The agricultural land suitability assessment as the main factor for land consolidation activities in Albania

Fatbardh Sallaku
Agricultural University of Tirana, Albania

Odeta Tota
Centre for Transferring Technology, Fushe- Kruje, Albania

Bujar Huqi
Regional Agricultural Extension Centre, Ministry of Agricultural & Food, Albania

Introduction

Albania has perhaps moved further than any other country in the region to introduce sweeping land reform as a necessary precursor to the development of land markets. As a result of this reform, the rural landscape has been dramatically transformed since 1990 with all collective farms disbanded, and approximately 98 percent of agricultural land distributed to smallholders. This has transformed crop farming from a collectivized, command structure to a fully private sector with smallholder families farming small and fragmented plots for their own consumption and for the market. Pasture land and forests have mostly not been part of the privatization process. Only recently has state ownership been transferred to communities and private persons. The legislation currently in place provides an adequate legal and regulatory framework to support a functioning land market. A systematic process of first time registration is proceeding and about 55 percent of distributed rural land has been surveyed, mapped, titled, and registered. There are some remaining practical challenges, including the problems raised by the lack of land assessment procedures, restitution and compensation policy. Much of the remaining work is concentrated in those issues, which are very significant for agriculture, and still have major importance in this sector.

Despite of the sweeping land reform and significant positive changes, the reform has had several negative results. The main problem today is that the land is too fragmented and the average size of the farm far too small. This creates problems while introducing the new measures of the agricultural and rural development policy. Those small and fragmented farms are not able to invest or to efficiently modernize the production and reduce the costs in order to be more competitive and flexible on domestic and especially international markets.

Unfortunately, the new landowners created by the privatization and registration process have proved very unwilling to sell any land because there is no any clear methodology for the valuation of their land. As a result, there has been very little progress on the consolidation that needs to take place to convert the fragmented small farms into modern farms. The government is committed to improving the land market to reduce the costs and delays associated with consolidation.

Land suitability assessment is a way of systematically establishing good, moderate and poor quality land for a specified use where the land consolidation activities are more important. The assessment is based on the analysis of a number of climate, site and soil characteristics matched against the requirements of that land use. Good land has a favourable combination of characteristics, poor land a less favourable combination. Some land may have characteristics that render it unsuitable for the intended use.

For land use policy and land consolidation activities it is relevant to define and then to classify land in terms of its suitability for more general agricultural use. This process will be able to rank Albania's agricultural land from best to worst as a precursor to the protection of good land from urban and commercial development, as a basis for land consolidation and land taxation based on land quality, or to guide investments in agriculture, drainage or irrigation, for example. These are the main purposes of the present agricultural land suitability assessment.

Land suitability classification procedure

Land suitability is defined (*Framework for Land Evaluation*. Soils Bulletin 32, FAO, 1976) as the fitness of a specific area of land for a specified kind of land use – a so-called land utilization type, LUT – under a stated system of management. Land is assessed for its suitability for an LUT by a consideration of climate, soil and site factors as they might affect *potential* productivity.

Where economic data are insufficient to establish potential profitability, suitability classification must infer how different land qualities and characteristics might affect it. Land is ranked in several classes from S1 (best) through to N (worst) to indicate decreasing payment capacity relative to increasing development and continued production costs. Either a greater cost is required to achieve the same yield, or yields will be lower under the same costs.

Classification of agricultural land

Under Albanian law (Law 7501, 1991) agricultural land comprises ***arable land*** (land under temporary crops[1], frequently cultivated) and ***fruit trees*** (permanent orchards, vineyards and olives, all infrequently cultivated).

Currently, all agriculture in Albania is by smallholder enterprise. Holdings are very small, cultivation is increasingly mechanized, with a dependence upon contractors, and farming is characterised generally by low inputs and a livestock component. The investment that small farmers are prepared to make in their land is likely to remain limited until their land tenure is perceived as secure.

Within both a fluctuating agricultural market and a long-term perspective, general agricultural land quality can be related primarily to versatility. Hence, land that can yield consistently well for a range of production is considered better than land that can support a more limited number of crops, even though the yield of some of these crops might be superior. We can say that arable farming demands: "land sufficiently flat[2] and fertile to permit sustained, mechanised and profitable cropping of a range of climatically adapted crops, with or without irrigation. The land should be sufficiently drained and free from serious risks of flooding and erosion. Limitations to use should be surmountable through normal husbandry and conservation practices at acceptable cost."

[1] Includes field crops, vegetables, alfalfa and fallow land.

[2] Above a slope limit of 25% any form of mechanised farming other than on terraces is inadvisable in view of safety aspects, the environmental risks or the conservation measures and costs needed to offset such risks. Land having slopes greater than 25% is regarded as non-arable, but it may well be suited to fruit trees or to pasture, forestry or conservation. Also, with technical and economic investments considerably greater than has been assumed available to smallholders, land above 25% slope might be safely cultivated with specialised equipment.

The best land (class S1)[3] for arable cultivation will have the most favourable land qualities and the worst land the least favourable; see Table 1. The main factor is irrigability; under a Mediterranean climate by far the most important parameter affecting potential productivity is whether the land can be efficiently irrigated (i.e. a sufficiency of water, adequately distributed and properly drained). Arable land that can be irrigated is better than arable land that cannot be irrigated and land that is suitable for all types of irrigation is better than land that might be suitable only for overhead or drip irrigation.[4]

Table 1. Arable land suitability

Land class	Land qualities							
	Tilth, tillage, rooting	Fertility	Toxicity	Wetness / aeration		Water retention	Irrigability	Erosion; actual and risk
				Drainage	Flood risk			
S1 -	Good	Moderate, high	None	Well, imperfect	None	High	Good; any method	None / low
S2 -	Moderate, poor	Low	Slight	Well, imperfect	Slight	Moderate	Moderate; any method	Moderate
S3 -	Moderate, poor	Very low	Moderate	Poor	Moderate	Low	Poor; any method but restricted surface	High
S4 -							Specialised only, eg. drip	
N -	-	-	High	Very poor	High	Very low	-	Very high

Table 2 summarizes the land suitability classification which can be easy used during the land transaction for land consolidation activities. It is based firstly on the quality of land for arable cropping and then incorporates a consideration of irrigability.[5]

[3] Note, the best and most versatile land is not necessarily the most *valuable* land. Land value is related not only to land quality but also to its location, being enhanced by proximity and good access to markets and to service centres, for example.

[4] Irrigation requirements:

- surface irrigation	Slopes < 3% and deep (>2.0m) loamy to well-drained clay soils of reasonable structure.
- overhead irrigation	Slopes < 12% and/or deep to shallow sandy to clay soils.
- localized (eg. drip)	Almost any slope or soil with correct technology.

[5] For all provisionally irrigable land it has to be assumed that adequate water of acceptable quality will be available at acceptable cost. In the past, water supply was a state control function and supplies must have been generally adequate for at least supplementary irrigation. The economics of water supply today may be questionable.

Table 2. Land suitability for arable farming

Land class / subclass		
S1		Good arable land; irrigable by surface, overhead or drip methods
S2		Moderately good arable land; irrigable by surface, overhead or drip methods
S3	**S3-1**	Poor arable land; irrigable by surface, overhead or drip methods
	S3-2	Poor arable land; irrigable by overhead or drip methods only
S4		Marginal arable land; generally non-irrigable but drip irrigation locally
N		Non-arable

Soil and site characteristics

For arable farming, the qualities of tilth and tillage, the soil root zone, fertility and toxicity, wetness, moisture retention and erosion hazard are all assessed by measuring a range of soil and land characteristics. Table 3 shows the soil and land characteristics measured to assess the land qualities; each characteristic can affect a number of land qualities.

Table 3. Interaction of land qualities and characteristics

Measured land and soil characteristics	Land qualities							
	Tilth, tillage	Rooting	Soil fertility	Soil toxicity	Irrigability	Wetness aeration	Soil moisture	Erodibility
Slope	√				√			√
Water-table	√	√	√	√		√	√	
Soil depth		√	√		√		√	
Topsoil stones	√		√		√		√	√
Topsoil texture	√	√	√		√	√	√	√
Subsoil texture		√	√		√	√	√	
Topsoil structure	√	√	√		√	√	√	√
Subsoil structure & permeability		√	√		√	√	√	
Soil consistence	√	√			√		√	√
Soil drainage	√	√	√		√	√	√	√
Flood risk					√	√		√
Actual erosion			√		√			√
Cation Exchange Capacity			√					
Organic matter	√	√	√		√	√	√	
Soil acidity (pH); carbonate	√	√	√	√				
Exchangeable cations			√					
Cation ratios			√					
Available phosphorus (P)			√					
Sodium (ESP)	√	√		√	√			
Salinity (EC)	√	√		√	√			

For example, topsoil tilth is a function of stoniness, soil texture and soil structure. Workability is further influenced by the moisture content of the soil, itself a function of texture and soil drainage status. Erodibility is assessed mainly from soil texture, structure, organic matter, consistence and slope. The wetness of the land is a function of the flood risk, the soil drainage, soil texture and structure and the water-table fluctuation.

Land suitability classification

In the following there is a short description of the land suitability classification for arable farming in terms of class and subclass and the associated land qualities and characteristics which can be used during the land transactions for land consolidation activities. The classification is based on physical criteria (land qualities, characteristics) with inference rather than data as to how these criteria might affect productivity and which the farmers can take into consideration during different land transaction.

Highly suitable arable land – S1

The best agricultural land can support any of surface, overhead or drip irrigation. Slopes are <3% and soils are sufficiently deep, fine-textured and well-structured both to retain water so that water needs and application intervals are minimized and - in the case of furrow irrigation - so that long furrows can be maintained without significant lining. The soils are not so heavy that the cropping range is restricted or that water distribution, drainage or tilth is poor.

The best land has soil drainage that is no worse than imperfect (but has the potential to be easily improved), at least moderate soil fertility, an easily worked topsoil and has no risk of serious flooding or erosion. The need for special soil conservation or husbandry practices is nil or small.

Moderately suitable arable land – S2

Moderately suitable land is suitable for furrow, overhead or drip irrigation but less so than the class S1 land. The land comprises the flat or gently sloping land having deep loamy or fine-loamy soils that characterise S1 land, but having also one or more other limitations of fertility, moisture availability, topsoil tilth, drainage or erosion risk, etc. Land having a clay topsoil is also considered as class S2 at best because of the greater tillage requirements, difficulties for clean-harvesting and difficulties to distribute flood irrigation evenly.

It is assumed that the limitations of class S2 land will demand a greater expenditure on appropriate conservation and husbandry measures to obtain an equivalent production to class S1 land.

Moderately poor arable land – S3

Moderately poor land has one or more serious limitations for arable use, such as fertility, flood risk, moisture retention, drainage or so forth. Arable land under a montane climate is considered to be class S3 at best, on account of a restricted range of adapted crops. The arable land may have soils and slopes suitable for surface, overhead or drip irrigation (subclass S3-1) or suitable only for overhead and drip methods (subclass S3-2). In both cases the land has increased limitations and/or environmental risks – and therefore increased conservation or husbandry costs – as compared to class S2 land.

Marginally suitable arable land – S4

This land is not normally irrigable, being defined by slopes of 13 – 25%. The land may, in addition, have any other range of limitations. The land is regarded as arable assuming that

basic soil conservation techniques will be employed. Drip irrigation may be used locally for specific enterprises.

Not Suitable land – N
This is land having – for arable cultivation – one or more limitations or environmental risks assumed to be so severe as to preclude any possibilities of rectification currently.

Conclusions
Land suitability in terms of the analysis of a number of climate, site and soil characteristics as well as in terms of recording rights and delineating and demarcating relevant individual and/or communal boundaries represent a vital instrument for land consolidation activities and provide a secure land tenure regimes and property rights. Improved access to land strengthens the social and economic position of rural and urban dwellers, enhances the sustainable management of natural resources and leads to increased food security and alleviation of rural poverty.

Consequently the formulation of an appropriate land assessment and land administration policy has a crucial influence on the land consolidation activities as well as on the socioeconomic development in every society.

Existing land assessment and land administration systems, however, are often shaped in a way that the fundamental development objectives, e.g. economic growth, social justice, employment, participation, independence and environmental preservation are not targeted. Deficits may limit transferability of land due to lease or sale prohibitions and hinder or impede (i) activities for the increase in agricultural productivity and efficiency and (ii) activities for the improvement of living conditions in rural areas (*regional approach*).

The land suitability assessment is specifically important in both transition and developing countries where the implementation of land consolidation activities has largely failed to untie the wealth in land due to a variety of reasons.

The issues outlined adapted to the specific situation in Albania underpin the interconnectivity and cross-sector linkage between access to land, economic growth, social stability and environmental sustainability. The role of the government in land consolidation processes has to be clearly defined and it should basically act as a facilitator, providing the enabling environment hence the appropriate legal base for the land suitable assessment and the normative framework.

Notwithstanding the remarkable success of the land reform process, land fragmentation emerged as a side effect with detrimental implications for private and public investments, sustainable economic growth and social development.

In the Albania of today land fragmentation remains one of the most significant constraints which impede the development of rural areas in Albania with the agriculture sector most affected. The land suitable assessment is a very important issue which can introduce the ideas of market value-based property tax which is an essential measure to ensure equity, and promote land consolidation activities, economic allocation of the scarce urban land, prevent speculation, and link population base to the municipalities' resources.

Farm consolidation will be promoted by a number of the activities where the land suitability assessment is one of the important measures which will encourage the more dynamic farmers to use land that is currently under-utilized. The increased opportunities for income generation that are promoted by this activity will lead to an increase in investment in farms and in agricultural processing.

Summarising the above it is clear that any envisaged land consolidation/improved land management policy and strategy has to be holistic which tackles constraints in the rural labour market, improves rural finance and stimulate land markets, in particular land rental markets. While it is too simplistic to expect the market to solve all problems, a *comprehensive rural development strategy* focusing on rural infrastructure, creating off-farm rural employment opportunities, reducing labour mobility costs, increasing education and skills *in combination* with measures regarding land consolidation, better land management and improving the functioning of land markets, in particular the rental markets, may be the best way in addressing the fragmentation problems.