A Step Forward in Integrating the Sociological Aspect into the Biophysical Model in the Process of Agricultural Development Planning

Agricultural Land Use Planning in Iran[1]

Farzaneh Davari

Itc, Department II, Social Science Division

1. Abstract

Agricultural development planning should aim at sustainable development in such a way that the outcome, is biophysically feasible, economically viable, environmentally sustainable and socially acceptable/desirable. Therefore Land Use Planning process is a multidisciplinary activity.

This paper briefly discusses a research carried out in order to develop an appropriate agricultural development planning method. The study included different disciplines such as: biophysical land evaluation, crop evaluation, economic farming system, as well as ways to incorporate sociological information in this planning process. As part of this study, a "Social Impact Assessment " approach was adopted and tested. In this process, application of ALES, SPSS and GIS software capabilities proved to be effective in linking social data to land use planning process. The research reported in this paper, concerns with the development and demonstration of a sociological methodology in which this integration has been applied.

2. Introduction

Review of traditional methods of agricultural development planning in Iran from the social point of view indicates that, these methods are subject to the following problems:

- Essentially agricultural development plans are mostly based on biophysical aspects,
- In some cases where the society was considered, it has been used only as a resource with a biophysical approach, considering population factors only,
- In some cases society is regarded as a dynamic resource by sociologists, it is studied and reported separately. Synthesis and integration of social data with the results of biophysical analysis proved very difficult. This is also because of the
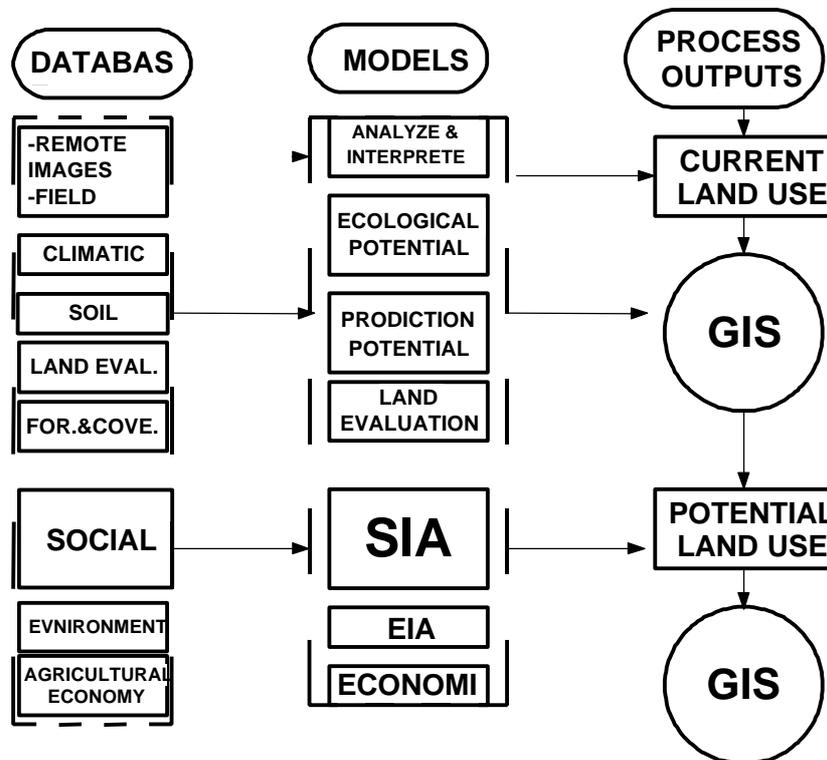
---

different analytical tools and techniques that are applied in social and biophysical process.

Sociology plays an important role in Land Use Planning and its implementation. The human environment should be assessed and incorporated in development of planning and its implementation.

As with the physical aspects of Land Use Planning, it is most important to identify the relevant stakeholders, and consider their sociological behaviour.

The focus of regional planning in Iran is the Government at the National and Provincial levels. The planning process should assist Government in making decisions at these levels. This can only be made practical, if the planning process uses sociological techniques that identify sociological limitations to the adoption of proposed Land Use Changes.

Figure 1.   Role of Sociological Studies in LUP.

Table 1.   SIA Method, Inputs, Procedures & Output

Objective	Determine the sociological feasibility of proposed alternatives or planning options for the study area and suggest modifications to those alternatives to render them applicable
Methods	Social impact assessment- analyze a series of social indicators and present specific criteria for decision making by Social scoping - determine social issues, variables, affected areas and study boundaries. Social profiling description of social trends and status quo. analysis of the social and cultural values. Formulation of land use alternatives - list the preliminary plan and its related options. Projection and estimation of effects - detailed examination of impacts of one or more options for change.
Inputs	Variables described : Sustainability of land use, Farmers' social strata, Farmers' values, Farmers' ideas/life style , children's education/employment, Rate of innovation and acceptance of risk, Rate of learning and level of knowledge, Rate of dependency on group (developed or undeveloped), Rate of farmers' environmental development: Rate of migration Rate of urbanization Level of education Rate of other sectors activities
Procedures	Sociology database created in dB4 which contains original data and their related secondary data Data obtained through questionnaires filled out in participation sessions with the farmers and regional and local experts and stored in the database.
Outputs	Out puts for regional level analysis: A sociological analysis that establishes the interrelationships between the existing variables including the relationships between: the social variables and different crops; social variables and localities; stability of land uses with the social variables; Relationships between all variables. This output is computed using the SPSS software. ALES output, including social feasibility analysis incorporating the social aspects in the land suitability classification. Social impact assessment of the proposed policies. This output will be begun once the overall policies and strategies have been finalized.
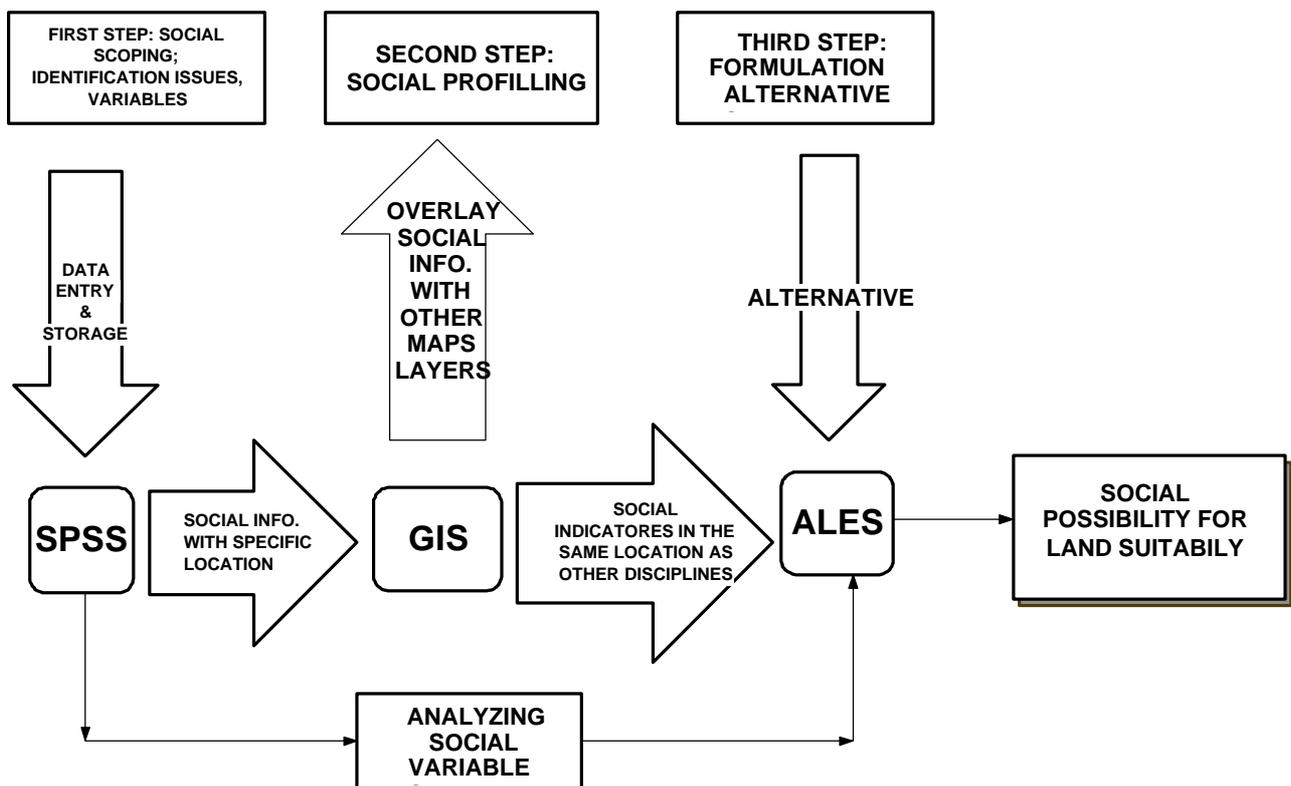
Figure 2.   Sociological Method & Process in LUP.

3.   How are social possibilities integrated with other disciplines?

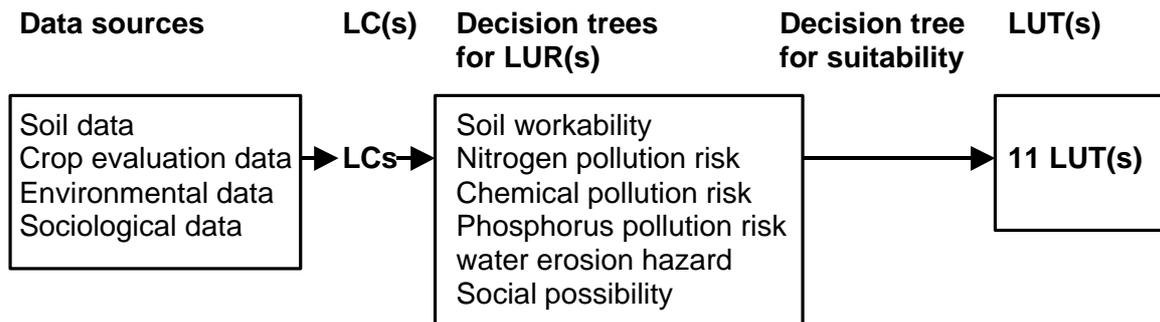First of all, three levels of social possibility were defined:

- Possible (without any social limitation)
- Marginally possible with improvement (with social limitation)
- Impossible

In the second step, land use types and their requirements are defined, because according to each land use type and its requirement, kind of social variables and the relation between them would change. Rainfed or irrigated land use, mechanised or non mechanised, high labour density or low labour requirement, high investment or low investment of each land use types, not only affect the relations between social variables, but analysis of social data indicated that major social variables based on land use, had meaningful differences.

In the third step, the social variables assumed as land characteristics were defined and aggregated to the classes. This was based on analysing social variables in the social profile stage. Social decision trees for each land use type were written. For this, development boundaries for urban and all other areas, where agricultural planning is irrelevant were defined. Then for each land use type in the remaining area, three major pathways were identified as follows:

- If the evaluated land use type is an existing land use, its degree of social possibility is based on the possibility to acquire the potential yield of that land use type.

- If the land use type isn't the existing but a past one, social possibility depends on whether social revival is possible or not. In this case, existing social variables and their relevant relations were reviewed and compared with the former (removed) situation. The result of this comparison reveals the degree of social possibility for revival.
- If the evaluated land use type is neither existing, nor past use, the land use type is considered to be a new one and this social possibility, reflects the social acceptability of this new land use.

Data sources	LC(s)	Decision trees for LUR(s)	Decision tree for suitability	LUT(s)
Soil data Crop evaluation data Environmental data Sociological data	**LCs** ➤	Soil workability Nitrogen pollution risk Chemical pollution risk Phosphorus pollution risk water erosion hazard Social possibility	➤	**11 LUT(s)**

Figure 3.   Social Possibility in ALES.

4.   Conclusion

The result of this research indicates that, in an agricultural development planning process (based on LUP), sociological studies can play role in two phases:

- Supplement land suitability assessment with concept and model of Social Possibility as a requirement of land use types,
- Supplement decision making with a Social Impact Assessment model.

Social Possibility would be part of Social Impact Assessment which automatically integrates with biophysical analyses in Land Evaluation. So the result of land suitability would include the degree of social possibility.

This integration was possible because:

- The objective of agricultural development planning is sustainable agriculture rather than community development. So sociology should be considered as a dependent discipline to the other disciplines.
- Using proper techniques and equipment for storing, processing and analysing data would permit planning models to use social data.
- GIS and geo-referenced physical resources, social data should in combination refer to specific time and location.