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**INTERNATIONAL  
JOURNAL OF  
AGRARIAN AFFAIRS**

Vol. II, No. 1, January 1955

**Redistribution of  
Farm Land in  
Seven Countries**

Price 5s. 0d. net

**OXFORD UNIVERSITY PRESS**

**LONDON: GEOFFREY CUMBERLEGE**

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NOTES ON INCREASING THE ECONOMIC SUPPLY OF  
LAND IN PUERTO RICO

*Introduction*

THE economic and social problems in an island in the Caribbean, where nearly  $2\frac{1}{2}$  million people have to live on less than 3,500 square miles of mostly mountainous land, call for the most far-sighted approach if these people are to enjoy decent levels of living.

Discovered by the Spaniards in 1493, Puerto Rico remained under Spanish sovereignty until 1898, when it was surrendered to the United States as a result of the Spanish-American war. In 1950 the United States Congress, with the approval of the Puerto Ricans, enacted a law giving the Island complete local autonomy, thus creating the Commonwealth of Puerto Rico (U.S.A.).

The rapid growth of population has long been the paramount problem. The present density is about 650 persons a square mile, one of the highest in the world. From a total of 44,883 in 1765, the population rose to 953,243 in 1899, and had reached the figure of 2,210,703 by 1950. At that time 59.5 per cent. of the population were living in rural areas and, indeed, the crux of the population problem lies in the fact that the economy is mainly agricultural. Agriculture directly or indirectly provides about 40 per cent. of the total net income. There is an almost complete lack of mineral and fuel resources, so for this and other reasons the Island's entry into the industrial world has been retarded and it is doubtful whether it will ever become highly industrialized. Agriculture in fact will continue to be the backbone of the economy despite the limitations of the land. These are severe, for even if the whole area—little more than 2 million acres—were suitable for agricultural use it would provide only 0.9 acre for each inhabitant today. With the present rate of population growth, this figure will be only 0.7 acre by 1970. This is indeed too small even for subsistence, and the situation is worse than that because, according to the best estimate available, approximately half of the land area has been seriously damaged by erosion so that its continued use will require intensive application of proper soil and water conservation practices.

None the less, more than 80 per cent. of the total area was under some kind of utilization in 1950.

Almost 94 per cent. of the farms were operated by their owners. More than 70 per cent. of the farms comprised only 15 per cent. of the farm land. On the other hand, 58 per cent. of the farm land was contained in less than 6 per cent. of the farms.

### *Recent developments*

Conscious that there are too many people for the land available, the government has launched several different schemes in an effort to solve or alleviate the problem. Among them the most important are: distribution and maximum utilization of the land, industrialization, emigration and education (training skilled and semi-skilled workers). All these schemes call for detailed presentation but various limitations prevent their full discussion in this paper. The following notes are intended to show the directions in which improvement is being sought.

In the effort to achieve a better level of living full consideration is being given to the possibility of making the physical supply of land go further by increasing its supply in the economic sense. This can be done in various ways: (1) by bringing new, previously unused, areas into production; (2) by utilizing areas already in production more intensively; (3) by removing obstacles to the most economical use of the land; (4) by controlling the consumption of products from the land; (5) by inducing a decline in population or a reduction in the rate of increase; and (6) by increasing foreign trade.

A better utilization of the scarce land available for agriculture in the sense of a more intensified and diversified production, and the reclamation of some areas either by irrigation and/or drainage, together with the resettlement of such lands, seems to be the present line of approach involving some large and multi-purpose schemes. The government itself through some publicly owned agencies has launched such programmes. Whenever public funds are used in projects of this nature, of course, care has to be taken not only to see that the people are convinced of their desirability, but also to study alternatives, that is to say, to consider whether there are other lines of production into which the limited funds available could be put to more efficient use.

### *Possible reclamation areas and schemes under way*

There are in the whole Island about 159,900 acres of land that could be reclaimed. Although some of it is already in process of

reclamation, the larger part remains for future endeavour, including about 40,000 acres of submerged lands around the coast. If all of the area except the submerged lands were reclaimed, the total cropland actually available for agriculture would be increased nearly 10 per cent. Current works of reclamation involve about 35,780 acres. This area includes 26,000 acres to be irrigated in the south-western corner of Puerto Rico in the 'Lajas Valley Project', 5,600 acres to be drained in the northern part of the Island in the 'Tiburones Drainage Project', and 4,180 acres to be drained in the north-eastern part in the 'Loiza-Rio Grande Drainage Project.' In addition, studies have been undertaken with a view to the reclamation of 4,800 acres of dry land in the southern part of the Island, 1,200 acres of swampy area in the north, and 10,481 acres of salty land in the Lajas Valley—in addition to the land to be irrigated and drained there.

*The south-western Puerto Rico Project.* In this corner of the Island there is a vast area known as the Lajas Valley that is almost entirely idle owing to the aridity of the region. The land to be reclaimed is from 2 to 6 miles wide and approximately 19 miles long. Actually, the project is one of development since it aims at rehabilitating, adding to, and preserving agricultural lands of great value. The valley covers about 36,481 acres with a mean annual rainfall of about 31 inches. Once finished, the project will provide for the irrigation of 26,000 acres of land, good potable water supply for the towns of the region, production of 100 million kilowatt-hours of hydro-electric energy and protection of property from floods. The lack of water has been the limiting factor in this area, for the soils are among the most fertile in the whole Island. If the development is properly guided, says a report on the area,<sup>1</sup> it will open new employment opportunities for thousands of additional workers, create new living space, encourage new industries and commerce, raise the general level of living throughout the area, and result in a more favourable balance in the general economy of the Island. Based on the plans and progress being made it will be four years before the entire 26,000 acres will have irrigation available, but it is estimated that with the necessary funds made available on time by the government, the irrigation system can be completed by the end of 1954, or shortly thereafter. The preliminary studies were started in 1942. As to cost, the overall capital investment in this project on 1 July 1950 was \$26,789,000. For the

<sup>1</sup> Nathan Koenig, *A Comprehensive Agricultural Program for Puerto Rico*, United States Department of Agriculture in Co-operation with the Commonwealth of Puerto Rico, 1953.

purposes of construction and finance, the project has been divided into two parts. The first consists of the power and water-source feature, its cost being placed at \$20,482,000, \$11,704,000 of which is allocated to the power aspect and the remaining \$8,778,000 to the provision of water for irrigation purposes. The second part consists of the construction of the Loco River Dam and Reservoir and the irrigation-distribution system. This is to be financed at an estimated cost of \$6,307,000. Hence, the irrigation feature is estimated at \$8,778,000 for the development of the water source, plus \$6,307,000 for the development of the irrigation system itself, the total cost being \$15,085,000. The cost of the project is equivalent therefore to around \$580 per acre of the 26,000 acres concerned.

The present pattern of agricultural production in this valley area is extensive rather than intensive. It is based primarily on pasture and livestock, sugar-cane being the main crop on about 7,000 acres already under irrigation. A study made in 1950 revealed that of a total of around 56,100 acres in and near the reclamation area, about 18,900 acres were cultivated, the rest being in pasture. In the area to be irrigated 479 farmers have all or part of their farms. Most of the land is owned in large blocks, to the extent that 6 per cent. of the farmers with farms of 200 acres or more control about 80 per cent. of the total area in farms. The most important crops in 1950 were sugar-cane, followed by corn. For that year, the total gross income from the 26,000 acres to be irrigated was estimated at \$3,000,000. Of this amount, crops provided 82 per cent. and livestock products, especially milk, accounted for the rest.

Looking to the future, some questions must be answered before the irrigation system is completed. Among those to be thoroughly considered are: First, what pattern of agricultural production will be introduced, i.e. what will be produced? Second, who shall farm the land, in other words, what type of tenancy will be established? Third, what tax policy will be followed? As yet, no concrete answers have been found to these points. The project involves large expenditures of public funds so the pattern of agricultural production is a matter of public interest. A net increase in the total economy of the Island is to be expected from an undertaking of this kind. If the Island were to continue the hitherto one-crop economy—sugar-cane—no doubt most of the irrigated areas would be planted to this crop, but with a more diversified agriculture and with the marketing quotas under the Sugar Act still in effect, new lines of production are being sought. With the

development of irrigation the Lajas Valley would become ideal for diversified farming, but whatever pattern may be established some sugarcane could obviously be included to provide one of the cash crops.

Because most of the land is in the hands of a few farmers and because diversified farming is most likely to be established, some change in the farm-ownership pattern would be desirable. There is ample evidence in the Island and elsewhere that family-type farms seem to be best suited for such a pattern of production. Hence, it has been recommended that the government purchase the land and divide it into family-type farms in a systematic layout. It is argued that such farms would increase production and provide for a more stabilized economy, that they would assure a better utilization of resources and would contribute socially to a sense of equality, security and independence among the people farming the land.

The history of land taxes reveals that in earlier times such taxes were strictly proportional, applying to all real property without regard to the taxpayer's personal circumstances. In more recent years land taxes have been modified by becoming personalized. The main purpose of differentiating the tax load in this way may have been to influence land use rather than to increase revenue. Similarly, different pieces of land yield different returns according to their capacity to produce, and this crucial fact should be given due weight in arriving at the tax policy for the scheme. It may be recalled that the cost of irrigating the Valley will be around \$580 per acre and, although the government is financing the project, it will be those who farm the land who in the long run will pay for it. The stability and economic security of the project will depend on the kind of farm units established and on whether the charges for water are based at least in part on the quality of the land, rather than entirely on the quantity and cost of delivery of the water supplied.

*Tiburones Drainage Project.* There is along the north coast one of the largest swampy areas of Puerto Rico. It covers 5,600 acres of land that could be reclaimed. Satisfactory drainage by gravity is impossible because the land is only from 16 to 40 inches above mean sea-level, because of the high tides and because the long flow distances make the drainage slow. The frequent blocking of the mouth of a river by wave action piling up sand bars, and the flooding of the area by a second river, make the drainage problem difficult. All these conditions indicate that the drainage project already being undertaken will have to provide for the diversion of the run-off from the higher

lands, for the protection of the lower lands from the overflow of the two rivers, for the drainage by gravity of some lands and for drainage by pumping from the rest.

Studies for the drainage of this area started in 1945. The cost of providing adequate drainage is placed at \$270 per acre. Of the whole 5,600 acres, 5,423 belong to the Land Authority, a publicly owned agency created under the Land Law of Puerto Rico in 1942. The policies of ownership, production and tax policy once the project is finished can be decided along the same lines as those in the Lajas Valley Project.

*Loiza-Rio Grande Drainage Project.* This calls for the drainage of about 4,000 acres of poorly drained soils, part of which belong to the Land Authority and the rest of which is privately owned, in the north-eastern part of the Island. The problems and requirements are much like those of the Tiburones Project. Studies started in July 1948 and the construction of the drainage works began in October 1950. The investment per acre is expected to be around \$235.

The reclamation of another 17,000 acres is in view, including 10,481 acres of salty land in the Lajas Valley, in addition to the 26,000 acres already being irrigated, but this calls for more funds than are at present available.