7. SPECIFIC TECHNICAL PROBLEMS

7.1. LAND CONSOLIDATION IN MOUNTAIN DISTRICTS

In some European countries, particularly Austria, the southern part of Germany and Switzerland, the mountainous districts present considerable and serious problems. Their proper solution, is of great importance both from an economic and social point of view. The difficult production conditions in the valleys lead, in countries with expanding industries, to an ever growing migration of the mountain people to the industrialised areas. The result is the de-population of the mountain valleys, where the remaining farmers live under most unfavourable and worsening conditions.

Within the framework of an integrated approach to the complex problems of mountain regions, European countries give specific attention to the agrarian structure. In some districts of Austria and in the Swiss Cantons, Graubünden, Tessin and Wallis, the successive subdivision of land has led to excessive fragmentation and in some of the Cantons the average number of separate plots within a farm unit, amounts to 22 to 27 pieces of land; and many farmers have even more than 100 plots. The average size of the plot in those areas is as minute as 0.06-0.20 hectares. Mountain districts illustrate much better than other regions the need for more substantial help than the reallocation of plots can provide. The lack of roads and of proper transport facilities makes efficient farming impossible; road construction and the installation of cable cars and milk pipe lines have to be closely coordinated with reallocation measures, if a real success is to be achieved. In addition drainage – and in some districts also irrigation work and the construction or improvement of farm buildings, have to be included in the consolidation operations.

A specific problem of land consolidation in mountainous areas is the necessary exchange of shares in buildings and the liquidation of and compensation for specific rights in the use of pastures, forests, and watering places. The drainage of moors and marshy areas will make it possible to gain land for the enlargement of small units.
Fig. 16. First stage of a forest consolidation scheme in Sweden.

Left: Scattered location of forest plots. Right: Forest land has been exchanged between the State and the companies A and B, into concentrated units.

In later stages a continued exchange with private forests is envisaged, so that gradually the isolated private parcels will come closer to the farms they belong to.
7.2. CONSOLIDATION IN FOREST AREAS

The consolidation of forest areas is a problem of outstanding importance in the Northern European countries where the forest plays a great part in the national economy, since its productivity could be greatly strengthened by consolidation measures. It is generally recognized that the reallocation of combined farm-forest holdings into useful, economic and manageable units must go hand-in-hand with the consolidation of agricultural land. In the case of the small farms which are especially vulnerable to technical changes likely to occur in the near future, their enlargement to the appropriate size of a family enterprise will involve the inclusion of a combination of food crops and forest in accordance with local, economic and social conditions. Such a concept, of course, entails specific financial and legal provisions favouring purchase of land for redistribution to small-farm owners, security of tenure and long-term loans encouraging long-range improvement. Of significance to forestry are particularly such aspects as the prevention of refragmentation, compulsion to accept consolidation where the forest’s protective role was neglected, control of exploitation during the period of reorganization, and the standardization of acceptable assessment methods. The lack of such standardization has been the principal obstacle to forest consolidation in almost every country where it had been attempted, Switzerland being the outstanding exception. France and Sweden have made an effort to create forest-owner associations with unchanged ownership pattern, while the forest complex is managed under a common working-plan. Forests, in general, are not fragmented to the same extent as agricultural areas, but here again accessibility to roads and water courses serving as transportation means, is of considerable importance. One main objective of consolidation measures in forestry areas is the achievement of adequate plots for cutting purposes. Since the growth of young timber can be seriously influenced by joining long standing timber, the boundary of the forest holding to the adjoining property should be as short as possible. Redistribution of forest land has to give specific attention to this point and consequently forest holdings are consolidated usually in the form of quadrangles since in this way the boundary length is the shortest possible in relation to the whole area. Sweden has particular experience in the lay-out of the road system in forested areas; reference is made to the Annex I, wherein the extract from a Swedish report on technical aspects of road construction in forested areas is included. In Sweden, thorough investigations have been made to determine the optimum road interval of certain road systems and to define the optimum quality of the roads and its variations in different parts of the system. The decisive factors are costs, of hauling the timber and of transporting the labour, per cu.meter and kilometer road lengths at various road qualities. The Swedish calculations are based on ideal models and, therefore, cannot be directly transferred to practical conditions in the field, but they are adaptable to the characteristics of the landscape. Deviations even of 20% to 25% from the optimum will only cause comparatively small increases in cost.
The consolidation of forest areas, particularly of private forests in northern European countries is combined, wherever possible, with the consolidation of the agricultural land. In order to ease the financial burden of the participating owners, the work on forest roads is usually allocated to the participants after the construction work in the agricultural area is concluded; construction work in forest areas is generally distributed over long periods.

7.3. CONSOLIDATION OF VINE YARDS

The consolidation of vineyards presents specific technical problems, which in many European countries have not yet been solved. Consolidation of small plots to one unit, is of particular importance in vineyard areas, since grape cultivation is four to five times more labour intensive than agriculture. Among the various technical aspects of this type of consolidation, the very considerable differences in land values, depending on location, soil qualities and even commercial standing of the produce (trade mark), involve the greatest difficulties, since they complicate the exchange of plots in the course of consolidation operations. In France, consolidation in areas producing high quality vines is considered impossible, because of the immense differences in soil values, while Switzerland in similar areas has carried out such consolidation operations successfully despite of these difficulties. In Germany resettlement action, even in ‘high quality’ areas is closely coordinated with consolidation operations. This was done, for example, quite successfully, in the famous Lorely region (Taunus), where the resettlement of twelve farms has cost about DM 950,000 (US $235,000). Portugal intends to follow the Swiss and German lead and is considering a consolidation legislation for vineyards.

Accelleration of land consolidation operations in grape-cultivating areas is of particular importance, since the owners of the vineyards have to start replanting as soon as possible. To achieve this, a certain work schedule has to be established, the strict observation of which is dependent on that part of the necessary work, as rooting and road construction, which is jointly done by the participants.\(^1\)

The best conditions for grape cultivation are assured in an homogeneous area, which is not interrupted by other cultivations. In such an area, it will be relatively easy to establish a road system, which makes it possible to fix the most adequate length of the parcels and to establish a uniform distance between the various fields. Only under such conditions it will be possible to use efficiently the very expensive technical equipment, applied in modern grape cultivation and the drainage facilities. Experiences in Germany and Switzerland have proved that consolidation operations in vineyard areas have not only reduced costs (labour) but also increased and improved the yields.

\(^1\) H. Gamperl, 'Die Flurbereinigung im Westlichen Europa', Bayerischer Landwirtschaftsverlag München, 1955, pp. 245.
8. SUMMARY

The technical work associated with land consolidation is so complex and comprehensive, that it cannot be dealt with here in all its aspects. The geometric and cadastral technical work, for instance, has been omitted from this survey though its importance for the success of the operations can hardly be overstated. A well organized and technically high standard of the geometric and cadastral services will speed operations, eliminate obstacles and reduce the frictions between participants; in other words, it will save time and costs. A satisfactory solution of the complex problems involved in consolidation operations is impossible without a highly qualified staff. The scope of consolidation work combines technical, economic, and social aspects. Land consolidation is not a technique but rather an art, since all three aspects are part of agrarian reconstruction and have to be coordinated in the execution of the consolidation scheme. The majority of the European countries have recognized this fact and try to strengthen the quality of the personnel involved in consolidation operations by broad scientific training; but, in addition, large scale economic, social and technical research is needed if the success of the scheme is to be assured.

In the following an attempt is made to show the main problems involved in the various stages of land consolidation operations:

8.1. PREPARATION FOR LAND CONSOLIDATION

a. Provident acquisition of land by the community, settlement societies or agricultural organisations for the purpose of enlarging holdings to the size of profitable family enterprises and provision of land for public interests.
b. Establishment and building up of community funds as a financial preparation for land consolidation, especially for expensive improvement measures.
c. Increased information and education as mental preparation on land consolidation problems and, in congested villages, on the advantages of resettlement.
8.2. EXECUTION OF CONSOLIDATION MEASURES

a. Coordination of the various measures in the sense of total planning combined with the greatest possible consideration of public interests.
b. Practical road construction and melioration work. Use of machinery that will reduce costs. Lowering of maintenance costs by road stabilization. Implementation of resettlement schemes.
c. Use of time and money saving technical methods of calculation, measurement and valuation.
d. Simplification of the operations by removing timewasting legal and administrative regulations.
e. Providing extension service before the procedure is initiated and after the consolidation operations are completed.

8.3. MAINTENANCE OF LAND CONSOLIDATION WORK

a. Improvement of cadastral surveys and of the land records.
b. Regulations for the upkeep of buildings and facilities.
c. Prevention of renewed sub-division and fragmentation of the land.

8.4. TECHNICAL PERSONNEL AND RESEARCH

a. Increased training of the personnel concerned with land consolidation.
b. Increase of knowledge by promotion of economic, social, and technical research.
PART IV
CONCLUSIONS

AGRARIAN RECONSTRUCTION: A CURRENT RESPONSIBILITY

The Western European countries use land consolidation as a tool of agrarian reconstruction to improve the production conditions of agriculture and to assure a better way of life for the farming population. Although methods and emphasis vary greatly in the individual European countries, the fundamental reasons for land consolidation are the same all over: agricultural regions have been more or less by-passed by the general economic development; the farming families on fragmented holdings toil with an effort unproportionate to the limited economic results; the most energetic young people leave the backward agricultural regions for the towns, where work and life is less hard and the reward for labour comparatively high.

Land consolidation is a coordinated effort to stop this trend and to reintegrate agriculture into the economic development of the country by remodelling production conditions and by placing the standard of life of the farming population on an equal footing with industrial labour.

Experiences of the post-war years have proved the rightness of this policy and it is safe to say, that satisfactory results have been obtained by proper planning. However, agrarian reconstruction or particularly land consolidation should not be considered, as it is still done, by some countries, as limited in time and in focus and therefore coming to an end, if fully implemented. On the contrary, it will continue to present itself even if in another, but not less provocative shape. Agrarian reconstruction will also in future be concerned with the need for directing economic and social progress and regulating the process of adjustment to technical advance and demographic development, in order to avoid frictions and the unnecessary loss of human and material values which, as we know, is so closely associated with the ways of economic and social development. Such a policy, however, will call for considerable and continuous public investments though the Finance Ministers in Europe very much dislike the ever-expanding budgets for agrarian reconstruction; but such investments might be the only way to avoid much larger losses in terms of human and economic values.
Some European countries are already faced with the task of reconciling the competitive interests of agricultural and urban development. With increasing free time and mounting labour insecurity, industrial workers and artisans will wish to have their own vegetable gardens close to their homes, and part-time agricultural labour may thus assume a different aspect under changed conditions. On the other hand, farmers will claim everywhere homes of equal standing to those found in urban districts. Future technical developments will also demand readjustments of farm sizes, since our present planning obviously was not wise enough.

The motorization of the rural areas in Western European countries will of necessity have a great impact on the settlement schemes of the future. In some countries the advantages of isolated homesteads on the holdings may not be considered as important in future when a motorized farm family living in the village can reach their fields in a few minutes by car. From a community point of view modern village settlement is preferable since it saves expenses for water and electricity, schools, extension and other public services. But still more important is the fact that its conveniences and cultural attractions might help to stem the migration to the town of the more enterprising young people, thus preventing that the reduction of the agricultural population, which is an integral part of agricultural and economic progress, takes place by way of anarchic depopulation of the rural areas and by a negative selection of those who remain there. 1) The most suitable and energetic farmers will likely decide to stay in agriculture, if it renders them adequate economic rewards and moral and cultural satisfaction.

The technical and physical progress of our age does not permit an indifferent attitude to the pressure of the forces of modern economic and social life. The European countries wish to establish the firmest foundation for human and economic progress and therefore are determined to remodel physical and agrarian conditions to face the great challenge of our age. Land consolidation has been a decisive step in the right direction.

1) F. T. Wahlen, Die Welternährungslage und ihre möglichen Auswirkungen auf die deutsche und europäische Landwirtschaft; Flugschriften der Deutschen Landwirtschafts Gesellschaft Band 27, Frankfurt-Main; page 20.