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FINAL REPORT

SMALL ENTERPRISE APPROACHES TO EMPLOYMENT -- HOUSING COMPONENT

Agency for International Development Contract

with

Michigan State University

DS/~~46924~~0012

9/28/1978 - 8/31/1982

Phase I

Principal Researcher: W. Paul Strassmann,  
Professor of Economics

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## I. Executive Summary

SMALL ENTERPRISE APPROACHES TO EMPLOYMENT/HOUSING  
A.I.D. Contract DS/otr-c-0012 with Michigan State University  
Project Director: W. Paul Strassmann, Professor of Economics,  
Michigan State University, East Lansing,  
Michigan

### A. Schedule

1979: Develop the approach and carry out on-site evaluation surveys of contractors, households, and workers in six countries: Colombia, Tunisia, Zambia, Kenya, Pakistan, and Sri Lanka.

1980: Field demonstration of concepts in Lima, Peru, after one large survey and two small ones in cooperation with ministries and the AID mission.

1981-1982: Begin second field demonstration with large survey in Colombo, Sri Lanka, that includes a home-based enterprise component. Follow-up in Tunisia. State-of-the-Art study. Disseminate results to United Nations, World Bank, and others at their request.

### B. Organization

The project director and three Ph.D. candidates from developing countries spent half their time on the work. AID funds allocated and spent were \$295,062. Five months of sabbatical leave and

"All University Research Funds" were added to the project by the College of Business, The Center for International Programs and Studies and the Department of Economics gave logistic support. Former MSU students were hired for work in Tunisia, Colombia, and Peru. Elsewhere subcontracts were set up with the Mazingira Institute, Kenya; the Marga Institute, Sri Lanka; and the Office of Technical Manpower Studies, Peru.

C. Formal Output

Twenty-one reports were prepared by Summer 1982. Nine are general guidelines or cross-country comparisons. Ten are reports on work in Lima, Peru and have been translated into Spanish. Two are by MSU Ph.D. candidates. Dissertations are also under way. For publication, articles were due in Ekistics, Economic Development and Cultural Change, Journal of Economic Issues, and the Pakistan Development Review. Others are in process.

D. Major Substantive Results

1. Small-scale contracting is a viable alternative to large-scale construction. National and international agencies are exploring semi-autonomous "Contractor Support Agencies."
2. Rising construction wages will be matched by almost equal percentage declines in employment. Simple employment estimators will be circulated by the World Bank to project officers and can be used in future HIG Shelter Sector Assessment missions.

3. Virtually all households make informal additions and improvements. These depend on physical infrastructure and could benefit from credit. Peru has set up a Banco de Materiales along recommended lines.
4. Without home-based enterprises, including renters, many households can support little construction. The tolerance in Kenya compares well with past controls in Sri Lanka, Peru, and Colombia.
5. Benefits from construction can be optimized by relating projects to the general transfers of all housing. One way is a housing stock-user method of analysis. It points housing strategy toward infrastructure for the poor and away from subsidizing upper-income households without forbidding their building activities.

## II. Revised Final Report

### SMALL ENTERPRISE APPROACHES TO EMPLOYMENT -- HOUSING COMPONENT Contract with Michigan State University 1978 - 1982

In accordance with the Scope of Work, this Final Report reviews "all activities and findings of the project, including an interim evaluation of employment impacts."

#### A. Activities

The activities were carried out by the principal investigator (half-time) and three MSU Ph.D. candidates from developing countries who have been producing publishable research reports of their own. They are Ehsan Ahmed, Nimal Gunatilleke, and Manenga Ndulo. In addition research was carried out through subcontracts with individuals and institutes in five developing countries. The countries studied were Sri Lanka, Pakistan, Kenya, Zambia, Tunisia, Colombia, and Peru. Most complete was the Field Demonstration in Peru that was carried out in close collaboration with AID and Peruvian housing and employment officials. Eight reports were submitted, discussed privately and in a public lecture on December 3, 1980, in Spanish. Later the reports were disseminated widely in Spanish versions and modification of Peruvian housing and employment policy appeared to be in line with these recommendations although that might well have occurred without them. Additional Peruvian publications are planned.

A Sri Lankan study of similar scale was undertaken in the Summer of 1981 and has been adapted for Phase II. The Lima data base is so rich and was so carefully developed that important additional findings will be gleaned from it.

## B. Findings

The findings of this type of study must ultimately be judged by their impact on small scale enterprises in the field of housing due to changed public policies. Such a hope is not farfetched. Informed opinion and practice have already been affected by past academic fieldwork and analysis. It is now anachronistic to plan wholly New Towns like Chandigarh or Brasilia, to eradicate slums, to favor heavy prefabrication through joint-ventures with large foreign enterprises, to subsidize middle-class housing for trickle-down effects, to arrange level-payment mortgages, and to think of automobiles and subways as the primary means of transport. All these measures were once in favor. We have come a long way, but deteriorating employment and housing conditions suggest that we can still do much better. Study of home-based enterprises can help show the way.

Some effect was no doubt obtained by personal contact with officials in the course of collecting data and discussing results. Circulation of some twenty reports in mimeographed form probably had a further effect. Inquiries came from Indonesia, Pakistan, Nigeria, Ethiopia, Egypt, Algeria, and a variety of other countries. Perhaps some of these were inspired by our past books, such as the OECD-sponsored Studies in Employment in the Mexican Housing Industry (1973), the

ILO-sponsored Housing and Building Technology in Developing Countries (1978), or the World Bank-supported, Transformation of Housing: The Experience of Upgrading in Cartagena (Johns Hopkins University Press, 1982, draft 1978). A four-year lag between fieldwork and academic publication appears normal. Articles have already been accepted by Ekistics, Economic Development and Cultural Change, the Journal of Economic Issues, and the Pakistan Development Review (by research assistant, Ehsan Ahmed). Others are in process.

Faster dissemination has occurred through about fifteen lectures that I have given on the work in the US, Tunisia, Kenya, Britain, Peru, and Germany. Some of these were given in the course of collecting information for the State of the Art Report at research centers in various European cities. In addition the United Nations Center for Human Settlements requested presentation of our findings on "Labor, Levels of Employment, and Skills, Factor Substitution, Productivity, and Manpower Training," at the Expert Group Meeting on the Indigenous Construction Sector, November 23-30, 1981, Nairobi, Kenya. The Urban Development Department of the World Bank asked me to prepare a Guidance Note for Measuring and Improving the Employment Impact of Construction Projects of practical value for their project officers in the field. That task was completed in October 1982. British, Dutch, French, and German development agencies have also shown an interest in our findings.

### C. Employment Impact

An interim evaluation of employment impacts amounts to the sum total of everything that is contained in the lectures, reports,

articles, and works-in-progress referred to in the previous section. Two types of small scale enterprises are involved -- formal and informal. The formal can participate in building infrastructure or build core dwellings for a public housing agency. The informal activity is the partly professional, partly selfhelp process of expanding and improving existing dwellings.

For formal small scale enterprises we made a seven-country survey of the employment involved in building an identical 24.9 m<sup>2</sup> core house in seven countries. As shown in MSU International Development Working Paper No. 3, we found the elasticity of substituting labor for non-labor inputs as relative wages rise, and the elasticity of substituting skilled for unskilled workers as the skill premium changes. Both elasticities are substantial, between 0.7 and 0.9. This kind of study had never been done before. The impact of alternate designs was assessed. Furthermore, we compared the estimates from both the entrepreneur's and the worker's point of view. The worker surveys show their tendency to become entrepreneurs when circumstances are favorable.

As another task we developed a formula or guideline for quickly estimating the employment, N, generated for any type of project by any type of enterprise and demonstrated its reliability.

$$N = \frac{r(1 + q)}{(p + q)} \cdot \frac{C}{w_u}$$

The equation depends on three ratios:

- $r = W/C$ ,      the wage bill, W, in total costs, C.
- $p = w_s/w_u$ ,    the ratio of skilled to unskilled wages.
- $q = N_u/N_s$ ,    the number of unskilled workers employed for every skilled worker.

We expect the guideline to be used in future feasibility studies and in shelter sector assessment missions. The World Bank has asked for an adaptation, as mentioned before.

In the case of Tunisia we could study how the 24.9 m<sup>2</sup> dwellings had actually been built under an AID HIG loan. The Tunisians were able to use small and medium-sized contractors with greater labor intensity and lower cost than large contractors would have. The project had to be subdivided into small, biddable components, and the enterprises had to be furnished with logistic support as well as with financial and technical monitoring. A year later rooms and other improvements had been added to all.

The informal small-scale activity of upgrading was initially studied by comparing its extent in sites and services projects, core housing, and rehabilitated slums as compared with control group settlements in six countries. The findings were that virtually everyone makes improvements, that adding rooms is the most popular change, and that access to water or a sewer system has the most stimulating effect, provided there is security of tenure. These results were confirmed by a survey of the entire city of Lima. Such total surveys are much more valuable than partial surveys of some housing types. Thus we concluded that in prosperous years, 33,000 workers were formally employed in residential building, and that the additional informal selfhelp building amounted to another 20,000 annual workyears (if it had been built at the formal pace). Infrastructure employment was also assessed.

Finally, overall trends in housing needs as related to population growth and income rises were assessed by means of stock-user matrix analysis, a method developed earlier at Michigan State University (Strassmann, Land Economics, August 1977). The conclusion is that small scale construction by the poor cannot produce enough housing for the poor, even if capital-intensive trickle-down methods are avoided, unless the poor are allowed to use the dwellings for reinforcing their incomes. Obviously dwellings must be located close to earning opportunities. Beyond that, however, they must themselves be earning opportunities through use for renting, subletting, and use as a store or workshop. As usual, such activities are already widespread but unfortunately too often forbidden, hence clandestine. One exception is Kenya, but that experience is not altogether satisfactory. To our field demonstration survey of Colombo, Sri Lanka, we have added a special questionnaire for enterprises in the dwelling. To what extent does the dwelling make the enterprise possible, and the enterprise the dwelling? How much employment is generated by these two types of interrelated small scale enterprise projects? What policies about building codes, zoning, and licensing must be abandoned and modified, and what other policies can encourage the right kind of enterprises in expanded dwellings? Here is an area where more research could prove fruitful. Without action in this field, the outlook for attractive and healthy urbanization is poor. The subject is treated in detail with discriminant analysis by research assistant, Manenga Ndulo, in "Home Improvement by Ordinary and Consolidating Households in Lusaka, Zambia."

#### D. Evaluation

An evaluation of a project by its director is certain to be unobjective, self-serving, and due to be received with skepticism. The results had better speak for themselves.

The ultimate results for this project are supposed to be more employment and higher productivity by small enterprises in residential construction and related activities. Are there enterprises that improved their performance exclusively because of this project? Are there AID missions, ministries, banks, housing agencies, and the like who changed their policies mainly because of conclusions reached by this study? Perhaps.

Changes in practice have a long gestation period partly because of contingencies, cut budgets, transfer of key officials, and shifts of political priorities. Meanwhile a new idea goes through stages in which decision-makers become aware, interested, willing to evaluate, ready to try, and so forth. In activities related to small-scale building, the key public decision is often to cease intervening in a misguided fashion, to allow the creativity of households and small firms to take its course, and to take actions that could have been justified by other than employment-dwelling-improvement motives. Those who take decisions have no need to acknowledge or even to be concerned with the origin of insights.

Decisions to build a dwelling or a firm are in any event complex with many options and numerous reasons for choosing or rejecting each. Research is most potent when it deals not just with one case,

but with factors that affect entire categories of cases. Being general, though not too abstract, it changes the signals for all and yet seems to be only a small part of the solution for any one specific problem. Above all, it vetoes mistakes in advance.

To be specific, apart from the guideline for estimating employment, the five major generalizations from this project are the following:

1. Small-scale contracting is a viable alternative to large-scale construction. National and international agencies are exploring semi-autonomous "Contractor Support Agencies."
2. Rising construction wages will be matched by almost equal percentage declines in employment. Simple employment estimators will be circulated by the World Bank to project officers and can be used in future HIG Shelter Sector Assessment missions.
3. Virtually all households make informal additions and improvements. These depend on physical infrastructure and could benefit from credit. Peru has set up a Banco de Materiales along recommended lines.
4. Without home-based enterprises, including renters, many households can support little construction. The tolerance in Kenya compares well with past controls in Sri Lanka, Peru, and Colombia.

5. Benefits from construction can be optimized by relating projects to the general transfers of all housing. One way is a housing stock-user method of analysis. It points housing strategy toward infrastructure for the poor and away from subsidizing upper-income households without forbidding their building activities.

The value of these five generalizations cannot so far be based on their creation of so many thousands of identifiable jobs and a precise amount of output, but rather on their having aroused substantial interest and support from experts. Officials of international agencies other than AID have spent thousands of dollars to obtain versions and elaborations that they see as suited for their present programs. European institutes and centers in five countries (mentioned in the State-of-the-Art report) were eager to exchange views with more modest commitments of time and funds. Some of these might be dismissed as simply expressions of hospitality and personal regard. Such doubts cannot apply to the editors and anonymous referees of four specialized scholarly journals that have accepted adaptations of our reports for publication. So far we have had no rejections. Other articles are forthcoming. The objective of this project has been practical results more than journal articles, but perhaps such articles show most conclusively whether or not an insight is both original and true -- not a retread or a notion insufficiently substantiated with data and analysis.

But supposing that results are positive, as claimed, it could be that they were not in proportion to the time and money spent

(\$295,062 plus large MSU contributions). Or perhaps the balance between teaching, developing and testing concepts in East Lansing, and fieldwork abroad should have been different. Or perhaps different types of research assistance should have been mobilized. All that is possible, but I feel it would have been hard to obtain the results that we did with a different approach. Indeed, it might be said that we had more luck than we deserved.

With a different division between teaching and research, which was half and half, we might not have been able to recruit the high-caliber Ph.D. candidates that chose to work on the project. We get to know each other in the seminars. Their abilities and their contacts back home proved invaluable during the 1979 and 1981 fieldwork. Their training is also part of the output of this project. The availability of excellent past MSU graduate students, Ridha Ferchiou (Tunisia) and Norma Botero (Colombia) was indispensable for good results in three countries (Botero also supervised work in Peru). It is probable that the Marga Institute (Sri Lanka) and the Office of Technical Manpower Studies (Peru) spent more on their surveys, including overhead, than the subcontracts actually paid them. We were lucky to have their participation.

Such good fortune cannot be taken for granted. Without it we would definitely have been overextended in attempting to carry out studies in seven countries in about three years using less than \$300,000. If the principal investigator is not to be simply a principal "administrator," work with three research assistants and local research groups in three countries should be regarded as the

limit. Even here the assumption is that the research assistants are natives of the country or region being studied.

In my opinion it would be useful in the future to involve American students in the fieldwork. But it is unusual to find students with lengthy experience abroad (Peace Corps, diplomatic, missionary, or multinational offspring, etc.). In all other cases, even after US language and other training, fieldwork would require an additional six months or a year. The extra expense, it would seem to me, is more than justified by the extra benefit of one more American who can function abroad in a highly technical capacity. Incidentally, such a person could become a valuable resource for the Agency for International Development.

## APPENDIX

Reports, Papers, and Articles

Written as Part of

SMALL ENTERPRISE APPROACHES TO EMPLOYMENT -- HOUSING COMPONENT

Phase I, Contract AID/DS-otr-C-0012

Unless otherwise specified, reports were written by W. Paul Strassmann.

G-1. "Guidelines for Estimating Employment Generation through Shelter Sector Assistance." January 1980. Pp. 38.

\*Elaborated and rewritten for the World Bank as, "Guidance Note: Measuring and Improving the Employment Impact of Construction Projects." October 1982. Pp. 35.

G-2. "The Role of Infrastructure in Employment Generation." January 1980, Pp. 8.

G-3. "Government Policy and the Improvement of Low-Cost Housing in Seven Countries, 1979." March 1980. Pp. 19.

G-4. "Employment in Core House Building: A Comparison of Estimates from Six Cities in Six Countries." May 1980. Pp. 19.

\*Much of the data were incorporated in "Labor: Levels of Employment and Skills, Capital-labor Substitution, Productivity, and Manpower Training," paper presented at the Expert Group Meeting on the Indigenous Construction Sector, Nairobi, Kenya, November 23-30, 1981. It will be published in the proceedings of that meeting.

\*A more econometric and elaborate version is "Employment in Construction: Multi-Country Estimates of Costs and Substitution Elasticities for Small Dwellings," MSU International Development Working Paper, No. 3, December 1982, pp. 36, forthcoming in Economic Development and Cultural Change.

- G-5. State of the Art Report I: "Methods for Analyzing and Promoting Employment in Low-cost Housing in Developing Countries." August 1981. Pp. 19
- G-6. State of the Art Report II: "Employment and Income from Production in Dwellings." September 1981. Pp. 23.
- R-1. "Production Functions and Input Elasticities in the Construction of Low-Cost Housing: A Comparison of Building Firms in Pakistan with Firms in Five Other Countries," by Ehsan Ahmed, published in the Pakistan Development Review, Volume XX, Number 4, Winter 1981, pp. 417-426.
- Z-1. "An Analysis of Low-Income Demand for Shelter: The Case of Lusaka, Zambia." January 1981. Pp. 62. By Manenga Ndulo. Mr. Ndulo's doctoral dissertation based on this and other material collected during the Summer of 1979 is almost complete and the degree is likely to be awarded in early 1983.

#### REPORTS ON HOUSING AND EMPLOYMENT IN LIMA, PERU, 1980

- P-1. "Background and Overview of Recent Trends." Pp. 9.  
Brief survey based on official reports of trends in housing policies, income and population growth, and construction employment, 1950-1978.

- P-2. "Description of a Sample of Households Surveyed in the Metropolitan Area of Lima, Peru, June 10-July 3." 1980. Pp. 4.  
Summary of the procedures used by the Technical Office of Manpower Studies of the General Bureau of Employment, Peruvian Labor Ministry, in surveying 1,167 households. Brief description of major zones of the Metropolitan Area and the distribution of interviews.
- P-3. "Income and Housing in the Metropolitan Area of Lima, Peru, 1970-1990." Pp. 25.  
Households and dwellings are each classified in six ranges. Conditions in 1980 are compared with 1970-71. Construction needs are given for a hypothetical 1990 housing target.
- P-4. "Urban Infrastructure and Employment in Peru." Pp. 7.  
Employment is estimated for the infrastructure for 500 116.2 m<sup>2</sup> lots. With lower specifications one-third more lots could be equipped at the same cost, but employment would fall by 6 percent.
- P-5. "Employment Generation Through Building Core Housing in Peru." Pp. 46.  
Demonstrates a simple guideline for estimating employment without a highly detailed cost analysis. Such an analysis is made, nevertheless, for a 24.9 m<sup>2</sup> and a 34.4 m<sup>2</sup> core unit. Data comes from three organizations operating at three

different volumes. Costs and employment for the 24.9 m<sup>2</sup> unit are compared with findings from six other countries for the identical design. Compared with the average, the unit costs two-thirds as much in Peru and employs one-third as many workers. Wages in Peru are over three times as high.

- P-6. "Employment Estimation with Limited Information about Building and Upgrading: An Illustration From Peru." Pp. 12.

Value and floorspace information about housing can be obtained fairly easily. With this and employment data for two housing types, one can estimate employment for incremental housing expenditures. If that applies for all housing types, one can guess at their employment content per m<sup>2</sup>. In Lima it went from 3 to 6 workdays from the lowest to the highest housing category.

- P-7. "Shelter Improvement in Lima, Peru." Pp. 47, Appendix 17 pp.

Explains who does how much of what and why. How improvements are paid for and their effect on value. Renters are compared with owners. Employment generation as a share of the urban economy. Regression analysis and cross-tabulations by six income and value ranges.

- P-8. "Housing and Employment in Lima, Peru." February 1981. Pp. 55.

A Summary Report.

This report was written after the previous seven preliminary reports had been discussed with officials and other experts in

Lima, November 28-December 10, 1980. It contains new material based on definitions of neighborhood types and covers the main points of the other reports without giving all technical details. All eight reports on Peru have been translated into Spanish and have been circulated to interested persons and agencies by the AID mission in Lima.

P-9. "Upgrading in Squatter Settlements: Test of a Marxist Hypothesis," Journal of Economic Issues, June 1982, Volume XVI, Number 2, pp. 515-523.

This article is based on a paper presented at the December 1981 meetings of the Allied Social Sciences Association in Washington, D.C. It uses the Lima data to reject the Marxist hypothesis that housing cannot be improved through selfhelp, subsidized credit, and public action because under capitalism housing must not rise above the minimum level needed to reproduce labor power.

P-10. "Shelter Improvement in Lima, Peru." Forthcoming in Ekistics.

This article uses the Lima data to show how contradictory public policies can foster the deterioration of one part of the housing stock while encouraging the improvement of another.

Other articles and papers on Lima housing and home businesses are in process, as is the data on Colombo, Sri Lanka, by Nimal Gunatilleke, which will partly take the form of his doctoral dissertation. This work should, however, be considered as part of Phase II of the project, its continuation as a component of the 1982-1985 Small Scale Enterprises Cooperative Agreement, a special study that focuses on home-based businesses.

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Executive Summary

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1. The activities were carried out by the principal investigator (half-time) and three MSU Ph.D. candidates from developing countries and who are producing publishable research reports of their own. In addition research was carried out through subcontracts with individuals and institutes in five developing countries. The countries studied were Sri Lanka, Pakistan, Kenya, Zambia, Tunisia, Colombia, and Peru. Most complete was the Field Demonstration in Peru that was carried out in close collaboration with AID and Peruvian housing and employment officials. Eight reports were submitted, discussed privately and in a lecture in Spanish, disseminated widely in Spanish versions; and modification of Peruvian housing and employment policy appears to be in line with these recommendations although that might well have occurred without them. A Sri Lankan study of similar scale and <sup>with</sup> some additions was undertaken near the end of the contract and remains in process. The Lima data base is so rich and was so carefully developed that important additional findings can still be gleaned from it. The World Bank appears eager to participate in that work. Negotiations are under way.

2. The findings of this type of study must ultimately be judged by their impact on small scale enterprises in the field of housing due to changed public policies. Such a hope is not farfetched. Informed opinion and practice have already been affected by past academic fieldwork and analysis. It is now anachronistic to plan wholly new towns, to eradicate slums, to favor heavy prefabrication through joint-ventures with large foreign enterprises, to subsidize middle-class housing for trickle-down effects, to arrange level-payment mortgages, and to think of automobiles and subways as the primary means of transport. We have come a long way, but deteriorating employment and housing conditions suggest that we can still do much better. The current fieldwork can help show the way.

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Faster dissemination has occurred through about fifteen lectures that I have given on the work in the US, Tunisia, Kenya, Britain, Peru, and Germany (in four languages). Some of these were in the course of collecting information for the State of the Art Report at research centers in various European cities. In addition the United Nations Center for Human Settlements requested me to use our findings to report on "Labor, Levels of Employment, and Skills, Factor Substitution, Productivity, and Manpower Training," at the Expert Group Meeting on the Indigenous Construction Sector, Nov. 23-30, 1981, Nairobi, Kenya. The Urban Development Department of the World Bank has received from me a "Guidance Note for Measuring and Improving the Employment Impact of Construction Projects" (30 pp., March 1982) that is supposed to be of practical value for their project officers in the field.

3. The interim evaluation of employment impacts amounts to the sum total of everything that is contained in the lectures, reports, articles, and works-in-progress referred to in the previous section. Two types of small scale enterprises are involved -- formal and informal. The formal can participate in building infrastructure or build core dwellings for a public housing agency. The informal activity is the partly professional, partly selfhelp process of expanding and improving existing dwellings.

For formal small scale enterprises we made a seven-country survey of the employment involved in building an identical 24.9 m<sup>2</sup> core house in seven countries. We found the elasticity of substituting labor for non-labor inputs as relative wages rise, and the elasticity of substituting skilled for unskilled workers as the skill premium changes. Both elasticities are substantial. This kind of study had never been done before.

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We developed a formula for quickly estimating the employment generated for any type of project by any type of enterprise and demonstrated its reliability. We expect it to be used in future feasibility studies and in shelter sector assessment missions.

In the case of Tunisia we could study how the 24.9 m<sup>2</sup> dwellings had actually been built under an AID HIG loan. The Tunisians were able to use small and medium-sized contractors with greater labor intensity and lower cost than large contractors would have. The project had to be subdivided into small, biddable components, and the enterprises had to be furnished with logistic support as well as <sup>with</sup> financial and technical monitoring. A year later rooms and other improvements had been added to all.

The informal small-scale activity of upgrading was initially studied by comparing its extent in sites and services projects, core housing, and rehabilitated slums as compared with control group settlements in six countries. The findings were that virtually everyone makes improvements, that adding rooms is the most popular change, and that access to water or a sewer system has the most stimulating effect, provided there is security of tenure. These results were confirmed by a survey of the entire city of Idma, as well as the fact that such total surveys are much more valuable than partial surveys of some housing types. Thus we concluded that in prosperous years, 33,000 workers were formally employed in residential building, and that the additional informal selfhelp building amounted to another 20,000 annual workyears (if it had been built at the formal pace). Infrastructure employment was also assessed.

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