

LAND USE AND ITS CLASSIFICATION

Land use is the surface utilization of all developed and vacant land on a specific point, at a given time and space. According to the FAO concept, land use defines the human activities which are directly related to land, making use of its resources, or having an impact on them. In that context the emphasis is on the function or purpose for which the land is used and particular reference is made to “the management of land to meet human needs”.

Jasbir Singh and Dillon define land use of an area as “the cumulative outcome of the historical events, the interaction of the economic forces with the natural environment and natural value of the society”. Land use thus automatically involves the concepts of optimizing the land use potential, land evaluation for example, and of land use planning. A distinction should be made here between present land use (the way in which the land is used at present) and potential land use (how it could be used with or without improvements).

LAND USE CLASSIFICATIONS

A land use classification is a classification providing information on land cover, and the types of human activity involved in land use. It may also facilitate the assessment of environmental impacts on, and potential or alternative uses of, land. Land use classification is of great significance in land use and land cover as it is the most fundamental step of land use analysis. Land use classification is the systematic arrangement of various classes of land on the basis of certain similar characteristics, mainly to identify and understand their fundamental utilities, intelligently and effectively in satisfying the needs of human society. The best use of each parcel of land requires a scientific and methodologically appreciable classification. This may help us in investigating the land use problems and be the basis of planning for the best use of our land after considering the major land use categories.

According to Barnes the objectives of land use classification can be categorized into the following.

- To give more enlightened and economically sound land settlement policies both public and private.
- Guidance in public land purchase and development.
- Planning the organization and distribution of local government services
- Guidance in the distribution of public aids
- Guidance in determining sound real estate lending and borrowing policies.

- Land assessment for taxation purposes
- Developing administration programmes for land conservation and management
- Developing sound farm management policies and organizing the most effective
Decide the type and size of operative units.

SIGNIFICANCE OF LAND USE CLASSIFICATIONS

Land is considered to be the most important natural resource in all times. All agricultural, animal and forestry productions depend on the productivity of the land. The entire eco-system of the land, which comprises of soil, water and plant, meet the community demand for food, energy and other needs of livelihood. The purpose of land use classification is to maximize the productivity and conserve the land for posterity. The prime requisite for better land use planning is information on existing land use and their spatial distribution. The present land use is related to landform, climate, soil conditions, irrigation facilities, marketing and socio-economic conditions. The best use of each parcel of land requires a scientific and methodologically appreciable classification of the present land use. This could be achieved only through the proper understanding of existing land uses pattern and changes that have taken place in concerned regions. “Land classification is not an end in itself but a means of obtaining better land use”

LAND USE CLASSIFICATIONS – A HISTORICAL REVIEW

The development of land classification systems has a long history in various countries of the world. Soil classification systems were the first to be produced by both national (e.g. the U.S. Soil Conservation Service, Canada’s Soils Directorate) and international (the FAO) organizations to serve the needs of producing soil maps and provide a basis for determining land capability and suitability for growing various types of crops. The need for developing land use and land cover classification systems ensued first focusing, as it was natural, on agriculture and forestry – uses of land occupying large tracts of land and playing important environmental and economic roles. After the 1960s and 1970s, efforts to develop land use and cover classification systems for other types of land use proliferated, a response to growing urban and industrial pressures on land and the need to provide a basis for rational land use planning and management.

At the world scale, the first land use classification systems produced concerned the major land uses of the world. The FAO produces land use statistics, starting in the 1950s, using a four category classification of land use:

- (i) Arable land (cropland)
- (ii) Grass land (permanent pasture)
- (iii) Forest land (forest and woodland)
- (iv) Other land (includes urban areas, unmanaged rangelands, and land in Polar Regions, desert land, tundra, stony and rocky land in mountains..

Wolman, however, cites another FAO publication describing world land use in terms of five categories:

- (i) Meadow and permanent pasture
- (ii) Forest and woodland
- (iii) Unused but potentially productive and
- (iv) Built-over, wasteland and other.

The relevant data are collected annually by means of questionnaires from national governments. Since the mid-1990s, the FAO is in the process of developing a more elaborate international framework for classification of land uses using a 3-level hierarchical system to develop classes of land use.

Many attempts have already been made by many eminent scholars to classify land use from geographic as well as economic perspectives. One of the most notable attempts on land use was made by Von Thunen. Von Thunen viewed land as an economic resource whose main attribute worth considering was productivity and the landscape within which agricultural activity was taking place was flat and uniform in all directions. Von Thunen put one of the first major theoretical concept of land use on the assumption that all land is entirely level and of equal productivity. He, based on the transport cost needed to bring each commodity to the market, identified six concentric land use zones around the city. They are:

- (i) Truck farming
- (ii) Wood products
- (iii) Zone of intensive crop rotation
- (iv) Field grass with dairy farming
- (v) Three field system and
- (vi) Zone of extensive cattle rearing.

The first decades of the 20th century saw significant changes in the uses of land brought about by industrialization and urbanization in the western world not to mention by the two world wars and other major socio-economic events and technological progress. These changes were documented in studies of this period – most of which are not easily accessible, however – as well as in studies conducted in the second half of the century. The most important trait of these studies is the establishment of the systematic and "scientific" analysis of land use change based on theories and models drawn from a variety of scientific fields – mainly, economics, sociology and geography.

Sir Dudley Stamp was the pioneer of land use studies. He was instrumental in the first land use survey of Britain conducted during the thirties. According to him an ideal land use classification system should be exhaustive so that it does not omit any phenomenon. It should also be mutually exclusive so that the categories identified do not overlap with each other (Stamp, 1951 and 1953). In addition to these two, Stamp tried to make the classification simple since the fieldwork was conducted not only by geographers, but also by students, volunteers, etc.

On the whole Stamp identified 6 major categories of land use for Britain. They

are:

- (i) Forests and Woodlands
- (ii) Meadowland and Permanent grass
- (iii) Arable or tilled land including rotation grass and fallow land
- (iv) Heathland, Moorland and rough hill pasture
- (v) Gardens, allotments, orchards and nurseries
- (vi) Agricultural unproductive land including buildings, mines, cemeteries, etc.

Between 1931 and 1933 Stamp recorded existing land use field by field using the British Ordnance Survey maps of 1: 10560 scale. These are converted as Land Use maps at 1:63360 (that is 1 inch to 1 mile) scale and published. The first map was available in 1933 and the entire task could be completed only by Second World War. The most important feature added by Stamp is that these maps were complemented by monographs for each county. This monograph contained inventory data related to historical, economic, climatic, terrain and soil information of the area so that the interpretation of maps becomes easier. In 1948 these monographs were synthesized into a book named “The Land of Britain: Its Use and Misuse.”

The International Geographical Union Congress’ 1949 held at Lisbon have taken another leading step which became a milestone in the landuse studies in the subject. At the conference Valkenburg (1950) proposed a Commission for developing a Land Use Inventory procedure for all countries and UNESCO provided the grant (Parthasarathy et al., 2012). A five member committee was constituted for the same consisting of Van Valkenburg (United States of America), Stamp (United Kingdom), Hans Boesch (Switzerland), Pierre Gourou (France) and Leo Waibel (Brazil).

The main objectives of the survey are:

- (i) Recording the present land use and
- (ii) Publication of land use maps at 1:1 million scale.

This 1: 1million scale is chosen because it is at this scale only maps for all parts of the world were available. Though the World Land Use Survey is similar to the Land Use Survey in Britain, it identified 9 categories of land use as given below:

- (i) Settlements and associated Non-agricultural lands
- (ii) Horticulture
- (iii) Trees and Other Perennial crops
- (iv) Cropland
 - a) Continual and rotation cropping
 - b) Land rotation
- (v) Improved Permanent pasture
- (vi) Unimproved grazing
- (vii) Woodlands

(viii) Swamps and Marshes and

(ix) Unproductive land

Dudley Stamp became the Director of World Land Use Survey in 1951 and the survey started in Canada, East Pakistan (now Bangladesh), Tanganyika, Nyasaland, Cyprus, Japan and other countries. However the needs of these countries were varied and the standards of topographical base mapping were also different . Hence there was no World Land Use Survey in a stricter sense. In 1956, the Commission of World Land Use Survey was reorganized and Stamp became its Chairman. The Commission tried to stimulate Land use surveys to be completed in various countries.

Experience gained in different countries brought out the need to modify the categories to suit local needs. For example, even in the United Kingdom, the Second Land Use survey which was conducted by Alice Coleman in 1960s published Land Use maps at 1:25000 scale. Further, the 6 categories of Stamp's First Land Use survey were expanded to 13 groups with 64 categories of land use.

