

LARGE SCALE IRRIGATION PROJECTS AS A MEANS OF SOCIO-ECONOMIC DEVELOPMENT
IN THE THIRD WORLD: A BRAZILIAN EXAMPLE

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During the 1960s, many Third World countries adopted the large scale, multifunction water project as a development tool in drought prone arid and semi-arid regions. These "great projects" were promoted by developed countries as being economically desirable. International financing institutions lent billions of dollars for their construction.

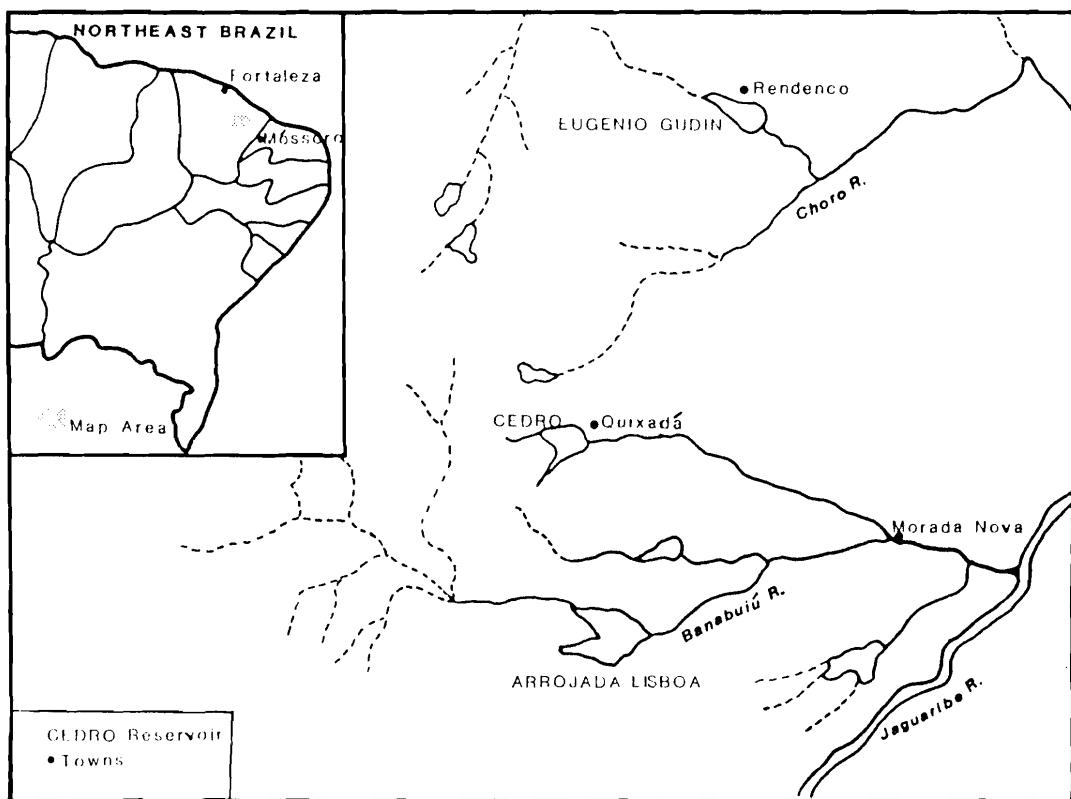
It was anticipated that, in addition to supplying hydro-electric power for fledgling industries, such projects would bring previously uncultivated land under irrigated cultivation, and thus increase the regional food supply. This would achieve socio-economic stability and decrease the vulnerability of the local population to re-current drought. This policy was adopted in 1960 by the Brazilian government for application in the Northeast region of Brazil. Between 1967 and 1980 thirty large scale irrigation projects with affiliated colonization schemes were constructed in Northeast Brazil. The prototype project, Morada Nova in Ceara, was the subject of a socio-economic impact study completed by the author in 1986 (Meaney-Leckie, 1986).

Evidence from the above study suggests that these projects cannot be considered effective anti-drought strategies. They benefit only a small minority of the vulnerable population in the drought stricken areas, a minority not composed of those most in need of assistance. The projects are not self-sustaining entities and the administrative and capital costs associated with them are extremely high. In addition, inadequate compensation for expropriated land and the lack of a re-location policy has served to destabilize the population base in the region.

MORADA NOVA

Located on the Banabuiu River, Morada Nova (Map 1) was the first of ten large scale irrigation projects to be constructed in the state of

Map 1
Location of Morada Nova Irrigation Project



Ceara. The site was selected because it was in close proximity to major consumer centers and the Arrojada Lisboa reservoir. In addition, a 1964 soil survey indicated that soils would be adequate for cultivation (SCET/COOP, 1969).

Expropriation of the land for the project began in 1968. Between 1968 and 1980, over 3,000 families were expelled from the valley. Work began on the physical plant before expropriation was completed.

Irrigation began with access to water accomplished by using the river itself as a conduit for the water released from the dam to a diversion canal located on the projects. From the main canal, the water was distributed through a series of secondary and tertiary canals.

Residential nuclei were constructed on a .3 hectar lot for each colonist family which included a house, stable, and shed. The residential nuclei also incorporated a school/community activities center. In addition, a five hectar agricultural lot was prepared for each colonist family.

Recruitment of colonists began as soon as the project was approved in 1967 and recruitment stations were set up in a number of frontier towns. The application process however, was complicated. It required no less than four interviews, numerous forms, and rigid criteria were followed. Preference was given to young families that had been evicted from the valley to make way for the project. The entire family had to be in good health, of good moral standing and the male head of household between the ages of 22 and 49.

Once selected and placed on the project, the colonist families were provided with social guidance, technical assistance, and a marketing cooperative. The social services included educational, medical and dental facilities in addition to a social assistance department designed to assist in the acculturation of the colonists. The technical services included an assistance department responsible for overseeing the agricultural aspects of the project. These services ranged from organizing planting schedules to helping colonists prepare their land. An experimental station and an aqua-culture installation also were included. The marketing cooperative was designed to operate as the sole buyer of the colonists' produce, which it would undertake to sell at a fair price. The project was administered by a project director, usually

an agronomist by training, who was a Federal Drought Agency (DNOCS) employee.

The services provided by the project administration allowed the colonists to become successful farmers. Data indicates that, despite inflation, the colonists quadrupled their income between 1971 and 1985, while the income of other farmers in the area remained the same (Meaney-Leckie, 1986, p. 145). The social, educational and health skills of the resident population increased as well. Ninety percent of the children completed the eighth grade compared to a sixty percent illiteracy rate upon arrival. Colonist illiteracy rates decreased by forty percent, personal hygiene and household cleanliness improved to a point where endemic illnesses were almost eradicated. Ninety percent of the colonists were accepting dental and medical care when advised to do so (Meaney-Leckie, 1986, p. 132).

PROBLEMS ASSOCIATED WITH MORADA NOVA

The Morada Nova project brought to light a number of problems associated with large scale irrigation/colonization schemes in Northeast Brazil. The schemes were designed to absorb the vulnerable subsistence population; however, only three percent of those accepted ever had refugee status. The rest came from within the valley which already afforded some protection from the drought. In addition, 3,000 families were evicted to make way for the colony and only 487 families were ultimately allowed onto the project. The displacement of these families increased the number of people vulnerable to the drought.

It was anticipated that the colonies would provide economic stability for the surrounding area. In actuality, the increased skills, education and consequently, income available to the colonists created a rural elite class and major conflicts have arisen between the colonies and the neighboring farmers.

By providing the colonists with so many services, DNOCS became a paternalistic overseer. It did not prepare the colonists for ultimately taking over the administration of the project. Therefore, the cost of maintaining the project remains a major expense for the government. Likewise the cooperative system provides transportation of the produce

into major centers and thus minimizes the potential for local businesses to become established. Associated economic spinoffs have been few.

Technical problems plagued the project from its inception. They primarily involved poor planting schedules and an increasing inadequacy on the part of the technical staff. Land use problems arising out of these technical difficulties forced some colonists to vacate their agricultural lots. Their re-location to other parts of the project caused additional problems, some of which resulted in colonists quitting the project all together.

ALTERNATIVES TO LARGE SCALE PROJECTS

Public outcry regarding the expropriation of land and the tremendous expense of the irrigation projects led the Brazilian government to re-evaluate its commitment to large scale irrigation projects in the early 1980s. This re-evaluation caused DNOCS to begin to withdraw its support for the larger projects and concentrate on the possibilities of smaller scale projects. Between 1980 and 1983 three government prototype programs were instituted to encourage this development.

These programs placed emphasis on the development of small scale technical assistance programs designed to assist riverside farmers already in place. These programs were to include water conservation and management measures, small scale irrigation, intensive cultivation techniques and fish farming. Hence, they would be more geared to meeting the needs of the vulnerable population than the larger projects. They would reach more people, and be a less disruptive and a less expensive means of increasing agricultural production in the areas in question. However, financing for these projects was difficult to obtain.

By 1987 only one project had been implemented under the prototype programs and the Brazilian governments strategy had resorted to the building of more large scale projects. Plans are currently underway to build four new multi-million dollar, multi-functional water projects with international financing.

CONCLUSIONS

It is estimated that the Morada Nova project, including the infrastructure, administration and operation, has cost the Brazilian government about \$US one billion. In total 487 families were assisted and 3,000 families were evicted. The great majority of the population in the Banabuiu region of Ceara still have no access to water and continue to suffer the full effects of the drought.

Accepting an increasing population in Northeast Brazil as a given, a continued commitment to agricultural schemes is a necessity. The goal of any future program should be to develop enough agricultural land to provide sufficient food and jobs for a surplus population without causing detriment to other groups within the society. This could be accomplished by emphasizing the development of small scale technical assistance programs. However, in order for development to occur at the grass roots small scale level, pressure must be brought to bear on the major international lending institutions to change their financing structure.

ACKNOWLEDGEMENTS

The author greatly acknowledges the assistance of the second directorate of DNOCS in Fortaleza, the colonists and administration of the Morada Nova project, and the ex-director of DNOCS Dr. Almir Tavora.

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