

Harold I. Jorgenson
Bureau of Land Management

Basic Issues in the Process of Development in Latin America: Food - Land - Employment - Income - Environment

Six weeks from today (May 2, 1970) Latin America will have almost another million people to feed. A year from now there will be over eight million more. If the population growth rate increases in geometrical progression, by the end of the century the population of Latin America might reach 756 million people. This would be two and three quarters times the present number.

The accelerating increase in population is bringing a burgeoning demand for food, yet agricultural production is now just barely keeping up with the present explosive growth in the number of people. The increase in agricultural production is at the rate of 2.9 percent annually (1960-66); the increase in population is at the rate of 2.9 percent (1960-66)

It is well known that large parts of Latin America are on a collision course between a too fast growing population and a too slow growing, food supply. Some observers even warn of the possibility of localized famines in poorer and more crowded regions of the hemisphere within a generation and the probability of extensive famines before 2000 unless great effort is exerted to prevent them. This prospect undoubtedly is part of the uneasiness that forms the climate of our time, the feeling that our world is badly out of order in its priorities of development.

Hope has surged for increased agricultural production south of the Rio Grande as a result of the Green Revolution, especially through greater use of the miracle grains: the high yield and stockier wheats, the prolific IR-8 rice varieties, and the high lysine opaque-2 corn with its more assimilable protein which can mean so much to protein deficient diets of the humid tropics. Some major supply advances in basic food grains in the next few years appear likely, but the prospects for general self-sufficiency in the face of the population forecasts are not reassuring. Moreover, the impact of the miracle grains may be slowed by new wheat rusts, plant diseases, consumer dislikes, and social upheavals that interfere with production.

The effects of man's misuse of land are clearly visible in many places in Latin America. Much of the damage has resulted from a lack of knowledge or negligence of ecologic conditions. A comparatively modern example of damage occurred in the highlands of Colombia in the nineteen thirties when a rapidly expanding population began pressing hard upon land resources in the older settled portions of the Andean highlands and where accelerated erosion literally had washed away the economic base of subsistence over large areas in that region. Hundreds of thousands of campesinos were affected; this foreshadowed outbursts of the tragic "Violencia" that came at mid-century and cost several hundred thousand lives.

A less violent but nonetheless painful dislocation has occurred in the highlands of Central America. Costa Rica, for example, has had one of the highest rates of population increase in the world in recent years. As rural occupancy reached saturation in coffee growing regions of the Meseta Central, the overflow of population spilled in large numbers into nearly empty forested lands of the tropics. In general unionization there has been completely spontaneous and unordered and of little gain to the region or the settlers, and there has been extensive damage to watersheds and destruction of forests.

Much the same story of stress between resources and population has been experienced in drought prone northeast Brazil, in the eastern Brazilian highlands, and on some Caribbean Islands.

The good earth upon which such a high proportion of the Latinos depend has been seriously impaired in many areas. It is estimated that 20-25 million acres of arable land already have been so damaged by erosion, laterization and salinization as to be now submarginal or abandoned for production. The encroachment of pioneer settlement on forested land in Latin America amounts to all estimated twenty-five million acres annually, and much of this is wasted in unsuitable and transient occupancy. The relentless human invasion of wilderness areas has contributed probably more than anything else to the extinction of all estimated 18 species or subspecies of birds and 10 to 12 full species of animals in historic times and the endangerment now of at least several other animals and 77 other birds.

There are many reasons why an accelerated deterioration of the environment is taking place: the humanitarian measures that foster population growth, the

unforeseen impacts of new technology on fragile environments, extensive clearing and cultivation of frontier lands, witless industrial water pollution, and increased and largely unplanned urbanization. For development to succeed and mutilation of environment to lessen. there is need for concerted action to improve the relationship of people to land resources. This is especially true in expansion of agriculture.

One of the major lessons of the development effort in Latin America in the past 20 years has been the discovery that social progress and a rising level of employment on which it depends do not automatically emerge from economic growth. The improvements in Gross Domestic Product at 4.5 percent annually (1960-1967) and in exports at 4.8 annually (1960-67) in Latin America have little meaning for the tens of Millions Who continue to live in conditions of bare subsistence. squalor, disease and despair. Indeed for those in such circumstances the idea of "national development" is only a cruel delusion.

Compounding this difficulty. on the whole the trend in the Latin American Gross Domestic Product annual growth rate was down in tile period 1960-1967 (4.5 percent) compared to the period 1950-1960 (5.0 percent). and measured in terms of Gross Domestic Product per capita the annual rate of growth is only 1.6 percent (1960-1967) which compares very unfavorably with rising expectations of the people. This situation would be bad enough but as seen there are clear warnings that it will soon be made worse by the geometric growth of population unless something is done now. It should be noted, however, that while the overall percentage figures are discouraging there were impressive growth rates in a number of Latin American countries including Mexico. Bolivia. Chile. and in Central America.

The former chairman of the Economic Council, Walter W. Heller, wrote "... The economic growth we measure is not everything ... First claim on the products of growth should be to repair the ravages of the growth processes," (Heller, 1966). On the Latin American scene this brings to mind such victims as the impoverished cane field workers of the Zona da Mata in Northeast Brazil, cacao plantation laborers of Bahia in Brazil, and the small coffee growers of Colombia. This together with the general economic goals of our Employment Act of 1946 which requires consideration of employment and purchasing power as well as production as the basic criteria for economic growth policy may well be the best way to also help the people of underdeveloped countries to escape from poverty.

It has been estimated by the Latin American Institute for Economic and Social Planning (ILPES) that there are an estimated ten million unemployed in Latin America to say nothing of the tens of millions of underemployed in both the rural (farm laborers and patch cultivators) and urban (street vendors and small tradesmen) areas. Studies made by the Inter American Development Bank indicate that in the years just ahead the rural labor force in Latin America will increase by about one million annually. The worry is over where the vast and growing number of needed jobs will be found.

Good data are lacking but empirical evidence indicates that incomes are deteriorating for tens of millions of wage workers and small farmers under the impact of inflation, lagging wage adjustments, and small farm income losses due to technological crop displacements or stabilization price controls. The unemployment, underemployment, and declining incomes in many areas of Latin America are adding new elements of discontent to already inflammable social situations, and together present a challenge of daunting magnitude.

The contrast between wealth and poverty in Latin America are already shockingly and dangerously wide and growing more so. It is not tolerable that they should be. If development does not produce more employment and a fuller share in economic growth for the working man and peasant cultivator, it can serve to disrupt the social order instead of building a new one. That is why a new orientation toward the attainment of social as well as economic goals must be given to the whole concept of development research and assistance. Providing quality in the process of development must be of equal importance to providing for the growth of production. Development then may prove to be one of the strongest supports of order and stability among our Latin neighbors.

All of this suggests the need for greater attention to checking population growth, providing land, increasing food production, creating new employment, improving income distribution, preserving fragile ecosystems, and retarding urban migration in development strategies and processes for Latin America. Basically this means facing the problem of where to properly accommodate the multitudes of people already present and the multitudes arriving on the scene in the next few decades and how to provide all of them with a more acceptable quality of life.

In all of this, geographers with their special concern for improving the

relationships of man and resources through better national growth patterns, natural resources utilization, land use planning, regional economic development, population distribution, and managed urbanization, can make vital contributions.

In development these days the population dilemma is argued in two ways. One view is that "since labor is the most important factor of production, an increase in population increases the supply of output as well as demand for it" and that "population growth leads to economies of scale in production." The contrary view is that "per capita economic growth is slowed when the labor force grows faster than requisite capital natural resources, and technology" and that "since a rapid population growth means a lot of young people who consume but don't produce, this diverts crucial savings from investments." These are variants of the balance of population and resources issue of major interest to geographers.

In the field of population control the results have cheered no one. Ardor has translated poorly into action programs. For geographers part of the task seems mainly to be how to do better what they are already doing reporting oil demographic phenomena in relation to supportive resources and suggesting, the most rational relationships possible. Oil the population vis-a-vis development issues just posed it would seem research by economic and human geographers drawing oil development experience could help to clarify the problem.

The very idea of controlling the size of a population implies the existence of some standard of optimum size. Ways of determining, when a population is "too large" and when it is "too small" must be established. Involved in a critical judgement on this are regional (considerations of physical capacity of the earth itself, levels of technology in development of resources, quality of environment or quality of life that is desired, and psychological relationships of one individual to another as affected by space and other factors. It would seem geographers ought to have more to say on all of this.

It must be recognized that what the mushrooming work-forces of the poorer countries need most is a chance to learn a living. Providing highly automated and high-cost industrial development, often done with the best of intentions on the part of donor and recipient, is not a very effective response. Oftentimes it has aggravated the employment problem. Labor intensive rather than capital intensive enterprises seem to be a first order requirement.

Arrangements by which idle land and idle men are placed in a more productive

relationship may better serve national needs. Agrarian reform in many countries heads the list of man's wants. Increased access to land offers one of the key ways in which food production, employment, and rural incomes can be increased. Post-reform studies in Mexico, Venezuela, Bolivia, Chile, and Colombia show increased productivity on peasant farm units, as well as more intensive employment and greater incomes in the rural labor forces. Currently, significant reforms are being accomplished in Venezuela, Colombia, and Chile.

In some places land reform offers cost-benefit advantages over the settlement of new land, largely because of existing infrastructure and definite conservation benefits. Unused land in already developed areas tends to be in the more productive soil areas, and agrarian reform spurs modernization of agriculture. This approach diminishes the need for encroachment upon new lands, much of which is of unknown quality for farming and highly susceptible to erosion hazards and nutrient depletion.

Needs for geographic research work in this field include the following:

- 1) Identify areas of concentration of *minifundia* and *latifundia*, and interrelate programs of land use and tenure adjustments in their reform and modernization;
- 2) Analyze the comparative advantages of various areas for reform on basis of such criteria as development costs, number of beneficiaries, agricultural production, foreign exchange earning possibilities, social conditions, and political tensions in setting priorities;
- 3) Execute natural resource surveys in *latifundia* and *minifundia* areas as a basis for land reform planning;
- 4) Stimulate land planning in agrarian reform areas as a basis for modernization;
- 5) Analyze the agricultural development problems and opportunities in regions which have agrarian reform areas;
- 6) Develop models for integration of farm supply, production, processing, and marketing that are suitable in various agricultural economies to maximize small farming opportunities and incomes; and
- 7) Evaluate selected land reform projects, physically, economically, socially, and

administratively, to establish operational standards.

Development experience in many countries of Latin America has demonstrated that agrarian reforms are not enough in themselves. New land settlement also is needed. Resource, institutional, and political constraints place practical limits upon opportunities for agrarian reform. In various countries there must be a pragmatic and complementing mixture of land reform and new land settlement. A great deal of this settlement, spontaneous and scattered, is taking place in the tropical areas of many countries. If this settlement were properly directed and developed, it could be a positive national asset in terms of employment and income generation, provision of food needs, creation of new areas of viable economic activities, improving balance of payments through development of exportable production surpluses or import substitution products, and reinforcement of national integration efforts. If left unordered and ignored, such settlement could bring serious social and economic losses and in some areas even ecologic disaster.

Land settlement, if properly done, can contribute enormously to the development process and thereby help fundamentally to meet future food, employment, and income needs. There are important questions of *when*, *where*, and *how* additional land settlement should occur in connection with national development strategies. Brief mention can be made of only some of them.

In general the *when* is now. The current needs for new settlement farms, to cite a few countries, are on the order of 250,000 in Colombia, 100,000 in Ecuador, 225,000 in Peru, and 110,000 in Bolivia. The when also depends on what infrastructure projects are already built, under construction, or have high priority for early development.

In terms of *where*, we know that spontaneous land settlement and/or government sponsored colonization is taking place in virtually all Latin American countries. Most of it is in the humid tropical lowlands. This environment, together with the open land still remaining in less humid or dry tropics, make up the locale of the most extensive land frontiers still available. A great deal of the Latino's future depends on how well he learns to understand and properly utilize the tropical environment. In general he needs improved methods for more orderly and economical settlement and development of such land. There needs to be improved control, guidance, and assistance in voluntary land settlement in most

national development programs. And there must be greater regard for the large scale ecologic interventions that go with the settlement process.

Settlement should proceed first on suitable lands served by expensive infrastructure projects already financed, such as sections of the Carretera Marginal east of the Andes or the highland-to-lowland penetration roads being developed to the Upano Valley in the eastern lowlands of Ecuador, or to the Central Iluallaga Valley in Peru. Also a partial answer to *where* is the fact that tropical dry forest and tropical moist forest environments are more hospitable for human occupancy and agricultural development than tropical wet or rain forests. There also is less likelihood of soil depletion in the drier areas.

More productive settlement will be achieved if it is confined to areas with extensive concentrations of adequate soil to minimize road development expenditures. It should be first encouraged on suitable land along major transportation links which give reasonably good access to local markets and/or ports serving national or international shipping. Settlement should not be dispersed along whole national frontiers but along the periphery of already viable settlements where suitable soils occur. Land settlement should be promoted in regions which have obvious comparative advantages for production of crops or livestock needed in national or world markets.

There still are large areas in Latin America which can be further occupied and used for agriculture by relatively low cost land and water development. Outstanding examples are the upper São Francisco Valley in Brazil, the Guayas Basin in the western lowlands in Ecuador, the eastern lowland plains area east and north of Santa Cruz in Bolivia, and certain portions of the piedmont along the eastern side of the Andes in Venezuela, Colombia, Ecuador, Peru, and Bolivia where more fertile soils occur in anomalous situations of newer parent materials or where the weathering process has been arrested.

Regarding the how of new land settlement, we know that completely spontaneous colonization often results in random and unwise choice of land, destructive use of natural resources, extension of subsistence farming, agricultural development inappropriate to a nation's most essential product requirements, and waste of human energy and talents. At the other pole, fully directed settlement requires investments too heavy for general application over the large areas that need to be colonized and fosters a paternalism that deters

development of self-reliance and initiative among too many settlers.

In some countries, as in Ecuador, Colombia, and Paraguay, in what are considered "semi-directed" colonization projects. tasks of development have been constructively shared by government agencies and enterprising settlers through development of mutual aid entities such as consumer, farm supply and marketing cooperatives. and community action organizations These arrangements should be accompanied by thoughtful and continuous direction of settlement and development. especially in many tropical areas where there are particularly fragile ecosystems.

The main axis of development in the semi-directed colonization model is selection and subdivision of suitable areas, construction of access roads and basic services facilities, regularization and entitlement of land holdings, provision of agricultural credit and associated technical assistance to settlers, and development of mutual aid institutions.

A major activity that must be undertaken on a large scale in many less developed countries is clarifying and issuing land titles. This is a valuable government service that can be directly beneficial to tillers of the soil. In most cases farmers without title are ineligible for farm credit. Land title increases stability and leads to greater output from agricultural land. It gives the land occupants incentive to husband their land resources, and its aids in devising and enforcing effective systems of land taxation.

The movement of the displaced and the opportunistic into the hotter, rainier, and emptier lands of the *tierra caliente* is one of the more conspicuous of modern migrations. This movement which involves hundreds of thousands of people and generally an environmental adaptation greater than that faced by participants in the great trans-Atlantic migrations of an earlier era could benefit greatly from assistance of geographers.

Some examples of geographic research work needed in connection with colonization are:

- 1) Develop comprehensive land use planning on national scale as guides for settlement, development, and environmental protection;
- 2) Select land areas suitable for settlement;

- 3) Determine most suitable and economic the scale, sequence, and types of resource surveys in areas near and far from present settlement;
- 4) Determine types of commercial farming that are suitable to the moderately fertile to rather weak soils in the tropical moist to tropical wet forest areas of Latin America;
- 5) Determine forms of farm management systems that serve to minimize erosion and run-off, soil nutrient depletion, and infestation of weeds and brush;
- 6) Provide guidelines for improved land use in various ecosystems on the basis of data on rates of yield decline, breakeven points for retiring land, output responses of added capital in major land improvements, and relative yield benefits or losses from various combinations of cropping practices;
- 7) Develop area development plans, both rural and urban, vicinal to growth pole locations; and
- 8) Evaluate selected colonization projects, physically, economically, socially, and administratively, to establish satisfactory operational norms in varying environmental and locational situations.

Increasing food supplies and preserving environmental quality can be made to go hand in hand. Arranging the compatibility of development and environmental protection must be a major quest everywhere. Development authorities in all parts of Latin America need to consider the ecological aspect of development. To a greater degree than ever before all nations must develop knowledge and workable programs to protect and enhance the environment.

How a nation deals with its environment is no longer its own and nobody else's business. To a large degree it is everybody's business because of the unity of the earth's ecologic systems. Many nations may be affected by how any one of them treats its land, water, forests, or air. Moreover, there are resources that do not entirely belong to any one nation: the sea, certain lakes and rivers, migratory animals are examples whose effective management requires international cooperation.

An example of what a single nation can do about ecologic preservation is the recent cooperative survey of the Ministry of Agriculture and the British Tropical

Agricultural Mission in Bolivia (1968) which maps areas of the sub-Andean foothills and piedmont region in which it would be inadvisable to allow colonization in the form of small family farms to occur. Two main arguments support this view: 1) The general unsuitability of the soils in many areas, and 2) The hydrological significance of the forest cover of the region, controlling soil erosion on the soft sandstone and shale foothills and in controlling run-off onto the lowland plains adjacent to the foothills.

An example of what multi-national cooperation might do about ecologic preservation is inter-American adoption of comparable safeguards against spillages in connection with offshore oil drilling. Aside from international gains in environmental protection, the various oil producing nations and industries, if all joined in such responsibility, would not suffer competitive disadvantages in international trade from those giving inadequate regard to pollution hazards.

Examples of geographic collaboration in connection with environmental preservation are the following:

- 1) Develop the tools of resource investigation and ecosystem monitoring that are necessary for environmental preservation;
- 2) Encourage the negotiation of international agreements providing for firm antipollution and other environmental measures;
- 3) Establish the OAS Program for safeguarding of unique scenic, historic, botanic, wildlife, and natural resources now in danger of destruction whose preservation is a concern to all mankind.

Anxiety over deteriorating social and natural environments leads inevitably to concern about the affects of urbanization. The migration to the cities began in the pre-war era continues at a rapid pace. Urban centers which in 1950 had 39 percent of the Latin American population had 54 percent in 1969, Between those dates their population grew more than three times faster than the rural population.

Increasing pressure on the existing urban environments in many countries as a result of population growth and urban migration, and the ever-growing physical demands placed on them by urbanization and pollution have made it clear that they must develop a more rational and constructive approach to further

development. Nowhere is this more evident than in the exploding urban centers of Bogota with 2,037,000 people, Lima with 2,073,000, Santiago with 2,419,000, Rio de Janeiro with 3,909,000, Recife with 1,010,000, and Buenos Aires with 3,447,000. Moreover, previous channels for urban growth such as development of new towns and opening of new territories, limited as they are by financial and political constraints, do not appear to offer the same safety valve possibilities in the decades to come as was thought to be the case in earlier periods.

Current projections indicate that most future urban growth will take place in existing urban areas. This gives rise to such questions of major concern to urban geographers as:

1) What is likely to be the impact of the increased numbers, size and density of urban populations on a scale never before experienced in most parts of Latin America? The question raises implications regarding the capacity to provide employment, mental and physical health, housing and community facilities, education, recreation and other necessary urban services.

2) Will the massing of so many people create entirely new conditions or will it merely extend the present ones? It is necessary to evaluate the probable impact on the natural ecological environment (air, water, land forms, vegetation) and the quality of life in urban situations.

In short, it is necessary to focus on the major issues involved in the direction and control of urbanization in order to improve chances for the preservation and improvement of human environment.

In conclusion there seems little doubt that the most wasteful mistake that can be made in the development process anywhere is to proceed on a random project-by-project basis, rather than first to formulate an overall development strategy and then select those projects that interlock and buttress one another in attaining the social and economic goals that aim at ending poverty and injustice. This is a realm in which many of the geographers attuned to the basic needs and capabilities of lands and peoples in Latin America should find much to do in helping to build more habitable homes for mankind.

REFERENCES CITED

Bolivia Ministry of Agriculture (and British Tropical Agricultural Mission in

Bolivia). *An Initial Assessment of the Land-Use Potential of the Central Piedmont and the Santa Cruz Regions of Tropical Bolivia*. La Paz, Bolivia, (1968).

Heller, Walter. *New Dimensions of Economic Policy for the United States of America*. (Cambridge: Harvard University Press, 1966).