A.I.D. Project Impact Evaluation Report No. 13

Rural Roads in Thailand

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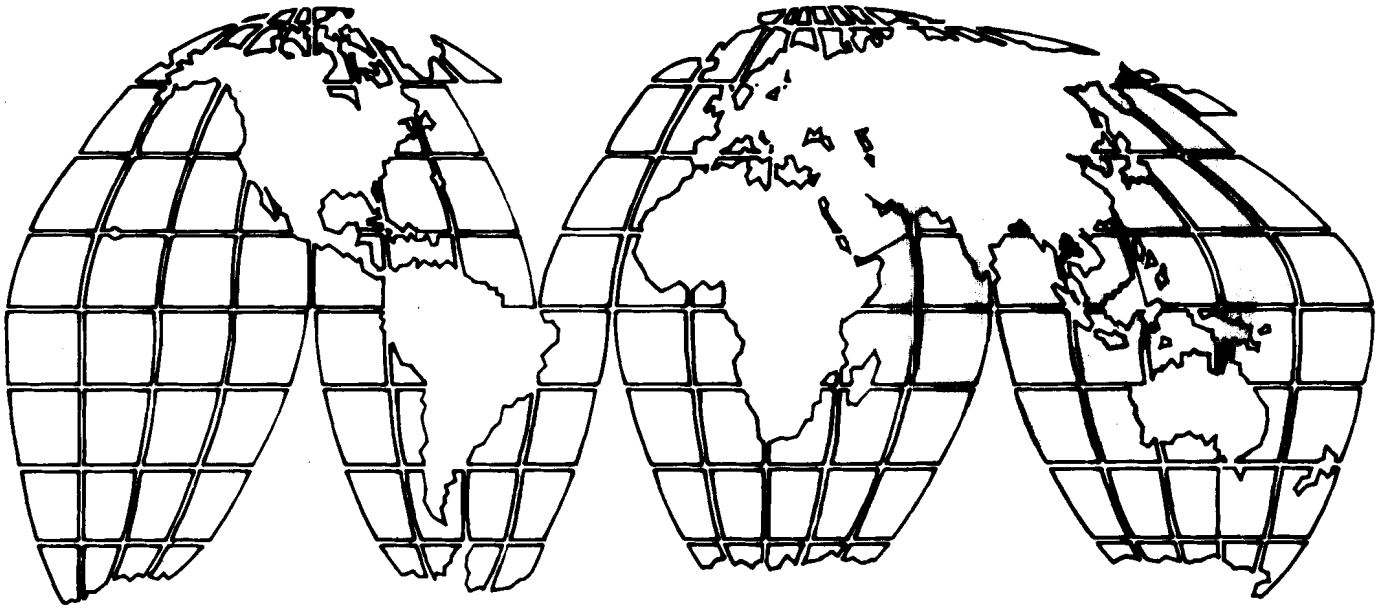

December 1980

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No. 11: Jamaica Feeder Roads: An Evaluation (November 1980)
No. 12: Korean Irrigation (December 1980)
No. 13: Rural Roads in Thailand (December 1980)

(continued inside back cover)

RURAL ROADS IN THAILAND

PROJECT IMPACT EVALUATION NO. 13

By

Frank J. Moore, Team Leader
(Bureau for Africa)
Charles T. Alton, Agricultural Economist
(Texas A&M University)
H. Leedom Lefferts, Social Anthropologist
(Drew University)
Suthep Soonthornpasuch, Social Anthropologist
(University of Chiang Mai)
Richard E. Suttor, Agricultural Economist
(Development Support Bureau)

Agency for International Development

December 1980

The views and interpretations expressed in this report are those of the authors and should not be attributed to the Agency for International Development.

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FOREWORD

In October 1979, the Administrator of the Agency for International Development requested that, in preparation for an Agency-wide ex-post evaluation system, between twenty and thirty projects be evaluated during the subsequent year, focusing on the impact of these projects in several representative sectors of the Agency's program. These impact evaluations are to be performed by agency personnel and result in a series of studies which, by virtue of their comparability in scope, will ensure cumulative findings of use to the Agency and the larger development community. This study of the impact of the roads component of the Thailand Accelerated Rural Development Project was undertaken as part of this effort. A final evaluation report will summarize and analyze the results of all the studies in each sector, and relate them to program, policy and design requirements.

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PREFACE

The task of evaluating the impact of 8,000 miles of roads on some 30 million people living in villages and small towns of North and Northeast Thailand--an area half as big as France- seemed at first an impossible assignment. This optimistic appraisal turned to total dismay when it became evident that the groundrules were inflexible, providing for completion of the study in a period of four weeks and a format not exceeding 15 pages for the body of the report.

Once the team gathered, we realized that both the procedures and the format provided a structure within which there was some hope that the task could be managed. An introductory description of the physical and cultural setting of the project, a summary of its principal objectives, and a page or so of concluding remarks leave no more than 12 pages for the actual evaluation. This forced concentration on the essential.

We have interpreted our mandate broadly. Thus we have looked not only at the impact of rural roads on the people directly served by them. We also examined the impact of the roads on the Thai institutions necessary to maintain them and the development momentum they generate. The adaptation of the service agencies to the needs for decentralized action determines the long-run viability of the project.

We have sought to present a balanced view. We have stressed adverse effects and unused opportunities precisely because we are convinced that the project triggered the boom and bustle so obvious throughout North and Northeast Thailand.

Our report is a team effort--a team whose membership goes substantially beyond the names listed on the cover page. It includes a large number of persons, both in the United States and in Thailand, without whose help we could not have completed our assignment. We cannot list them all; but we would be remiss if we were not to single out a few. We do so in chronological order.

First and foremost we are appreciative of the effective planning and administrative assistance we received from the staff of the Agency for International Development (A.I.D.), Evaluation Office, particularly G. William Anderson and Sandra Malone. We were given much valuable background information on the Accelerated Rural Development Program (ARD) by a number of persons associated with the ARD Project and with A.I.D. at various times. They include James Dalton (now with Louis Berger International), Lee Huff (Richard J. Barber Associates, Inc.), Jay Ingersoll (The American University), and David Steinberg, Fred Simmons, and Frank Kenefick who still work for the Agency. Richard Braida,

Department of Transportation economist who, but for financial constraints, would have worked with us in the field, gave us valuable assistance. We obtained good information on the use and possible availability of aerial photography from Heng Thung (Geo-data Systems International). While, in the event, we were not able to use photographic data, suggestions and advice we received from him were very helpful. Professors David Wilson and Herbert Phillips, University of California, Berkeley, gave us some useful leads.

In Thailand, we received assistance from the A.I.D. Mission, unobtrusively and in a low key non-interfering mode that was especially welcome. We are particularly grateful to Bill Fleming, our backstop, and to Eng. Mintara and Terry Grandstaff who shared their experience with us.

We owe a great deal to Eng. Damri Thaikam and Eng. Yhai Promprasit, assigned by ARD to accompany the field teams as liaison officers. Without their help, their constant concern for our task, their interest and, indeed, their wholehearted involvement, we could not have accomplished much. We leave with warm feelings of appreciation for their help and for their friendship. Roger D. Peacock, First Secretary (Development Assistance) at the Australian Embassy and World Bank economist Douglas Forno spoke to us about their work with ARD and thus helped to provide some perspective to our evaluation.

In the course of our visits to Provinces throughout North and Northeast Thailand, all ARD Provincial Officers and their senior staff gave much time to brief us in their offices and to travel out to the villages with us over ARD roads. Their commitment to the welfare of the villages is obvious and heartening. It is surely maintained by satisfaction derived from accomplishment that is evident, whether one "eyeballs" life along the roads in transit or talks at length to local people. We also wish to thank them for much cordial and often lavish hospitality.

In Nan, Chiang Mai, and Lampang, we had useful conversation with Thai and Australian technicians of the Thai-Australia World Bank Land Development Project and of the Thai-Australian Road Construction and Training Project.

On our return to Bangkok, we enjoyed the opportunity for extensive discussion with the first Secretary-General of ARD, Prasong Sukhum. Our talk with him helped us to put some order to our kaleidoscopic observations and to provide them with a sharper focus.

In drafting the final report we received valuable comments from George K. Tanham (Rand), William J. Klausner (Ford Foundation, Bangkok), and Richard B. Nelson (A.I.D.). They helped us to sharpen

our understanding and improve the presentation of some of our observations. Daniel Shea and his staff of the A.I.D. Publications and Audio/Visual Arts Division gave us excellent help and advice in the preparation of the maps and of our photographs.

All of these persons, as well as the many who could not be named individually, and the people and officials in villages and rural towns who talked to us along the way, have made it possible to reach some conclusions on the impact of the rural roads component of the ARD Project. What usefulness our report may have is largely due to them.

We are aware that many inconsistencies remain in our findings and that there may be errors and gaps in our observations. These are the responsibility of the evaluation team.

PROJECT IDENTIFICATION

1. Country: Thailand
2. Project Title: Accelerated Rural Development Project
3. Project Number: 493-0163 (493-11-810-163)
4. Project Implementation
   a. First Project Agreement: FY 1964
   b. Final Obligation: FY 1975
   c. Final Input Delivery: FY 1974
5. Project Completion--Final Disbursement: FY 1975
6. Project Funding Total
   a. A.I.D. $64,641,000 (grant)
   b. Host Country: by 1975, in excess of $20 million/year (Counterpart Funds) $ None
   c. Grand Total (Est.) $ over $200 million
7. Mode of Implementation
   a. Project Agreements between USAID/Thailand and, as approved by MOI/ARD, Provincial Governors.
   b. A.I.D.-financed fixed and cost-plus-fee contracts with a large number of U.S. firms, including Ralph M. Parsons, Raymond International, Inc., Vinnell Corporation, Philco-Ford Corporation, Universal Engineering Consultant Co., and Air America.
   c. PASA between USAID/Thailand and U.S. Army Corps of Engineers.
8. Evaluations
   a. Regular PAR/PES evaluations
   b. Special evaluations 9. Responsible mission officials during life of project in chronological order 1964-1975.
   a. Mission Directors:

John C. Ewer	1962-1964
Tracy C. Park, Jr.	1964-1966
Howard L. Parsons	1966-1969
Rey M. Hill	1969-1973
Roger Ernst	1973-1975

   b. Project Officers:
      Sheldon Turner
      Peter Davies
      William Thomas
      William Small
10. Host Country Exchange Notes
   a. Name of Currency: Baht (B)
   b. Exchange rate at time of project: B20 = $1

EXECUTIVE SUMMARY

Beginning in the early 1960s and still continuing, Accelerated Rural Development (ARD) is a program of the Royal Thai Government (RTG) originally aimed at fostering internal security through economic development. It provides basic infrastructure and economic and social services for rural people. The program is now active in 56 of the country's 72 provinces. ARD typically upgrades seasonal cart tracks into all-weather dirt roads to link villages and small towns to the national road network, develops potable water and minor irrigation schemes, and backs up these activities with the services of a variety of community level workers, especially in health and agriculture.

From 1964 to 1974, the U.S. Agency for International Development (A.I.D.) made grants to ARD totalling approximately 65 million dollars. To a large extent this assistance provided road building machinery to 31 provincial governments, technical specialists and funds to operate that equipment, and substantial in-country and participant training to develop a Thai capacity to maintain the momentum of the construction program.

In July 1980, a team of five social scientists spent three weeks in Thailand to evaluate the impact of the roads built in 16 northeastern and 10 northern provinces during the decade of A.I.D.'s participation in ARD which ended more than five years ago. This gives some depth to the evaluation perspective and enhances the team's confidence in its conclusions.

Both in the narrow focus on the impact of specific roads built with A.I.D. assistance and in the broader context of A.I.D.'s contribution,through the ARD project, to the development of rural Thailand, this has been an extraordinarily successful program.

The more isolated areas of the country on whose needs the project initially concentrated have been brought into the mainstream of national life. The area under cultivation and the intensity of land use have increased dramatically wherever roads provided access to markets--and thus opportunity for sales--that were previously out of reach. It is evident that there has been a tremendous increase in the range and volume of commercial activity both in the villages and in the district towns. The easier access to market is the critical benefit of the roads rather than any specific changes in transport costs.

However, increased opportunities of production for sale, as well as population pressure, encourage deforestation and consequently accelerate erosion. A solution to this problem must be sought in improved land use planning and ultimately in the development of off-farm employment.

In the rural areas, social benefits are also striking and clearly recognized by the villagers. Ready access to health facilities is foremost among them. Villagers also show considerable awareness, best expressed in the words of one informant, that "before the road families had 10 children or more and now they just have two or three." Children who formerly had little opportunity to go beyond the village school can now commute to higher grades in district towns; and teachers who often resisted rural assignments can live in town and commute to village schools by minibus or on their own motorcycles.

For everyone, the easier and more frequent access to town leads to increased availability of a wide range of foods, including fresh fish and meat, in the local market. This helps to promote a more varied and more nutritious diet.

A road does not change a social system. It widens the range of opportunities. The opening of the roads has made nobody worse off; but the rich have obviously gotten richer. They were in a better starting position. However, in terms of percentage of disposable income--of ready cash--that of the poorest people has quite likely increased most and they, rather than the more affluent, are newly within reach of health, credit and technical service for their farms, and education for their children.

A.I.D. participation in ARD activities has helped to develop a strong permanent national institutional capacity for sustaining and enhancing the rural development effort. In the original 31 provinces, most of the equipment still in use was provided by A.I.D. from 6 to 16 years ago. Some of course had to be scrapped, but much of it is kept running in A.I.D.-equipped workshops by technicians and engineers trainedin A.I.D.-funded programs.

Except for separately funded construction of "security roads", budget constraints now restrict ARD activities. It is interesting that, under those conditions, maintenance of the existing network carries a higher priority than new construction directed at completing a master plan for a 40,000 km net work of rural roads by the turn of the century.

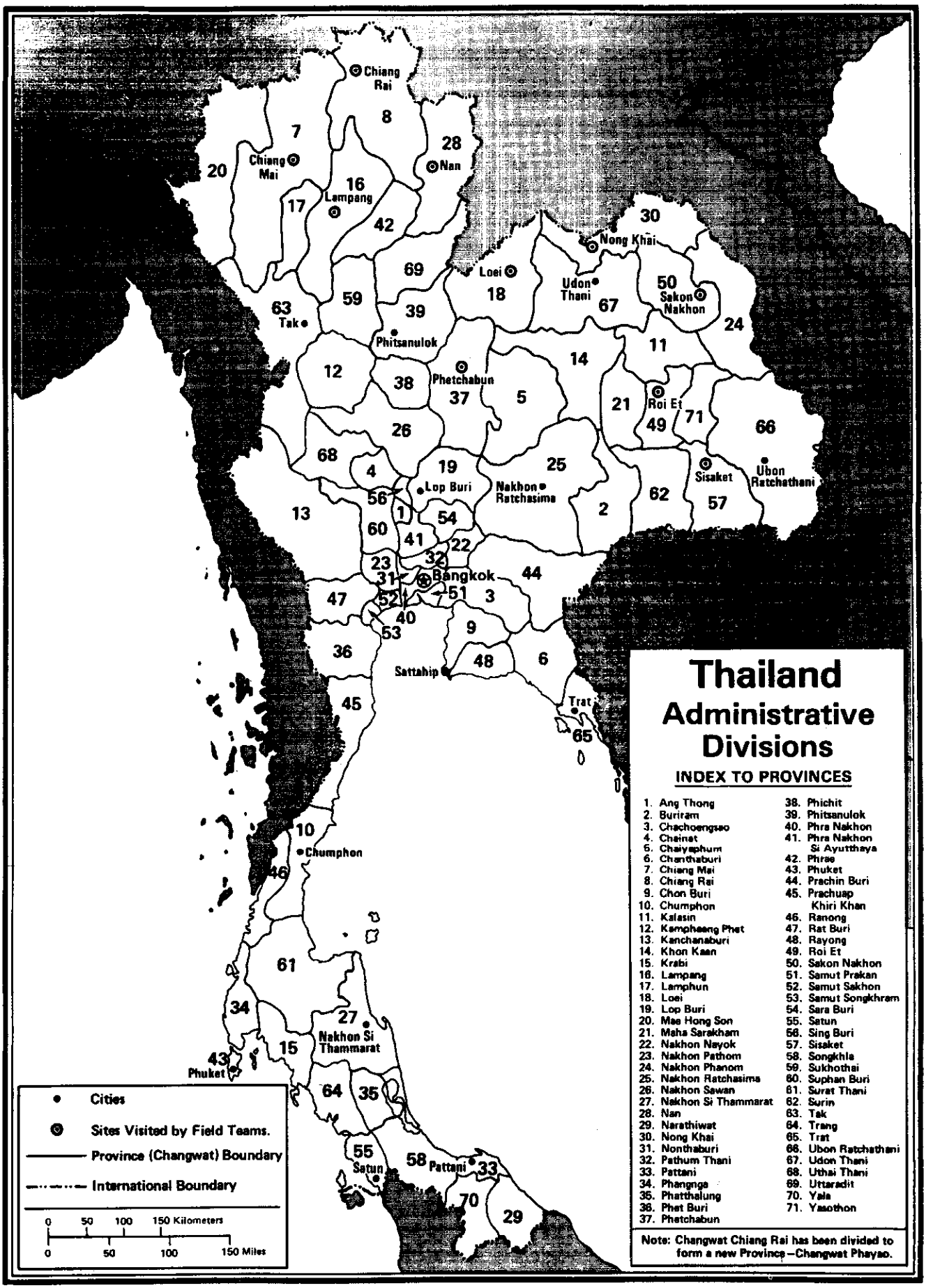
There has been some drawing back from the degree of decentralization which A.I.D. sought to promote with grants made directly to provincial governments. The ARD organization has now become stabilized at a level of delegation and of field and headquarters coordination compatible with both the highly centralized tradition of Thai authority and some degree of flexibility required for effective local action. The system does not require, but tolerates, and indeed encourages, responsible local initiative.

A.I.D. support of ARD road building programs has made a significant contribution to Thai development. We attribute the success of the program to the fact that ARD from its inception was a Thai program. It was heavily supported over a long period of time with A.I.D. funds and technical services rather than operated as an A.I.D. project assisted by Thai counterparts. This appears to have promoted a degree of experience and confidence which enabled ARD to weather the shock of the A.I.D. phase-out after a decade of collaboration. What remains to be done is to build on the experience and utilize to the fullest possible extent the opportunities that have been created to enhance and accelerate the growth of the rural sector of Thailand.

GLOSSARY

A.I.D.	Agency for International Development
Amphur	District--this is a subdivision of a Changwat and the smallest centrally administered government unit
ARD	Accelerated Rural Development
Baht (B)	Thai currency unit. Value B20 = $1
Chedi	Stupa--A memorial shrine in a Buddhist temple compound
Changwat	Province--Thailand is subdivided into 72 province, each headed by a Governor appointed by MOI
Kamnan	Chief of a tambon--a village headman selected by all village headmen in the tambon
MOI	Ministry of Interior
Rai	Standard land unit; it is approximately 0.4 acre or 5 per hectare
RTG	Royal Thai Government
Sangha	Organization of Buddhist monks
Tambon	Commune--an administrative subdivision of an amphur. It consists of several villages and is headed by a Kamnan

Thailand
International boundary
National capital
Road
0 50 100 150 Kilometers
0 50 100 150 Miles
Gulf of Tonkin
Andaman Sea
Gulf of Thailand
Strait of Malacca
KHORAT PLATEAU
Fang
Chiang Rai
Chiang Mai
Phayao
Nan
Phrae
Uttaradit
Sawankhalok
Tak
Phitsanulok
Lomsak
Phetchabun
Loei
Nong Khai
Udon Thani (Udorn)
Sakon N
Khon Kaen
Roi Et
Bua Yai
Nakhon Ratchasima (Korat)
Surin
Sisaket
Ubon Ra
Warin Cham
Nakhon Sawan
Chainat
Lop Buri
Sara Buri
Kabin Buri
Phra Nakhon Si Ayutthaya
Bangkok
Rat Buri
Samut Songkhram
Chon Buri
Phet Buri
Sattahip
Rayong
Prachuap Khiri Khan
Chumphon
Ranong
Takua Pa
Pak Phanang
Phuket
Trang
Phatthalung
Kantang
Songkhla
Pattani
Satun
Narathiwat
Mekong
Mae Nam Ping
Mae Nam Yom
Mae Nam Nan
Mae Nam Chao Phraya
Mae Nam Mun
Lam Nam Chi
Mae Nam Mae Klong


Thailand
Administrative Divisions
INDEX TO PROVINCES
1. Ang Thong
2. Buriram
3. Chachoengsao
4. Chainat
5. Chaiyaphum
6. Chanthaburi
7. Chiang Mai
8. Chiang Rai
9. Chon Buri
10. Chumphon
11. Kalasin
12. Kamphaeng Phet
13. Kanchanaburi
14. Khon Kaen
15. Krabi
16. Lampang
17. Lamphun
18. Loei
19. Lop Buri
20. Mae Hong Son
21. Maha Sarakham
22. Nakhon Nayok
23. Nakhon Pathom
24. Nakhon Phanom
25. Nakhon Ratchasima
26. Nakhon Sawan
27. Nakhon Si Thammarat
28. Nan
29. Narathiwat
30. Nong Khai
31. Nonthaburi
32. Pathum Thani
33. Pattani
34. Phangnga
35. Phatthalung
36. Phet Buri
37. Phetchabun
38. Phichit
39. Phitsanulok
40. Phra Nakhon
41. Phra Nakhon Si Ayutthaya
42. Phrae
43. Phuket
44. Prachin Buri
45. Prachuap Khiri Khan
46. Ranong
47. Rat Buri
48. Rayong
49. Roi Et
50. Sakon Nakhon
51. Samut Prakan
52. Samut Sakhon
53. Samut Songkhram
54. Sara Buri
55. Satun
56. Sing Buri
57. Sisaket
58. Songkhla
59. Sukhothai
60. Suphan Buri
61. Surat Thani
62. Surin
63. Tak
64. Trang
65. Trat
66. Ubon Ratchathani
67. Udon Thani
68. Uthai Thani
69. Uttaradit
70. Yala
71. Yasothon
Note: Changwat Chiang Rai has been divided to form a new Province—Changwat Phayao.
Cities
Sites Visited by Field Teams.
Province (Changwat) Boundary
International Boundary
0 50 100 150 Kilometers
0 50 100 150 Miles
Chiang Rai
Chiang Mai
Nan
Lampang
Nong Khai
Loei
Udon Thani
Sakon Nakhon
Tak
Phitsanulok
Phetchabun
Roi Et
Sisaket
Ubon Ratchathani
Lop Buri
Nakhon Ratchasima
Bangkok
Sattahip
Trat
Chumphon
Nakhon Si Thammarat
Phuket
Satun
Pattani

I. INTRODUCTION

For different reasons, the North and the Northeast of Thailand are relatively poor.

The Northeast, defined by rather rugged mountain ranges in the West and South, is a rolling plateau (Khorat Plateau) sloping towards the Mekong River which separates it from Laos in the North and East. The region is characterized by poor soils and low rainfall. Its people are somewhat marginal to the mainstream of Thai culture and had long suffered politically and economically from the benign neglect of the Royal Thai Government (RTG). The North, bordered by Burma and Laos and close to China, consists of a series of parallel river valleys with limited alluvial bottom land giving way to steeply rising slopes. Population pressure has reduced the size of holdings, so that the forested mountain sides are being increasingly denuded by the competing encroachments of alley Thai in search of crop lands.

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lation and pervasive poverty made both regions vulnerable to subversion from abroad fomenting chronic political disaffection. This turned locally into open unrest and insurrection under pressure of the tensions generated by the war in Vietnam.

In order to control this threatening situation, in the early 1960s the RTG began an intensive program of construction of security roads in six of the Northeastern provinces, coupled with the extension of social and economic services to the villagers. The purpose of the program was to control active or latent insurrections in the most vulnerable areas of the country by providing for ready military access, while at the same time seeking "to win the hearts and minds" of the local people.

By 1964 these activities had been formalized in a separate organization for Accelerated Rural Development (ARD). ARD has been under the Ministry of the Interior, since 1971 and continues its road building, road maintenance and service activities. By now these have been extended to 56 of the total 72 provinces.

II. THE PROJECT

A.I.D. support of the ARD program started in Fiscal Year (FY) 1964 with a Project Agreement granting $2.3 million to six provinces in northeastern Thailand. Over the following decade, until the project was phased out in FY 1975, a total of more than $64.5 million was spent by A.I.D., matched about equally with funds from the RTG budget.

Since then, ARD activities supported by a staff of around 8,000 persons continue to be financed by the RTG. Under a $43 million loan,

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the World Bank is funding some work in the Northeast, and Australia has provided grants to carry out work, similar to that of the A.I.D. project, in three southern provinces which may later be expanded to others.

The basic ARD goal was to win and hold the loyalty of people in areas were insurgency thrived upon the villagers' sense of isolation, hopelessness, injustice and insecurity. The stated objectives of the program were to increase rural income, to strengthen the ties between the RTG and rural people by increasing government services, and to promote effective local self-government.

The strategy to achieve these objectives was to increase the capacity of provincial governments to respond to local needs by decentralizing many of the development activities of the central government and placing them directly under the control of the provincial governor. For this purpose A.I.D. grants provided equipment and training directly to provincial organizations capable, in collaboration with the national ARD Office, of planning, designing, constructing, and maintaining rural roads, village water facilities, and other local public works. Under the leadership of the governors, these organizations were also supported in developing staff to coordinate the planning and implementation of rural development programs within the provinces.

Roads were selected on the basis of criteria related to security, road and population density, and economic potential of the area they served. In principle, they had to have dual access, so that they would contribute to the development of a national network of 40,000 kilometers (km) within a master plan for highway construction which aims at bringing 90 percent of all Thai villages within two kilometers of a road. Of these roads, ARD would build slightly more than half. ARD would also be responsible for maintenance until the roads were taken over by the Highway Department when traffic density exceeded 150 to 200 vehicles per day. On that basis, over 2,200 km of the total 12,500 km built by Provincial Offices have been so taken over.

When the ARD program started, the national road network of Thailand barely amounted to 15,000 km, of which no more than 4,000 km were Provincial roads. The 12,000 km of roads, access roads, village streets and tracks built in 26 of the more isolated provinces of the North and Northeast during the grant period thus represent at least a five to tenfold expansion.[1] More than 1,650 dams, ponds, small reservoirs, and wells have also been constructed under the A.I.D. project which expanded from the original six provinces to all 16 provinces of the Northeast, 10 provinces in the North, 3 in the South and 2 in Central Thailand.

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[1]See Appendix C for definitions.

Initially, the ARD program focused almost entirely on road construction, upgrading seasonal cart tracks into all-weather dirt roads, because other ARD development activities depended on access to the rural communities. Indeed throughout the project, the principal expenditures under successive A.I.D. grants were for road building equipment, such as trucks, bulldozers, scrapers, graders, compactors and assorted tools, together with workshops to service and repair them, and for training engineers and mechanics.

Over the years of the project, ARD has developed strong roots enabling it to maintain an independent organizational strength in harmony with RTG traditions. It has retreated somewhat from the pattern of United States county organization which was A.I.D.'s guiding concept. The organization especially with respect to financial planning and management has become more centralized because of its dependence on the central budget, once direct grant funding of provincial activities stopped. However, it is evident that ARD has maintained a field orientation. Its provincial staff is trained and committed to promote rural development; and the central ARD organization not only tolerates but encourages local initiative, especially where it takes the lead in coordinating the services of other RTG agencies at the provincial and district level to promote village welfare. The nature of the relationship of various ARD commitments is schematized in the picture of the chedi which illustrates the functions in a shape symbolic of Thai religious faith.

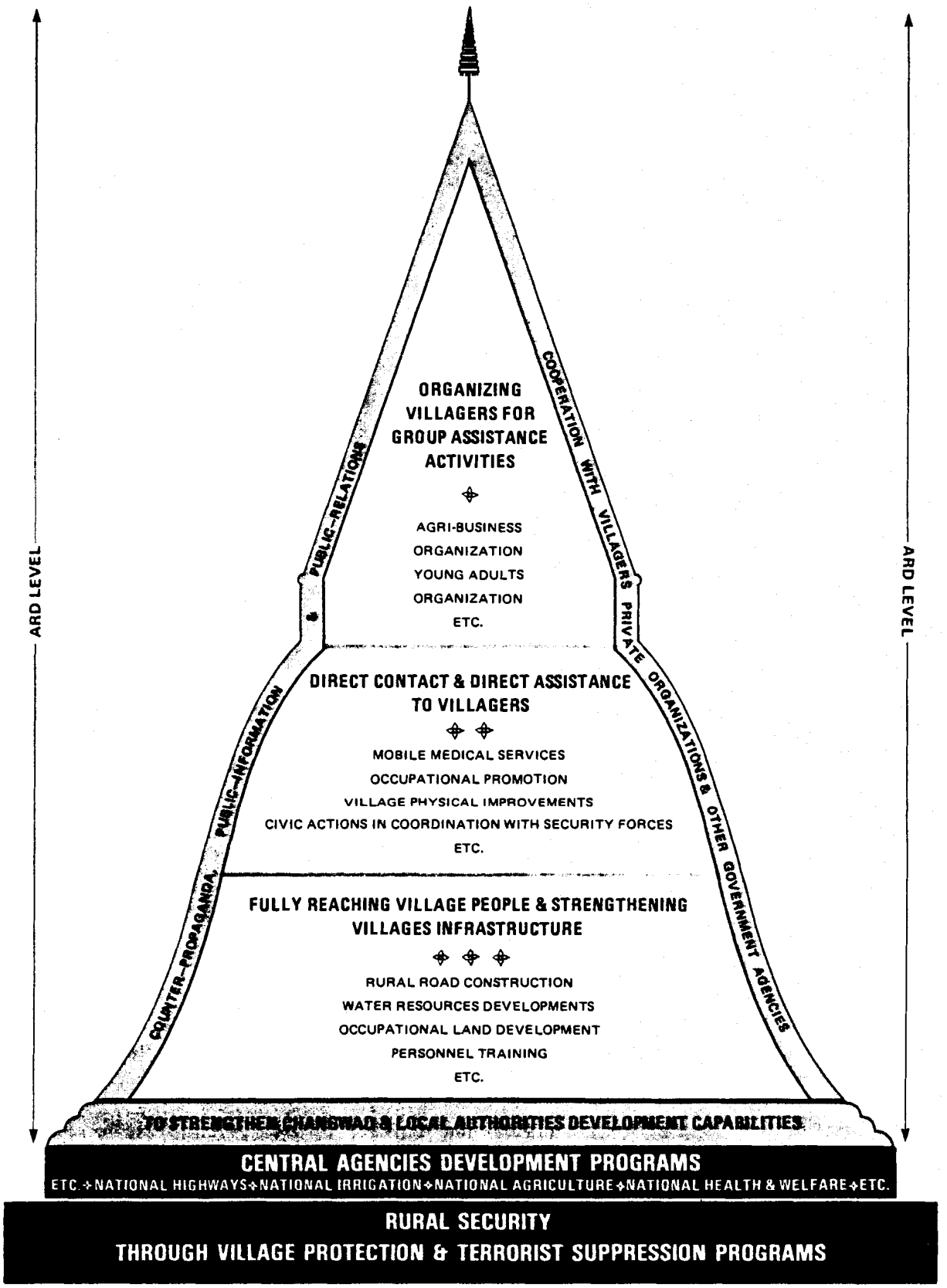
III. PROJECT IMPACT

Roads are neutral. By themselves they do not change the social systems of the communities they serve. They widen the range of opportunities and thereby trigger and sustain a development process which, in turn, may, and most likely will, promote changes in economic and social relations within and among communities.

Thai society is traditionally hierarchical but mobile. There is extensive popular participation in village affairs, particularly in all activities related to the temple. But the Thai have little experience and, it would seem, little interest at the village level in extending this participation to political or administrative concerns. There are clearly recognized patron-client relationships, mutual obligations in a wide range of social and economic situations, which place no stress on equal access to the benefits of economic development inherent in A.I.D. concepts of equity in the distribution of the fruits of growth.

Nevertheless, the benefits of the ARD program and specifically those derived from the activities supported by A.I.D. are widely, albeit unevenly, shared. At the risk of supporting ideas that have become unfashionable in these days of a basic human needs approach, Thailand appears to illustrate the viability and effectiveness of an approach which pragmatically accepts a "trickle down" theory. Everyone has had some benefits from ARD activities. The rich and--with or without great

THE ACCELERATED RURAL DEVELOPMENT PLAN (A R D)



ACCELERATED RURAL DEVELOPMENT OFFICE
OFFICE OF THE PRIME MINISTER
JANUARY 26, 1966

means--the ambitious and the venturesome have more quickly and more successfully taken advantage of opportunities created by new all-weather roads dramatically increasing the range and volume of effective transfer of goods and of ideas. But the poor also have gained. Indeed, in terms of relative gains, theirs may be the greater, especially where they start from a zero or negligible disposable income base. At the very least roads put them in contact with a range of services in health, agriculture and education for their children, that now reach into villages. Before then, these could be obtained only by persons with the knowledge and means to seek them out in the district towns or provincial capitals. For the poor, roads thus provide opportunities that previously were solely available to the more affluent. At the risk of oversimplification, the roads have enabled the poor to buy sandals where they walked barefoot before; the rich can trade up their VW Beetles for Audis, BMWs, and Mercedes. For the poor, the benefits represent changes in kind; for the rich the change is in degree.

Increased contact is not necessarily and always an unmixed blessing. If officials who can reach the people along the new ARD roads are inefficient or corrupt, they hurt the government's image. Also, enforcement of laws, such as those, for example, regulating the production and sale of alcohol, can lead to resentment in villages which, before the roads, were beyond reach of the authorities. On balance, however, the villagers to whom we talked seemed to enjoy the closer contact and to benefit from the new services.

The ARD roads impact on different facets of Thai society in a variety of ways. Although these are closely interrelated, we shall examine them separately.

A. Political and Institutional Impact

There is considerable evidence that subversive agents and insurgents feel constrained by the development of roads. They know that to the extent rural isolation is broken by opening access to the mainstream of ideas, to development services, and to the free flow of trade, the people gain confidence in the promise of a brighter future that can be achieved in peace within the existing national framework.

Ever since work first started on rural roads under the ARD program, dissident elements sought to disrupt construction by armed attacks. Many of the roads were completed only with heavy casualities.

Nevertheless no simple correlation can be established between the extension of a road network and internal security. It appears that subversion is as much or more a function of external political development than of domestic initiatives. And certainly the improvement of relations between Thailand and the People's Republic of China has contributed as much to reducing the rate of insurgency as the construction of roads in sensitive border areas.

The long-term institutional effect of Thai-U.S. collaboration in the ARD program can be more readily demonstrated. Both at the time and with hindsight, the perceptions of the Thai bureaucracy and A.I.D. with respect to their role in developing the basic ARD concept seem to vary. There is complete agreement, however, that the relation, on the whole, was fruitful and contributed directly to the success of a new programmatic approach to development which has become a permanent and important part of the Thai administrative fabric.

There seem to be three major reasons for this success: First, the commitment to the principles of the ARD program of Prasong Sukhum and the serendipity of his dual foothold in the Thai civil service as Deputy Director of the Budget and as Secretary General of ARD during its formative years.[2] Second, the massive A.I.D. grants provided all the equipment for the provincial construction programs under authority delegated to the governors and funded the training of the required technical staff at all levels, from engineers to mechanics, site foremen and machine operators. Third, and perhaps most significantly in the long run, the project was from the very beginning a Thai undertaking, heavily dependent on A.I.D. technical and financial assistance, rather than an A.I.D. project supported with interest, good wishes, and some counterpartsby the RTG.

These reasons, we believe, explain why ARD weathered the phasing out of A.I.D. in FY 1975 without major disruption of its activities; they also account for the extraordinary record of the ARD organization inmaintaining an equipment pool which is now largely from 6 to 16 years old. More than 50 percent of the equipment provided under the A.I.D. grant is still operational and, with few additions, serves the construction and maintenance needs of the ongoing program. The commitment to the maintenance of the equipment is matched by the priority assigned to maintenance of the roads over new construction. In each of the provinces we visited, we were told that the annual budgets allowed little new construction but provided all necessary funds required for adequate maintenance and for the periodic resurfacing required to keep the roads in good condition. With only one exception, we found this commitment to maintenance confirmed during our own travels over hundreds of miles of these roads.

Foremost among the adjustments to existing realities was the decentralization effort. A.I.D. saw in the ARD program "... a basis ... for formulating small public works units at the provincial level that would not be unlike the county units in the United States."[3] The ARD leadership recognized that a competent central organization could not

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[2]Based on Non-Capital Project Paper (PROP) Accelerated Rural Development, TOAID A-1527, Bangkok 8/21/69.

[3]From a speech by Mr. Tracy Park, former Director of USOM/Thailand, February 6, 1968.

be developed rapidly enough to staff the program on the scale required by circumstances and made possible by the massive A.I.D. support. It became essential, therefore, to delegate planning and implementation responsiblity and give the necessary authority and means directly to the provincial governors.

After the phase-out of A.I.D., the funding responsibility reverted tothe Bureau of the Budget of the central government; but even now, there remains considerable scope for provincial initiatives in shaping local programs within the general guidelines of the ARD central office. Governors continue to direct the ARD operating staff in their provinces.

Thus within an overall national framework, ARD can respond sensitively and relatively quickly to local problems and serves as the development agency of the provincial government.

The development of the ARD staff also was dictated by the pressure of needs. As a new and untried organization, ARD could at first offer no more than uncertain prospects to professional staff. Difficulties in recruiting, therefore, made it necessary to accept persons with limited experience, often fresh from school, to be trained on the job or in A.I.D.-supported programs. It also made it necessary to recruit at the provincial level. The net effect of this was the development of an organization with increasingly strong local roots. Exciting career prospects developed in an organization growing in confidence and responsibility, and with esprit de corps and loyalty to the organization derived from common experience in learning and doing which persists to this day.

B. Social Impact

The development of the ARD roads brought about evolutionary changes compatible with Thai traditions. It extended processes of integration and modernization that were taking place in the capital and some of the major urban centers to outlying and formerly isolated areas. The roads facilitate more frequent contacts between villages and towns. They thus reinforce established patterns of relations and behavior and create new ones.

There also have been traditional mechanisms to diffuse information by personal contact, especially on the part of someone who is known. Thai men have traditionally travelled around a bit, often as workers, as monks, or during their compulsory military service, thereby increasing the flow of information back to their home villages. Finally there have always been relations between rural areas and urban centers, especially the capital, in terms of religious ritual as a foundation of the Thai state. The exchange of monks between the center and periphery has been well documented. Teachers, district and tambon officials, extension agents, and health workers expand the range of contacts for villagers along the roads. The growth of opportunities--in jobs, in agricultural production and marketing, in health and nutrition, in range of travel, in religious and secular educational domains--all illustrate the impact of ARD roads.

The movement of people and commerce, on ARD roads has brought many different kinds of people together more frequently. Thai villages were formerly ethnically homogeneous. Now Chinese who lived exclusively in urban centers have begun to move into the villages as shopkeepers and/or middlemen. There they (or their children) become more readily assimilated following a pattern of national integration well under way in Bangkok.

Under the rapidly developing umbrella of an expanding Thai and world economy, patterns of interdependence have been strengthened. The cities and towns provide resources and opportunities which, through vastly improved roads, become available to the rural people. At the same time, urban prosperity depends on work of the rural population.

Roads have strengthened the role of women in the home, as money makers and handlers, as government servants, and as participants in the on-going Buddhist ritual process. Thai women have traditionally controlled most household finances. As household prosperity has increased, so has the role of women. Women play a significant role in the growing and marketing of certain kinds of produce, especially vegetables. Almost any daily market in the North or Northeast sees mainly women as buyers and sellers. Because improved transportation permits people to move more easily, women can leave the home for jobs in cities, as servants and construction workers, and expect to return at important times in the religious festival and agricultural cycles.

Contacts with the outside world have increased for women, broadening their world views; in turn, this may influence the raising of their children. Child care centers have been established in some areas to aid working mothers. Finally, the religious role of Thai women as major suppliers of household resources for the continuation of the Buddhist Sangha may have increased with the increased financial contributions women are able to make from growing household income. Women have also benefitted directly by filling more than half the 600 positions in the ARD extension service at the tambon level.

Until about 10 years ago, Thailand's population, both urban and rural, increased at an annual rate approaching three percent. It is significant that despite rapid economic and demographic growth Thai social organization has maintained its stability. Population control, traditionally exercised through migration, is a basic part of Thai life. However, in the last few years, perhaps because of word-of-mouth reports along the roads of the hazards of frontier life and the relative lack of good land, families have been motivated to limit their size. While obviously no direct correlation can be established, it may well be that reductions in birth rates observed over the last few years are associated with the development of the roads and the related increase in welfare of the rural people. Everywhere families move their homes towards the roads so that the communities in the North and Northeast increasingly resemble the villages of the Central Plain, with houses lined up single file along the main line of communication--the canal in the

Plain and the new roads up-country. Once the village regroups, the temple often is relocated to retain the central place in the community.

Education is a traditional ladder for Thai social mobility. Almost every village has a school that has recently been expanded from four to six grades. In the past, only a few rural households could afford to send their children to secondary schools. Roads have been a major factor in encouraging greater access to more advanced schooling. District towns and provincial capitals have increased their roles as major secondary school centers to which rural children can commute daily on bicycles and, at reduced prices, on village to market buses. All-weather roads also encourage more regular attendance which should, one expects, lead to improved learning.

With the advent of roads, elementary education has also improved in villages. Easier access means that teachers can be more easily persuaded to teach in village schools, because a rural assignment no longer means a lasting separation from comforts and attractions of urban life. Teachers can live in towns and commute to work by public transport or on their own motorcycles. Alternatively, they can, and some do, take advantage of the lower cost of living in the villages and still remain in easy touch with pleasures and services that towns offer.

There is still a considerable lack both of teachers and equipment for the elective vocational programs provided for under the reforms of the secondary school system. The growing network of ARD roads may permit rotational assignment of vocational teachers to a number of schools backed by mobile demonstration units.

Country and capital have also become more closely related to each other symbolically, partly as a result of roads. Not only is a picture of the King and Royal Family present in every home, but pinned to the walls, there is usually an array of calendars with Royal Portraits, presented by banks, stores, and service organizations accessible by road. Additionally the Sangha may have increased meaning because of the greater contacts which road communication permits between the villages and Bangkok. At least 40 percent of monks in Bangkok come from northeast Thailand and benefit from merit making ceremonies by Bangkok residents, so that, to some extent, the greater wealth of the capital, reinforces the religious life up-country.

It is customary for donors of funds and their relatives to travel up-country, to present their gifts to village monasteries. Without roads, this would not have been possible 20 years ago. Nor would the massive construction of monasteries now taking place have been possible without the presence of a more affluent, more secure, more stable rural population depending on all-weather road transport.

Only in the health field have the social benefits of new roads been somewhat offset by a spread of epidemic and contagious diseases. Along

with roads, cholera has reached areas from which it had previously disappeared. The greater potential for extending health services has been accompanied by a spread of other respiratory and intestinal infections along the roads that can now readily be used to evacuate the sick to health centers and hospitals for treatment. In fact, it appears that roads encourage people to bypass health posts and seek treatment directly in district hospitals. The functions of rural health programs should, therefore, perhaps be reoriented to preventive health and rural sanitation service. On balance we found that roads have made a significant social contribution to the dense and complex fabric of Thai life. Roads have provided access to services that were not available before. They have increased the rate and range of contacts and, in particular, ARD roads permit moves towards full popular participation which can now be considered a realistic goal for Thai national development.

C. Economic Impact

Since the inception of the ARD road building program more than a decade and a half ago, Thailand has enjoyed a rapid rate of economic growth. The combined growth of international and domestic demand for agricultural and forestry products, has brought about a transformation in rural areas.

The ARD road network is an important element in the growth of rural areas. ARD standard roads allow all-weather access and thus have had significant economic effects on many rural communities.

Among the more readily quantifiable effects of the road are the cost of transportation and relative prices at different locations. This is shown, for example, in Sisaket Province where the average cost of transporting paddy rice from villages to a nearby market fell nearly 30 percent after a road was opened. In Sakon Nakhon Province it was found that the average differential between the price of rice at the farm and the market fell more than 40 percent. The fall in price differential may reflect increased competition among traders, as well as the decline in transport costs.

Other economic effects of the ARD roads are difficult to measure, but, in their total impact, are probably much more important than the fall in transport costs. It is impossible to isolate the impact of the ARD roads on the economy of the North and Northeast. We can, however, describe the more important economic changes and identify some of the linkages to the road building program.

1. Changes in Agriculture

Large additional amounts of land were opened for cultivation after the construction of ARD roads in both the North and Northeast through reduction in fallow and encroachment on forest land in the valleys and indeed on the mountain slopes. Apparently at least half, and perhaps more, of this expansion was due to the establishment of new farms where

large tracts of land were brought into production by "pioneer" farmers. Many of these farmers emigrated from other provinces, often from the Northeast to the North, but a significant number also came from families long established in the area. The number of houses in a remote village in Chiang Rai, for example, increased from about 100 at the time the road was built seven years ago to 240 now. Land had been opened for cropping several kilometers beyond the ARD road, with much of the produce of distant fields being carried to the ARD road where truck transport is available.

Rice is still the most important crop in Thailand, although there has been considerable diversification of crops in the past decade. The availability of water and better transportation have contributed to the rapid expansion of upland crops, particularly corn in the North, and cassava and kenaf in the Northeast and to vastly increased dry season production of vegetables, peanuts and mung beans in the Northeast. Rice is the traditional staple of the Thai diet and the greatest single earner of foreign exchange. Almost all farmers in the North and Northeast produce at least some rice for their own consumption, and ricemills constitute the most important agricultural processing industry. In the North, Chiang Mai Province has become a leading producer of soybeans, as has Nan for peanuts.

Tobacco is a major crop that appears to have been relatively little affected by the expansion of the road network. Farmers sell their tobacco harvest to nearby curing firms scattered throughout the producing areas. Since cured tobacco is a relatively high-value product per unit of weight, the transition to motorized transport, made possible by better roads, has had less impact on total costs than for lower-value commodities.

Agricultural production technology has significantly changed in some areas of the North and Northeast. One of the most notable changes is the "iron buffalo", a small two-wheel tractor that can be used to work in flooded rice paddies. Larger tractors are commonly hired for plowing upland fields. Some new seeds are being used, such as RD-7, a high-yielding variety of non-glutinous rice. The use of purchased inputs is partly a function of crop composition. Fertilizer is applied to rice, tobacco, vegetables and fruit trees, while practically none is used on corn. Insecticides are used intensively on cotton, vegetables and tobacco, and to a lesser degree on rice.

Changes in technology, especially the greater use of fertilizer and pesticides, seem to be related to more frequent contact with agricultural extension agents, which, along with crop composition, is made possible by the ARD roads. There has also been a rapid increase in the number of farmers using credit from government assisted cooperation and commercial banks to finance the purchase of inputs.

Agricultural marketing has changed with the growth and changing mix of farm products. The buying, processing and exporting of corn and cassava have grown from virtually nothing when the ARD road building

program began to major industries now. Their rapid rate of expansion would have been impossible without farm-to-market roads.

Farmers also sell more to local consumers after ARD roads are opened. A good example is a farmer located about six kilometers from the thriving commercial center of Mae Sai on the border with Burma, who sold vegetables in the town both before and after the ARD road was built about ten years ago. He now devotes four rai to lettuce, onions and garlic, compared to only one-half rai before the road was built. He now hauls his vegetables to the Mae Sai market on the bus, while before he carried lettuce and onions in baskets hanging from a shoulder pole and sold his garlic to a buyer at the farm.

For the North and Northeast in general, it appears that the point of sale has more often moved from, rather than to, the farm after opening of an ARD road. Farmers now have more options, which leads to a greater degree of competition among buyers. We were told, however, that collusion among rice and garlic buyers is still common.

2. Non-agricultural Changes

Growth is also apparent in towns. Service industries, transport and related businesses, financial institutions, retail trade, schools and other public services have expanded.

We were surprised by the expansion of commercial banking and the construction of substantial bank buildings in the provincial capitals and some district towns. Bankers reported greater than expected deposits from farmers when branches were opened in towns. Loan volume grew as much as tenfold in a few years. Motorcycle and automobile agencies have sprung up with the advent of ARD roads. Movie theatres, restaurants and hotels are being built in most of these towns. New stores of all kinds, especially those selling farm supplies, have opened in all the major towns. It would have been pointless fifteen years ago to offer for sale fancy sprayers, mechanical implements, commercial livestock feed, and even Thai-made farm trucks. Retail stores selling a wide range of consumer goods have proliferated along with wholesale establishments in the larger towns.

In the villages, which are populated mainly by farmers and their families, non-farm enterprise has increased to a more limited extent. Such personal services as barbers, hairdressers and seamstresses have increased with general village income growth. The number of general stores has increased, as we observed in one village where there are now 16 stores compared to only one before the road. Better roads have encouraged many villagers to purchase small pickup trucks to haul people and village produce to the market and bring back goods for sale in the village.

In some villages weaving has been transformed from a handicraft produced solely for local sales to larger operations using faster looms to produce goods on contract for buyers in Bangkok and elsewhere. It is unlikely that this would have happened before the construction of roads.

Other public services often follow closely the completion of roads. Most noticeable is the expansion of electricity. Even though the development of power lines is not formally coordinated with road building at the planning stage, it would be very difficult to string power poles and lines without the roads. In fact the villages on ARD roads which we visited either had electricity or expected to get it in the next couple of years.

3. Distribution of Benefits

Almost all rural people served by ARD roads benefit from greater opportunity and lower cost of personal travel. In addition, benefits from appreciation of property values, growth of farm and non-farm businesses, and greater employment opportunities accrue to many, although not all, residents of the North and Northeast.

Land values have increased substantially. Most villagers, however, sell land only within the family at non-market prices, and thus do not realize their capital gains. Nor have any significant numbers been displaced. One exception to the rule is the area around the northern city of Chiang Mai. Its pleasant climate and environment, prosperity and cultural advantages have attracted many buyers from Bangkok and other areas looking for retirement and investment property.

Appreciation of land values often reflects investments in land development and general price inflation, as well as the impact of roads. This is illustrated by the experience of a farmer in the northeastern province of Loei, who purchased 28 rai of forest land for 700 baht 15 years ago. When the road was built about five years later, he cleared half of the land and planted corn. At that time the land value had appreciated to about 11,000 baht. Since then he has cleared all the land, began double cropping corn last year, and plans to double crop corn and soybeans this year. The land is now worth about 50,000 baht.

The variety of ways in which more progressive members of rural communities have captured the benefits of ARD roads is illustrated by a farmer in Nan who cultivated three rai when ARD upgraded the path near his property to a standard road about seven years ago. He now works 20 rai; the expansion was achieved by cultivating some previously idle land, clearing additional land and buying some. He has continued to raise the same crops--rice, corn and tobacco--but produces more of each crop through increased area and yield. Agricultural extension agents now visit his farm, while none did before the road; he now hires more labor and purchases tractor services to supplement the water buffalo for plowing. Before the road he carried all the products he sold to the market. Now he hires a pickup truck to haul a much greater quantity to the same market.

Finally, many people have benefited from the vigorous growth in income and employment in non-farm businesses and public services. The greatest gains probably accrued to individuals, particularly women, who

pursued their education beyond the primary level, as opportunities for education and non-farm employment were significantly enhanced by the ARD roads.

D. Environmental Impact

Deforestation has proceeded apace with the construction of roads. However, it would be a mistake to ascribe a simple cause and effect relationship to this. The predominant cause of deforestation has been rapidly increasing demand for wood and agricultural products in the domestic market, as a result of population and income growth, and for export. To be sure, better roads have facilitated and speeded up the rate of deforestation. Without this demand the roads by themselves would have had a much more limited impact.

Road construction, however, may have an immediate and visible impact in localized areas. We were told of instances in the North in which large numbers of hillsides were cleared and corn was planted within 12 months of the opening of an ARD road. It became profitable to clear and farm those fields only after it was possible to haul the produce to market over a passable road. Thus, directly or indirectly the ARD road network has contributed to deforestation and soil erosion.

This is the most serious negative impact associated with the development of roads and the related process of modernization. The massive reduction in forested area has had detrimental effects on entire regions of the country. It has been especially noticeable in the Northern region. Thus in Chiang Mai province, the incidence of flooding has increased due to the reduced capability of deforested hillsides to absorb heavy rainfall, which, in turn, has caused significant destruction of low land rice crops. Increased flooding has occurred despite a long-term trend of lower annual rainfall, which is also blamed on extensive deforestation. Thus, drought and reduced water levels in reservoirs, adversely affecting hydro-electric generation, have been on the increase in recent years along with increased flooding.

In the Northern provinces of Nan and Chiang Rai, we were struck by the large number of fields of corn and, to a lesser extent, upland rice on the hillsides, often with slopes ranging to well over 50 percent. Hill tribes extending their traditional slash-and-burn agriculture down the slopes compete with valley farmers extending their cultivation uphill. Once a hillside is cleared and planted to crops, particularly corn, the soil rapidly erodes. The erosion is accelerated by the practice of plowing up and down the hill and planting corn in rows which run in the direction of the slope. As a result, the productive capacity of these hillside fields deteriorates at a rate that makes it unprofitable to farm within three to five years. Farmers, who have cleared and tilled the land illegally and without title then simply abandon it.

It is technically possible to farm the hillsides and conserve their productive capacity. We were told that the traditional ten or twenty year rotation in which only one or two crops are taken and the natural vegetation allowed to regenerate would sustain the productivity of the land. Population pressure and market demands make it both necessary and profitable to follow a much shorter cycle or to crop the land continuously until it is exhausted. One way of dealing with this problem would be to construct terraces on the hillsides; however, the costs involved do not make this a viable solution to the demand for land. Ways must, therefore, be found to decrease the pressure to expand the area of cultivation by more intensive production and by the creation of productive off-farm employment both in villages and rural towns.

IV. CONCLUSIONS

Our report, on the whole, paints a positive picture. The contribution of the A.I.D. project far exceeds the expectations suggested in the formal documentation over the years. We come away impressed with the lasting impact of the rural roads component of the ARD program. It has helped to establish the permanent institutional capacity of the RTG to sustain an ongoing rural development effort, and it has improved the welfare of rural people by tying villages and towns into the mainstream of Thai life.

Security considerations motivated the initial road building effort and are still important. The broader objectives implicit in the term "Accelerated Rural Development", however, were always part and parcel of the program. There was never any doubt that the roads alone could not offer a solution to either the problem of security or the quest for development. The roads were always thought of as means to widen the range of opportunities and choices, thereby creating a setting within which development could take place. ARD was--and continues to be--concerned with the building of infrastructure only to the extent that it is a necessary first step in creating access to new markets for rural producers and for services in health and agriculture to reach out into the villages. From the outset, ARD recruited a field staff at the tambon level to mobilize community effort through cooperative associations, youth groups and village development committees.

The rapid economic transformation, so evidently related to the extension of roads into formerly isolated areas of north and northeast Thailand, is fully compatible with the social and cultural traditions of the people. There is no sudden break in established patterns of behavior and relationships; but roads clearly quicken the pace and increase and widen the channels of communications open both for traditional and for new messages.

In the first instance then, the welfare curve merely shifts to a higher level without any essential change in shape. The poor remain

relatively poor, although a whole range of new services and new experiences to which the roads provide access enhances their potential for economic and social mobility. Starting from a higher base, the more affluent can take advantage more quickly of new opportunities which the roads create in the short run. However, nobody loses because everyone shares, at least to some extent, in a rapidly expanding pool of production and ideas. In the long run, the economic and social costs of deforestation will be a burden to be shared, to some extent, by all.

The roads create their own momentum of change. We believe that messages that are carried along with the increasing traffic of pickup trucks between villages and markets are more effectively transmitted by word of mouth along the road than over the airwaves to individual transistor radios. This may account for what appears to be a dramatic increase in modern ideas and practices in formerly isolated areas.

Our hurried travel in the North and Northeast has given us a feel for the pervasive and lasting excitement inherent in the promise of better things to come in the wake of the roads. We have been struck by the sense of confidence in the future brought about by fuller participation in the opportunities of the nation at large. There is need to study further the nature and the implications of the changes we have observed.

The substantial A.I.D. investment in the ARD program gives every indication of having become part of the permanent fabric of Thai national development. The time, it would seem, has come to evalute all aspects of the program more fully and in detail together with the ARD staff. It might be especially useful to explore opportunities for effective A.I.D. assistance in areas where the benefits of increased mobility generated by ARD roads do not seem to have been fully realized. It would also seem worthwhile to explore with the RTG how the field organization developed by ARD could best be strengthened to provide more technical and financial services for smallholders whom the roads helped in the transition from subsistence farmers to producers for a growing commercial market.

Lastly, in Thailand and elsewhere, A.I.D. might benefit from the experience implicit in its association with ARD. Our evaluation suggests that success came from long-term A.I.D. support of efforts to implement a project that the Thai had conceived, rather than from the efficient implementation of an A.I.D. project with Thai consent and counterpart assistance.

APPENDIX A

HISTORY OF ARD

History of ARD[1]

In the early 1960s, political considerations commanded the attention of the Northeast Committee, the group of leading Thai Officials concerned with development of the area. The development of roads in the Changwats, construction for generating electricity, and hospital expansion have been carried out, because the necessity of such projects to fulfill the needs of the rural people is obviously seen by the Northeast Committee. But, investments in such projects might not yield the best return, because a majority of the rural people may not benefit from the projects. Therefore, the Northeast Committee formed a "Committee for Coordination and Operation Planning of Rural Development" in order to meet the immediate situation.

Simultaneously, the government took notice of the insurgency problem. Insurgents take advantages of the difficult terrain of jungles ortheast and the lack of communications to organize s, propagandizing or terrorizing villagers into prood, manpower and information, killing village headmen and police and generally defying the authority of the local administrators. The insurgent activities favoured in their operation by the poverty of families in the village and by the lack of roads which made movement by official groups, including police and army, difficult. The Northeast Committee considered the work of development, especially that of ARD, most important in the general offensive against the communists. ARD roads are making it possible to provide effective protection to villages terrorized by the communists. They also make it possible for the villagers to take their products to market and their sicknesses to hospital. They facilitate the movement into their villages of materials needed for improving their living conditions and lifting their living standards. They open villages to private enterprise with prospects of higher income and more secure future for the inhabitants.

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The Committee soon found that it was not enough simply to open channels of communication between the provinces and the central government, and between each central government department. It was necessary to convince the people that government representatives were not only accessible to them but were truly concerned with their well being. It was determined that the establishment of broader social and economic development projects for the people could best be done by the provinces themselves since each province has an administrative structure in which the local people participated. It was necessary to link the structure closely to the ARD program.

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[1]Translation prepared by the ARD Office, MOI, RTG (typed, no date).

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Thus an Accelerated Rural Development program, with the provincial governor as director, was formed for each province, with a new post of assistant to the governor to handle rural development.

The Accelerated Rural Development program was initiated by the Northeastern Development Committee which realized the importance of the development in which results would effectively reach rural people in tambons and villages. The Committee proposed to the Cabinet the formation of a Sub-Committee for ARD Coordination and Operational Planning, which was established on September 10, 1963, as part of the Northeast Development Committee's responsibilities. It was found appropriate later on that the operational areas be expanded. Therefore, on March 17, 1964, the Cabinet approved the reorganization of the Sub-Committee to be the Committee for ARD Coordination and Operational Planning (CCOP). This committee was responsible for coordinating work in developing an overall operational plan in the sensitive and remote areas of the Northeast, as well as establishing a long term operational plan to take over the work of the Mobile Development Units of the Central Committee for National Security Command. ARD operational areas were initially designated in 6 Changwats in 1964 and increased to 11 Changwats in 1965. The operations were jointly carried out by the Department of Local Administration and Changwat Administration. The Central Committee for Accelerated Rural Development, appointed to replace the former CCOP by the Cabinet, was responsible for developing policies and directing work coordination.

Due to the large expansion of operational areas and the increase of national budget and assistance from cooperative countries, it was necessary that permanent staff be made available to carry out the operations of ARD program. Other than that, this program needs coordination with RTG agencies. The government, therefore, enacted the establishment of ARD office under the organization of the Office of the Prime Minister (No. 4, of 1965). The status of the newly established office is equivalent to that of a Department. The official promulgation of ARD's Organization was made on February 10, 1966.

ARD operational areas were increased to 31 Changwats in 1973, and 34 Changwats in 1974, and 56 Changwats in 1977, whereas the Cabinet resolved on May 6, 1969 that the Central Committee for Accelerated Rural Development (CCARD) be reorganized, and chaired by Minister of Interior. In supporting CCARD, the government also appointed a Committee for Mobile Medical Teams; a Committee for Rural Business Economic Policy and a Committee for Youth Promotion in the ARD areas.

The ARD office is responsible for carrying out the economic and social development policy in tambon and village levels to maintain rural security.

APPENDIX B

CURRENT STATUS OF ARD ROADS

September 30, 1979 Status of ARD Roads By Type and Region

A. Provincial Offices

(In Kilometers)

Region	Standard Roads[1/]			Rural Access Roads Type 1			Rural Access Roads Type 2		
	Built	Transferred[2/]	Remaining[3/]	Built	Transferred	Remaining	Built	Transferred	Remaining
North	2,764	917	1,847	200	-	200	61	-	61
Northeast	8,643	1,285	7,358	1,381	30	1,351	1,313	-	1,313
Central	615	27	588	144	6	133	66	-	66
South	339	-	339	63	-	63	47	9	36
TOTAL	12,361	2,229	10,132	1,788	36	1,752	1,487	9	1,476
B. Central ARD[4/]									
North	549	241	308	36	-	36	66	-	66
Northeast	172	172	-	-	-	-	-	-	-
Central	492	154	338	70	-	70	-	-	-
South	100	-	100	8	-	8	11	-	11
TOTAL	1,313	567	746	114	-	114	77	-	77
NATIONAL TOTAL	13,674	2,796	10,878	1,902	36	1,866	1,564	0	1,553

1/ For definitions, see Appendix C.
2/ To Royal Highway Department.
3/ As ARD responsibility.
4/ Built with equipment from central pools in provinces that do not have their own, because activities started after AID phased out in 1974/75.

SOURCE: Statistical Summary of ARD Construction, Technical and Engineering Division, ARD, Ministry of the Interior, Vol. 10, No. 4, Bangkok, April 1980 (in Thai).

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APPENDIX C

ARD ROADS SPECIFICATION AND STANDARDS

ARD Roads Specifications

A. Standard ARD Roads

All-weather laterite or gravel roads, 6 meters wide centered on 30 meter right-of-way and designed for 12.5 tons axle weight. They connect provincial capitals to district centers (amphur) or link such centers with each other or with communes (tambon) and villages. They require survey and design; and they must have box culverts and permanent structure, such as bridges, made of concrete.[1] They must be provided with all road signs and with construction materials for maintenance and repair.

B. First Class Rural Access Roads

Similar to standard ARD roads, except as follows: They are 5 red on a 20 meter right-of-way and typically connect ages only to each other and to main roads. They are usually less than 10 km long and designed for axle weights up to 10 tons. Culverts may be pre-fabricated pipe and bridges either concrete or wood. Only essential traffic signals are required.

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C. Second Class Rural Access Roads

They are semi-permanent laterite or gravel roads within village areas, 3 to 5 meters wide depending on conditions, and built for loads of less than 67 tons. They require survey and design, but only essential drainage and no traffic signs.

D. Service Tracks

These are temporary trails for dry season use only, prepared to serve essential and urgent needs of various government agencies. They are established by clearing and grubbing a strip not more than 10 meters wide and an actual trail of 4 meters or less, with grade and compaction adequate for a 2 axle truck with a load of not more than 6 tons. They are typically built without survey or design and without bridges or other permanent structures.

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[1]Since 1979; until then bridges were usually made of wood.

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APPENDIX D

METHODOLOGY

Methodology

The evaluation team consisted of 5 members: an agricultural economist and the team leader, a rural development planner, from AID/W, a social anthropologist from Drew University and an agricultural economist from the Texas A&M University. Three of these had extensive experience in Thailand and language competence in Thai ranging from the confident stammer to reasonable fluency. The four American members were joined in Bangkok by a Thai social anthropologist from the University of Chiang Mai. In addition two civil engineers were assigned as liaison officers by the Accelerated Rural Development Organization.

A basic understanding on the method to be used and on the scope of the field work was reached in a workshop organized by PPC/E about a month before the departure of the team. It was agreed to develop the

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red for the evaluation from three principal sources: w of all available documentation, including papers written by and for AID in Washington and Bangkok and reports relevant to the project prepared by other donor agencies, especially the World Bank and the Australian Development Assistance Program, and by scholars; (2) meetings and interviews with as many persons as possible in the United States and in Thailand who had first-hand experience with the project or were knowledgeable about it; and (3) personal observation and discussions with a cross-section of people living along selected segments of the roads to be evaluated.

Since northern and northeastern Thailand surely must be one of the areas most intensively and regularly photographed from the air during the years of the Vietnam War, a period which coincides with that during which the roads were constructed, the team discussed the usefulness of seeking access to series of aerial photos taken over a period of time along selected sections of roads. Pictures taken at, say, five year intervals from immediately before a segment of road was built until ten years after it was built would provide convincing and measurable evidence of changes in population, life-style and agricultural practices. It became evident, however, that it was unrealistic to hope that an analysis of aerial photos could be completed in the time and budget constraints of the impact evaluation.

Since the rural roads component of the ARD project assisted by AID encompassed a total of some 12,000 km in 31 of Thailand's 72 provinces, it was evident that 2 weeks work could accomplish little more than to develop a feel for the impact of the roads, leading to qualitative descriptions and conclusions. It was felt that, if thoughtfully done, this would be responsive to the purpose of the impact evaluation--certainly more so than the spurious accuracy of quantitative analysis that could not, in fact, be supported by a carefully developed data

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base. In any event, although much progress is being made, Thailand's overall statistical base still lends itself much better to the substantiation of broad-based hunches than to the support of regression analysis.

The North and Northeast of Thailand differ in respect to climate, soil and culture. The bulk of the AID-assisted road construction took place in 10 northern and the 16 northeastern provinces. In order to get the broadest possible overview, it was decided at the evaluation workshop to split the team in two, in order to cover each of these regions. We did not seek to get field impressions in the two central and southern provinces where AID also assisted ARD, because we felt that a further scattering of effort could not be justified.

Given the importance assigned by the RTG and AID to the decentralization of services for the development of the more deprived and politically sensitive areas of Thailand, we felt that it was essential to examine not only the impact of the roads on the people these roads serve. We thought it equally important to look at the willingness and the capacity of the RTG to keep up the institutional effort required to sustain the development momentum created by the project.

The full team gathered in Bangkok for three days of final briefings and for fine-tuning plans for the fieldwork.

We agreed on a range of topics to investigate rather than on a structured questionnaire and on a range of respondents that we would seek to contact. To test this approach both teams spent one day together in the field in an ARD province along the way to their separate field assignments in the North and Northeast. In developing our schedule we sought to achieve a maximum of geographic spread with enough time in each of 3 or 4 selected provinces for the range of interviews and observation which we thought necessary to reach plausible conclusions.

We had hoped to meet a large number of persons in Bangkok familiar with the areas we intended to visit and with specific knowledge relevant to our concerns. We managed to see no more than a few. Bangkok traffic is a caricature of the Long Island Express Way. Except for a few motorcyclists sneaking through, it is like an endless parking lot moved on a conveyor system subject to erratic and extended power failures.

Our field approach in each locality consisted of a formal briefing by the head of the provincial ARD office and/or the Provincial Chief Engineer, followed by travel over at least two roads each day and extended visits to three or four villages along them for observation and conversation with farmers, shopkeepers, village heads and community leaders, priests, school teachers, agriculture and health extension workers and district officials. In this fashion we covered 50 to 80 kilometers each day and averaged six to eight interviews each morning and afternoon. We

also called systematically on relevant provincial officers especially those in charge of health, education and agriculture.

Throughout, detailed notes were kept by each team member and an attempt was made to have a cumulative summary of impressions at the end of each working day.

Two weeks after leaving for the field we met in Bangkok and there retreated to the comfort of the Erawan Hotel to colate our impressions and seek to draw useful conclusions from them, to the extent possible. In our report we have stressed those that we believe to be actionable by the RTG and donors.

Some Lessons Learned

1. We believe that both the procedures and the format developed for the evaluation are eminently practical. The workshop especially provided an appropriate setting for the development of effective working relationships and thus helped to build some confidence in the feasibility of what, at first blush, seemed an impossible task. The 15-page format required for the report also helps in providing a focus for the evaluation exercise.

2. We believe that it would be useful to follow up the impact evaluation with carefully defined studies in depth of selected topics. This would help in an ongoing review of the assignment of priorities to "next steps" in development.

3. The time available for the work was just about right.

4. With a bit more confidence in the ability of the project to achieve its purpose of building all-weather roads we could have saved ourselves the discomfort of testing road maintenance by the seat of our pants in Land Rovers. We could safely have used cheaper and more comfortable sedans. More to the point is the fact that the internal Thai transport system with excellent trunk roads and air-conditioned buses would have made it quite practical to rely on them for point to point transportation and to hire cars locally for site visits. This could have led to greater dispersal of the teams throughout the day and permitted more efficient and wider coverage.

5. Without denigrating the relevance of technical specialists, it is likely that the objectives of the impact evaluations could be as readily achieved by generalist development officers with extensive overseas experience. Thorough language competence is essential.

6. Although there may well be some risk or bias inherent in working closely with or depending on a host country organization involved

in the project to be evaluated, we found our own association with ARD immensely helpful. It is not likely that we could have accomplished our task as well in the limited time available without their cordial but low-key assistance.

APPENDIX E

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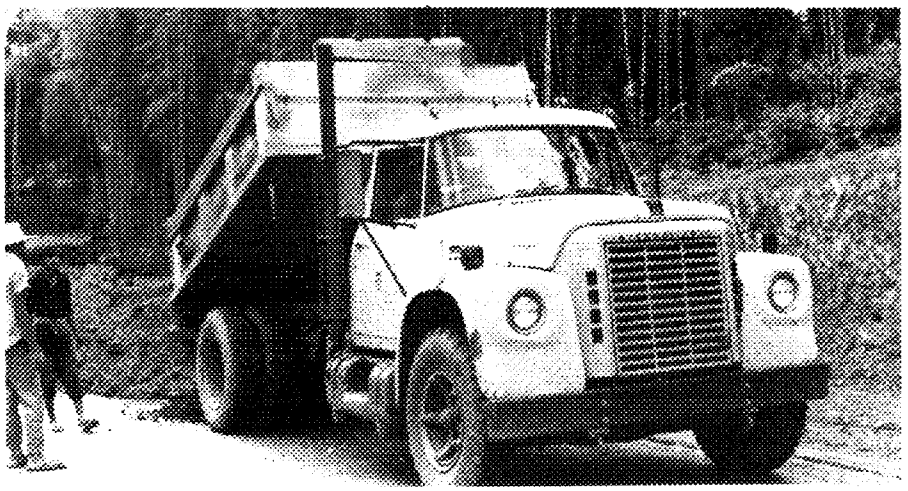
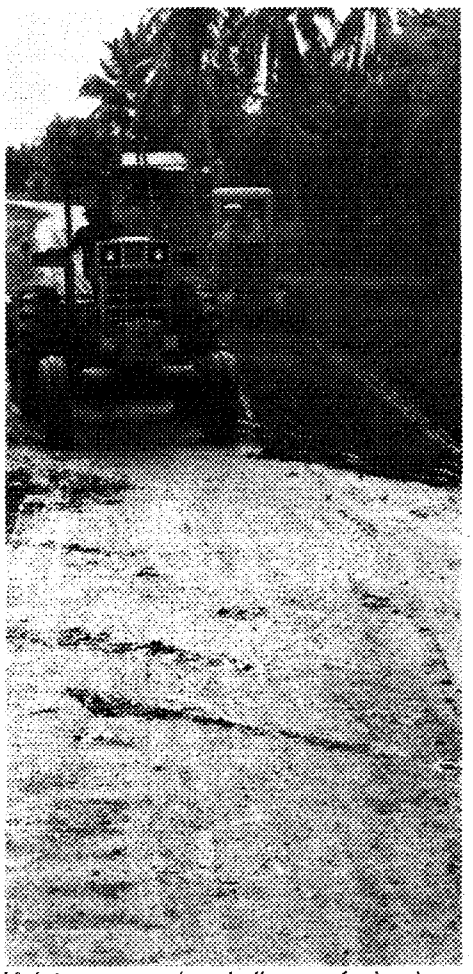
APPENDIX F

PHOTOGRAPHS



AID equipment still at work.

The first truck delivered by AID to ARD in Nan Province in 1964 is still in use.

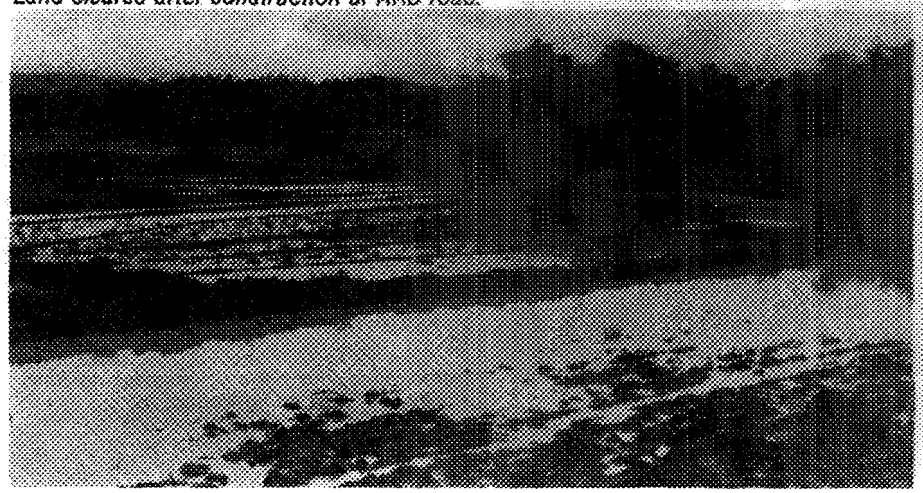


Maintenance and periodic resurfacing have priority over new construction.

Returning from school on ARD roads.

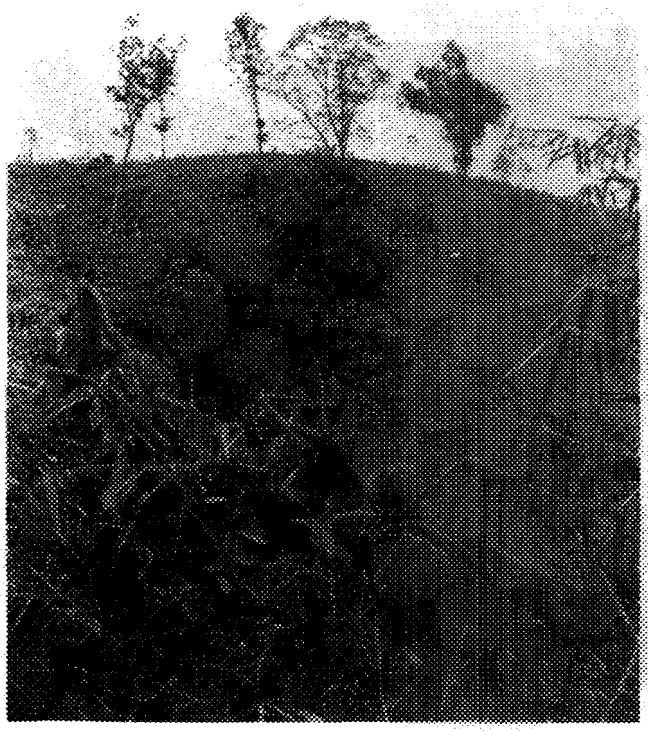
"Iron buffalo" at work in Northern Thailand.

Land cleared after construction of ARD road.

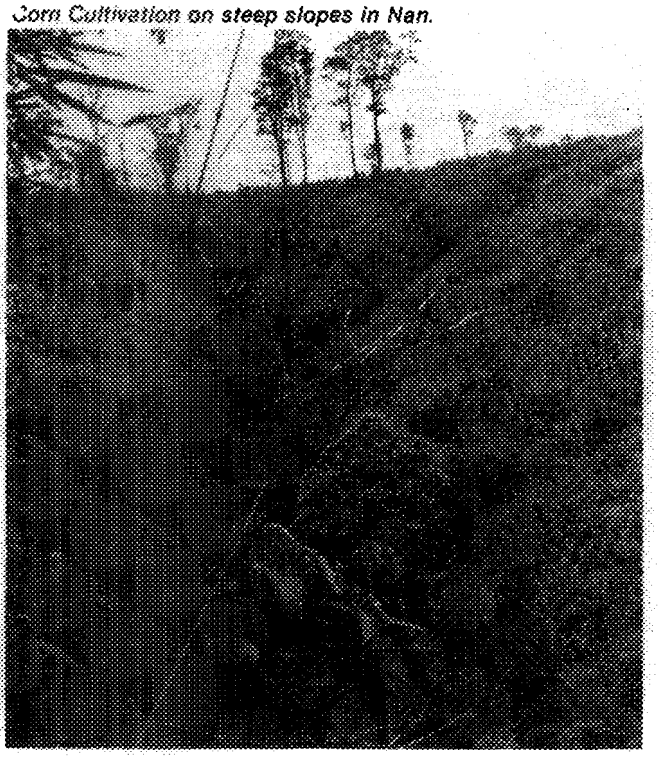


This farmer borrowed ฿ 4000 from a commercial bank in Nan to finance his crops.

Steep slopes cleared for cultivation in Nan.



Corn Cultivation on steep slopes in Nan.



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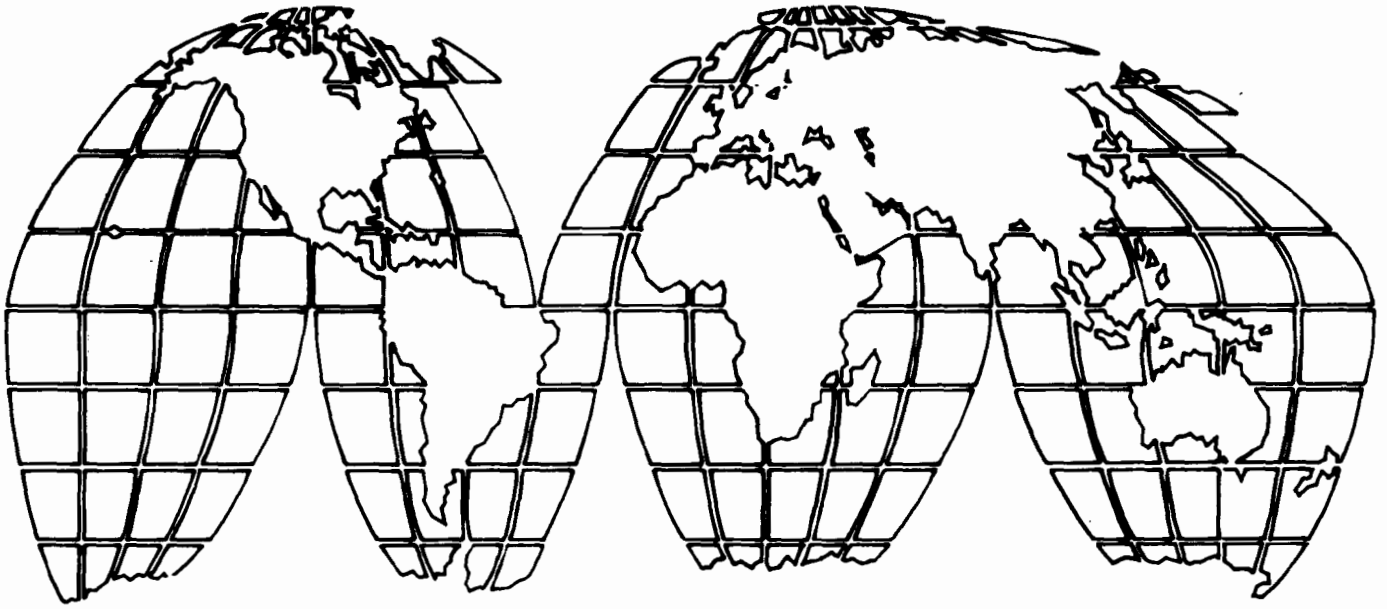
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