- Recognizes the need to preserve the natural resources for the future generation.

10. Emphasizes building up ITK.

- Farmers have their own knowledge of doing research.
- FSR provides opportunities for researchers to better understand & appreciate the technical knowledge available within the farmers & build up on that knowledge.
- For technology transfer to be efficient, farmers' knowledge must be respected.

11. Dynamic & iterative approach.

- Agriculture is dynamic in nature due to continuously changing circumstances. Research & extension must remain continuously tuned to such changes and assess the implications for technological needs. It need to be modified to suit the changing circumstances and needs.

12. Attempts to reconcile national & farmer priorities.

There is a need to reconcile national priorities with that of the farmers in order to achieve the national development goal

FSR brings research, extension & farmers together to solve farmers' priority problems & create new opportunities for research.

- ❖ It provides a systematic way of understanding the technical and socio-economic environment of farmers; it helps to identify constraints & to develop solutions to the problem that farmers face.

3.3 Steps in FSR & Development.

Step 1: Diagnosis of farmer problems.

- ❖ Objective is to identify tentative target groups, to understand the production system, to identify & prioritize problems & constraints, to identify potential solutions to the problems, to gather initial reaction to the proposed solutions.

Step 2: Design/planning of interventions.

- Objective is to identify feasible solutions to the identified priority problems.
- Problem analysis to establish causal factors & possible system interactions, screen to identify feasible solutions, identify list of activities.

Step 3: Experimentation/ intervention.

- ✓ To implement the experiments in the most efficient manner and to undertake socioeconomic investigations.
- ✓ Major activities of this stage are: planning of activities, farmers' selection, site selection, arrangement with farmers, lay out of the experiment, and monitoring & data collection.

Step 4: Evaluation

- ✓ Objective is to assess the performance the program, to confirm original hypothesis, to test the technology, to adjust the treatments to reflect new information generated.

4. Farming System in Sub-Saharan Africa

4.1 Characteristics of the region

- ❖ Sub-Saharan Africa is a region of superlatives and differences.
- ❖ It has the largest land area of any developing region and the smallest countries.
- ❖ It has the oldest geology and the youngest population.
- ❖ It has the greatest concentration of high value minerals and the highest concentration of degraded soils.
- ❖ It has the fastest growth in agriculture and the greatest level of agricultural imports.
- ❖ It has the highest proportion of rural poor and the greatest potential for smallholder agriculture led poverty reduction.

1. The Land of the region

- Sub-Saharan Africa is the big region ;
- ✓ With a surface area of 24 million km²
- ✓ It is larger than all other developing regions
- ❖ SSA is divided into six agro-ecological zones, these are;
 1. Desert, 2. Arid, 3. Semi-Arid, 4. Sub-humid, 5. Humid and 6. High land
- ❖ Rainfall of the region ranges dramatically, from over 2,000 mm/year in central Africa
- ❖ to less than 400mm/year in arid areas of the region

2. Political Geography

- SSA has the largest number of countries per surface area, and one of the smallest populations per country out of the developing regions
- sub-Saharan Africa has the highest number of landlocked countries, 15 out of the total 43 in the world, and the greatest proportion of population living in landlocked countries
- Instability, state fragility and conflict have, tragically, been much more frequent in SSA than other regions

3. The People

- Sub-Saharan Africa's current population of 800 million makes it one of the most sparsely populated regions, (2011 data)

- But also the fastest growing.
- As in other regions, population has steadily increased over the last 50 years and;
- Is projected to reach around 1.7 billion by 2050
- SSA's rapid population growth has resulted in a young population
- Youth under fourteen now make up 42% of the inhabitants of the region (2011 data)

4. Poverty and Equity

- ❖ Sub-Saharan Africa's population is poorer than other regions and is falling further behind
- ❖ While other regions have managed to reduce the absolute number of poor despite population growth, in SSA the number of poor has steadily grown
- The *proportion of poor in the population has*, decreased slowly since the late 1990s
- Accordingly, during 2011 about 53%, compared to 7% in LAC
- The poor in Africa live mainly in rural areas with the rural communities being home to 75-80% of the poor

5. The Economy

- Economic growth in SSA, as a region, has for the most part been lower than that in Asia and LAC over the last two decades.
- **According to IMF report and forecast the following table shows the growing rate of same SSA and other regions**
- However, the regional average does not show the particularly low, or high, growth rates in some SSA nations.
- While Asian averages have been largely driven by the high growth of China, SSA also has some strong performers.
- In fact, as recently published in the Economist, over the last ten years six out of the world's ten fastest growing economies were in SSA.
- (Economist 2011) The region also proved surprisingly resilient to the 2009 economic crisis and is expected to bounce back strongly. **Average GDP growth (IMF 2010)(table)**

4.2 Classification of farming system in the region

- The delineation of the major farming systems provides a useful framework within which to examine agricultural development strategies and interventions.
- Following the available natural resource base, including water, land, grazing areas and forest; climate, particularly length of growing period (LGP) and altitude;
- We can categorize SSA farming system in to 13 major categories. These are;

1. Maize Mixed Farming Systems

- Found In sub-humid and humid areas, dominated by maize with legumes.
- Located in East, Central and Southern Africa.
- Livelihood derived principally from maize, tobacco, cotton, legumes, cassava, cattle, goats, poultry and off-farm work.

2. Agro-Pastoral Farming Systems

- Found in semi-arid areas, dominated by sorghum, millet and livestock.
- Located in West, East and Southern Africa.
- Livelihoods derived from sorghum, some maize, pearl millet, pulses, sesame, cattle, sheep, goats, poultry, off-farm work.

3. Cereal-Root Crop Mixed Farming Systems.

- Found In sub-humid areas, distinguished by two starchy staples alongside roots and tubers.
- Located in West and Central Africa.
- Livelihoods derived principally from sorghum, maize, millet, cassava, yams, legumes and cattle.

4. Root and Tuber Crop Farming Systems.

- In lowland areas where systems are dominated by roots and tubers without a major tree crop.
- Located in West and Central Africa.
- Livelihoods are derived principally from yams, cassava, legumes and off-farm work.

5. Highland Perennial Farming Systems.

- Found in moist highland areas with good market access above 1400m asl, with a dominant perennial crop, either food or commercial.
- Located in East Africa.
- Livelihoods are derived from diverse activities including tea, coffee, banana (or enset in Ethiopia), maize, beans, sweet potato, cassava, livestock (including dairy) and off-farm work.

6. Highland Mixed Farming Systems.

- Found in cool highland areas above 1600 masl with temperate cereals and livestock.
- Located in East and Southern Africa.
- Livelihoods are derived from wheat barley, tef, peas, lentils, broad beans, rape, potatoes, sheep, goats, livestock, poultry and off-farm work

7. Humid Lowland Tree Crop Farming Systems.

- Found in humid lowland areas where commercial tree crops have replaced forest and provide more than one quarter of household cash income.
- Located in West and Central Africa,
- Livelihoods are derived from coffee, cocoa, rubber and oil palm, as well as yams, cassava and maize, and off-farm work.

8. Pastoral Farming Systems.

- Found in arid areas, dominated by livestock. Located in West, East and Southern Africa.
- Livelihoods derived from cattle, camels, sheep, goats, some cereal crops and off-farm work

9. Fish-based Farming Systems.

- Found around Proximity to major water bodies and fish a major source of livelihoods.
- Located in all parts of Africa, predominantly along the coast and around major lakes.
- Livelihoods derived from fish, coconuts, cashew, banana, yams, fruit, goats, poultry and off-farm work

10. Forest-Based Farming Systems.

- Found in humid lowland heavily forested areas. Located in Central Africa.
- Livelihoods are largely derived from subsistence food crops including cassava, maize, beans, cocoyams and taro, and off-farm work.

11. Irrigated Farming Systems.

- Found around large scale contiguous irrigation schemes, with virtual absence of rain fed agriculture. (Small scale schemes are visualized as part of the above systems).
- Predominantly located in low rainfall areas.
- Livelihoods are largely derived from commercial crops notably rice, cotton and vegetables, as well as cattle and small ruminants.

12. Sparse Arid Pastoralism and Oases Farming Systems.

- Found in Arid areas with average length of growing period less than 30 days.

- Located in West, North-east and Southern Africa.
- Livelihoods derived from date palms, cattle, small ruminants and off-farm work, with some scattered irrigated crops and vegetables,

13. Urban and Peri-Urban Farming Systems.

- Found in the centre or the fringes of cities.
- Located in all parts of Africa.
- Livelihoods are derived from diverse activities including vegetable and dairy production.

5. Sustainable Livelihood

5.1 Concept of sustainable livelihoods

- A livelihood comprises the people their capabilities, their assets (stores, resources, claims and access) and their activities required for a means of living; and
- a livelihood is sustainable when;
 - ✓ it can cope up with and recover from stress and shocks,
 - ✓ Maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base.
 - ✓ provide sustainable livelihood opportunities for
- ❖ the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long-term

❖ Objectives of sustainable livelihoods

1. **For policy implication** (improving equity, enhancing capability of the society as a whole, increase sing social sustainability and etc.)
2. **For research** (better understanding of 1. livelihood intensity of local economies 2. intensity, complexity and diversity of farming system and etc.)

5. 2 Principle of sustainable livelihoods

1. **People centred** sustainable poverty elimination will be achieved only possible when the extern support focuses on what matters to the people.
2. **Responsive and participatory.** Poor people themselves must be key actors in identifying and addressing livelihood priorities. Outsiders need process that enables them to listen and respond to the poor.
3. **Multi-level** poverty elimination is an enormous challenges that will be overcome only by working at several levels,
 - ensuring that micro-level activities inform the development of policy an effective enabling environment, and
 - That macro level structure and possess support people to build upon their own strength.

4. **Conducted in partnership.** With both the public and private sector
5. **Sustainable** to be sustainable the livelihood should have fulfilled four dimensions. These are 1. It should be economical 2. Institutionalized 3. Socially viable 4. Environmentally friendly.
6. **Dynamic** external supporters should have to recognize the dynamic nature of livelihood strategies and flexibly respond to change in people's situation and develop long term commitment

5.3 Determinants of sustainable livelihoods

- ❖ There are numerous initial determinants of livelihoods, these are;
 1. Livelihoods which are predetermined by accidents of birth
 2. Gender as it is socially defined as determinates of livelihoods
 3. A person also choose a livelihood through education and migration
 4. Natural calamities call also determine the livelihoods
 5. Economic growth can also determine the livelihoods of a person
 6. Adaptable capability to exploit new opportunities can also determine the livelihood of a person

6. Livelihood Zoning

6.1 Meaning of livelihood Zoning

- ❖ A livelihood zone is an area within which people share broadly the same means of production and broadly the same patterns of trade/exchange.
- ❖ The basic outputs from a livelihood zoning are:
 - 1) A map showing the different zones in relation to conventional administrative boundaries.
 - 2) A breakdown of the population by livelihood zone and administrative unit.
 - 3) A basic description of each zone's geography, production system and patterns of trade/exchange.

6.2 Purpose of livelihood Zoning

- ❖ There is increasing interest in using livelihood analysis as the 'lenses through which to view a number of problems, ranging from emergency response to disaster mitigation to longer-term development.
- This interest rests upon two basic observations:
 - **1.** That **Information** *about a given area or community* can only be properly interpreted if it is put into context with how people live.
 - **2.** That **interventions can only be designed and managed** in ways appropriate to local circumstances
- ✓ If the planner knows about local livelihoods and whether or not a proposed intervention will build upon or undermine existing strategies.

Interpretation of information

- ❖ *Food security assessment* provides an example of the value of livelihoods-based analysis.
- ❖ This is because it has been found that *an analysis of local livelihoods is essential for a proper understanding of the impact*
 - ✓ – *at household level – of hazards such as drought or conflict or market dislocation*
 - **Then Design and management of interventions.**

- ✓ *There are* several frameworks for livelihoods-based project planning and management
- ✓ One example – the DFID Sustainable Livelihoods Framework

6.3 Determinants of livelihood Zoning

- ❖ Most livelihoods are complex, and are shaped by a wide range of factors.
- ❖ In order to simplify the process of defining livelihood zones, it is suggested that the analyst focus on three primary factors.

1. Geography

- ❖ There are two classes of geographical factors:
 - ✓ Natural and man-made (corresponding to natural and physical capital in the DIFD framework).
 - ❖ The most important natural factors are topography (i.e. the physical features of an area, including mountains, coasts, rivers, and plains), altitude, soil, climate (i.e. temperature and rainfall) and vegetation.
 - ❖ The most important man-made factors are those related to infrastructure (roads, railways, telecommunications)

2. Production

- *There are several types of rural production system, with the most basic division being between agricultural, agro-pastoral and pastoral systems.*
- The system of production is determined by a range of factors, of which geography is clearly the most important
- Other factors include the marketing system (e.g. demand for one product as compared to another, the experience and capital resources of traders), the financial and banking system (e.g. availability and affordability of credit) and government policy (e.g. development policy, pricing policy, policy on the provision of production inputs, etc.).
- It is quite possible for two livelihood zones to be similar geographically,
 - ✓ but one to be based, for example,
 - ✓ upon food and livestock production, while another is depending on other system

3. *Markets/Trade*

- *The market system determines the ability to sell primary production, to trade goods and services and to find employment (whether in the formal or the informal sector), all of which have a profound influence on the pattern of livelihood.*
- Three factors are particularly important; these are:
 - a) *The demand for products, goods, services and labour;*
 - b) *An efficient system for marketing these; and*
 - c) *The existence of basic infrastructure to support market and trading activities.*

6. 4 Procedure of Livelihood Zoning

- ❖ The process relies on a combination of key informants secondary data.
 - ❖ Livelihood zoning is not about manipulating secondary data in a computer or using one single existing type of map.
 - ❖ Instead, livelihood zoning is an iterative process, gathering information from key informants, and verifying data with other people, then cross-checking with secondary sources.
 - ❖ The process is iterative, but it also involves a clear structure as elaborated below.
1. It begins with a **workshop** to obtain a preliminary map and zone descriptions.
 - ❖ This initial workshop is held either at national or regional level.
 2. Questions that arise at workshop are then followed up at a second level during consultations with key informants and possibly with some village visits.
 3. After consultations with key informants and village visits, it is wise to return to the first level to confirm any changes with partners and to get a consensus on the ‘final’ map.
 - It is important to emphasize at all stages; that there can always be further changes to the map as a result of future more detailed fieldwork.
 - ❑ Whether you start at the national level or at the regional level depends on the size and complexity of the country in question.
 - In a small country, with relatively little geographical variation,
 - ✓ It is best to start at national level and then proceed to regional level for confirmation and clarification.

- In a large country, with great geographical variation,
- ✓ It is usually best to start at regional level and then proceed to district level for confirmation and clarification.

7. Sustainable Livelihood Analysis

7.1 Analytical Framework of Sustainable Livelihoods

- A conceptual(analytical) framework is a set of ideas that are;
- ✓ Organised to provide a coherent approach to analysing and understanding an issue or problem of the poor.
- ❖ The framework organises, clarifies and defines terms and concepts.
- ❖ It also brings out the assumptions and values which underlie the concepts.
- ❖ The livelihoods framework examines the different elements that contribute to people's livelihood strategies.
- ❖ It analyses how forces outside the household or community in 'the external environment' affect them.
- ❖ There is no single 'right way' to analyse and understand livelihoods and no 'correct' planning approach that will make household livelihoods secure.
- ❖ Therefore, the livelihoods framework is one way of looking at the world.
- ❖ Other frameworks have been developed to describe poverty, governance, local economic development, gender relations and natural resource management

7.2. Components of Livelihoods Analytical Framework

1. Vulnerability,

- ❖ The *Vulnerability Context* frames the external environment in which people exist.
- ❖ People's livelihoods and the wider availability of assets are fundamentally affected by critical **trends** as well as by **shocks** and **seasonality** – over which they have limited or no control. The box below provides examples (this is not a complete list):

2. Livelihood Assets,

- ❖ The livelihoods approach is concerned first and foremost with people.
- ❖ It seeks to gain an accurate and realistic understanding of people's strengths (assets or capital endowments) and how they endeavor to convert these into positive livelihood outcomes.

- ❖ The approach is founded on a belief that people require a range of assets to achieve positive livelihood outcomes;
- ✓ no single category of assets on its own is sufficient to yield all the many and varied livelihood outcomes that people seek.
- ✓ This is particularly true for poor people whose access to any given category of assets tends to be very limited.
- ✓ As a result they have to seek ways of development and combining what assets they do have in innovative ways to ensure survival
- ❖ There is the asset pentagon lies at the core of the livelihoods framework, ‘within’ the vulnerability context.
- ❖ The pentagon was developed to enable information about people’s assets to be presented visually, thereby see the inter-relationships between the various assets
- Asset has five components
 1. Human capital
 2. Social capital
 3. Physical capital
 4. Financial capital
 5. Natural capital

3. Policy Institutions and Processes

- ❖ *Under this components livelihood analytical framework*
- *Transforming Structures and Processes* within the livelihoods framework are the institutions, organizations, policies and legislation that shape livelihoods.
- Their importance cannot be over-emphasized.
- They operate at all levels, from the household to the international arena, and
- ✓ in all spheres, from the most private to the most public.
- ✓ They effectively determine;
 - **access** to various types of capital, to livelihood strategies and to decision-making bodies and sources of influence;
 - the **terms of exchange** between different types of capital; and
 - **Returns** (economic and otherwise) to any given livelihood strategy.

- ❖ **And Policies** inform the development of new **legislation** and provide a framework for the actions of public sector implementing agencies and their sub-contractors

4. Livelihood Strategy

- ❖ The livelihoods approach seeks to promote choice, opportunity and diversity.
- ❖ It is the range and combination of activities and choices that people make/undertake in order to achieve their livelihood goals (including productive activities, investment strategies, reproductive choices, etc.).
- ❖ livelihood strategies for rural communities could be agricultural intensification, livelihood diversification and migration
- ❖ But strategies are intimately connected with people's objectives;
- ❖ People select the beneficial *Livelihood Outcomes* that they seek.

5. Livelihood Outcomes

- ❖ *Livelihood Outcomes* are the achievements or outputs of *Livelihood Strategies*.
- ❑ Which may include;
 - ✓ increased income,
 - ✓ increased well-being,
 - ✓ reduced vulnerability ,
 - ✓ improved food security and
 - ✓ more sustainable use of the natural resource base
- Once again, the important idea associated with this component of the framework is that
- We, as outsiders, investigate, observe and listen, rather than jumping to quick conclusions or making quick judgments about the exact nature of the outcomes that people pursue.
- In particular, we should not assume that people are entirely dedicated to maximizing their income.
- Rather, we should recognize and seek to understand the richness of potential livelihood goals.
- ❖ This, in turn, will help us to understand people's priorities, like;
 - ✓ why they do what they do, and
 - ✓ Where the major constraints lie.