Appropriate Technology Directory

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DEVELOPMENT CENTRE STUDIES

APPROPRIATE TECHNOLOGY DIRECTORY

by

Nicolas Jéquier

with the assistance of
Gérard Blanc

DEVELOPMENT CENTRE
OF THE ORGANISATION
FOR ECONOMIC CO-OPERATION AND DEVELOPMENT
PARIS 1979

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**RÉPERTOIRE DES CENTRES
DE TECHNOLOGIE APPROPRIÉE**

POSTCARD

Dear Reader,

In order to help us to identify for a next edition of this book other important organisations working in the field of appropriate technology, please return this card giving on the other side the name and address of such institutions if you know any.

With our warmest thanks for your kind co-operation

Nicolas Jéquier
OECD Development Centre
94 rue Chardon-Lagache
75016 PARIS

France

Your name and address: _____

_____

Name and address of institutions to be included in next edition of Directory.

1. _____

2. _____

3. _____

4. _____

5. _____

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The Organisation for Economic Co-operation and Development (OECD) was set up under a Convention signed in Paris on 14th December 1960, which provides that the OECD shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development;
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

The Members of OECD are Australia, Austria, Belgium, Canada, Denmark, Finland, France, the Federal Republic of Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States.

The Development Centre of the Organisation for Economic Co-operation and Development was established by decision of the OECD Council on 23rd October 1962.

The purpose of the Centre is to bring together the knowledge and experience available in Member countries of both economic development and the formulation and execution of general policies of economic aid; to adapt such knowledge and experience to the actual needs of countries or regions in the process of development and to put the results at the disposal of the countries by appropriate means.

The Centre has a special and autonomous position within the OECD which enables it to enjoy scientific independence in the execution of its task. Nevertheless, the Centre can draw upon the experience and knowledge available in the OECD in the development field.

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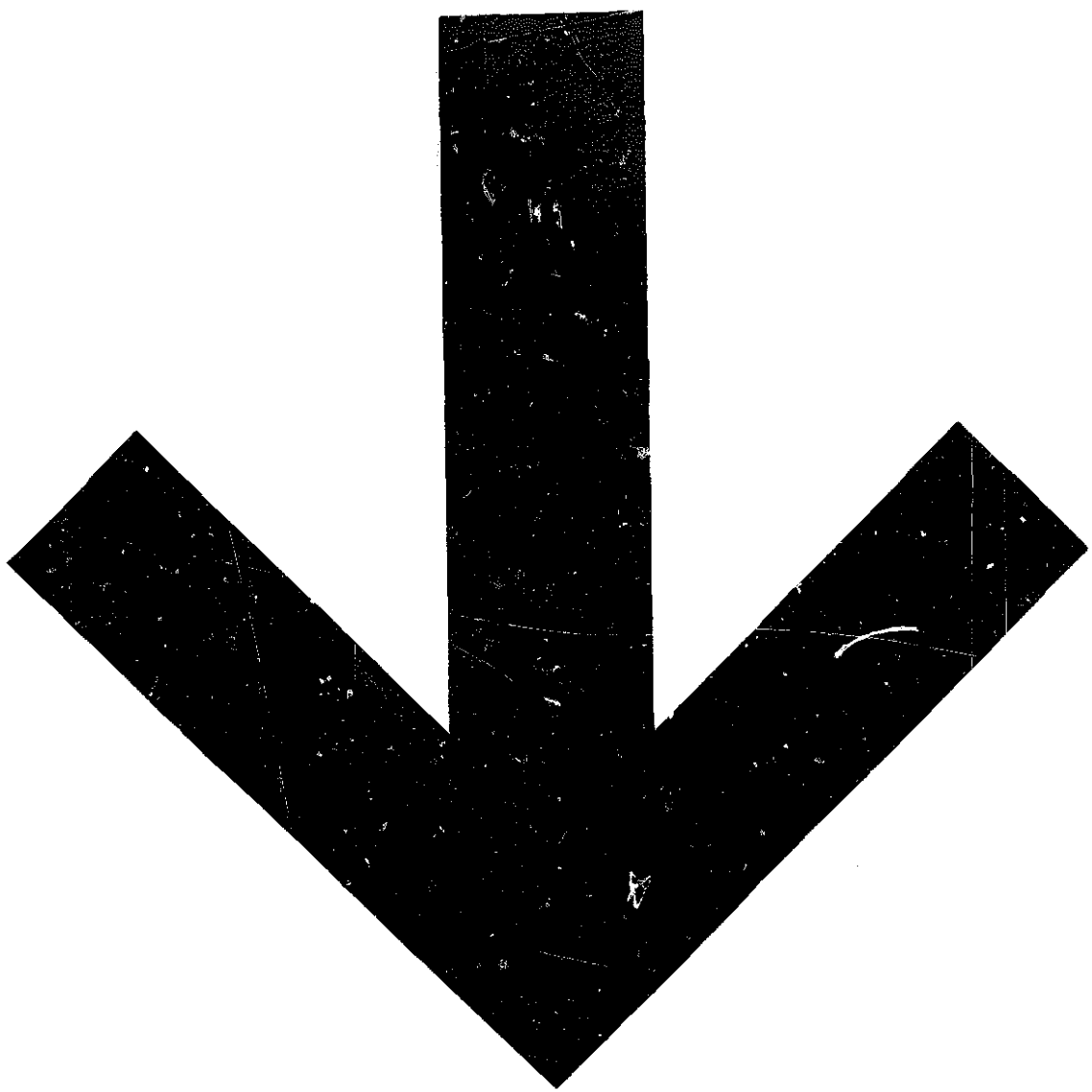

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P R E F A C E

by

Professor Louis Sabourin
President of the OECD Development Centre

Appropriate technology has in recent years been a subject of lively debates between those who saw in it a means of creating more employment and facilitating the mastery of technology and those who feared that it would indefinitely retard the technological take-off of the Third World and its ability to become a competitive partner in world trade.

The OECD Development Centre's positive stance in favour of appropriate technology is based on two principles. The first is that a technology can be considered as appropriate only in terms of the objectives of the project in the framework of which it is implemented. The second is that the development of appropriate technology in a country is intimately linked with national policies aimed at fostering a mastery of technology.

Nicolas Jéquier, who has actively contributed to the appropriate technology "movement" through his book Appropriate Technology: Problems and Promises published by the OECD Development Centre, has completed, with the assistance of Gérard Blanc, the present Appropriate Technology Directory which testifies to the diversity and richness of this "movement". The strength and credibility of this Directory lies in the fact that over two thirds of the organisations listed here are active in the developing countries.

I hope this book will be useful to the wide number of people who, for one reason or another, need to know more about the institutions associated with research and thinking on appropriate technology.

I N T R O D U C T I O N

Some books are the result of a carefully laid out plan, carried out with all the required resources in time and money. Others are developed haphazardly, almost by accident, with little editorial planning or evaluation of the amount of work that would be involved in their preparation. This Appropriate Technology Directory belongs to the second category. The idea for such a 'Who's Who', or rather, 'Who's Doing What' in the field of appropriate technology grew out of hundreds of requests for information addressed to the OECD Development Centre after the publication of a short article and a book on the subject in 1975 and 1976(1).

What started as ad hoc attempts to answer individual requests gradually turned into a major research effort in its own right. In trying to provide these answers, we soon discovered that the number of organisations involved in developing and diffusing 'appropriate', 'intermediate' or 'soft' technologies was considerably larger than anyone had suspected, and furthermore, that apart from perhaps ten or fifteen well-known institutions in this field (such as the London-based Intermediate Technology Development Group or Volunteers in Technical Assistance, in the United States), very little was known of the others. Moreover, the number of these other institutions involved in appropriate technology appeared to be growing extremely rapidly. Indeed, in the five years which followed the oil crisis of 1973, the appropriate technology movement seems to have become the equivalent of a growth industry, characterised by a high degree of entrepreneurship, considerable technological and organisational innovation, rapid increases in funding and the availability of venture capital with, at the same time, a high level of institutional instability.

If the idea of preparing a directory of the institutions involved in the appropriate technology field appeared timely, it raised two fundamental and still partly unanswered questions, namely, what is appropriate technology? and what are the criteria justifying the inclusion of any particular organisation in such a directory? In addition to these two important issues of substance, we were faced also with the usual problems that beset almost any new research project, namely, potential criticism that (a) 'the research has already been done by someone else', or (b) 'the project is impossible anyway'.

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(1) "Intermediate Technology: A New Approach to Development Problems", OECD Observer, May-June 1975, and Appropriate Technology - Problems and Promises by N. Jéquier, (ed.), OECD Development Centre, Paris, 1976.

A DEFINITION OF APPROPRIATE TECHNOLOGY

Defining what constitutes an 'appropriate' technology - and by corollary what constitutes an 'inappropriate' technology - is a highly controversial and ideologically-loaded issue, as the vast amount of articles and pamphlets on the subject will testify, and it will probably remain open for quite a few years. But while definitions are difficult, they are also necessary, particularly in the first pages of a directory. Let us begin therefore by saying that the expression 'appropriate technology' is considered here as a generic term, in the pharmaceutical sense of the word, that is it includes such expressions (or brand names), as 'intermediate technology', 'environmentally sound and appropriate technology', as well as some others which are somewhat less widely used.

By 'appropriate technology', we mean new types of technology which can be characterised by any one, or several, of the following features: low investment cost per workplace, low capital investment per unit of output, organisational simplicity, small-scale operations, high adaptability to particular social or cultural environments, sparing use of natural resources, and very low cost of final product. They may also be of an intermediate level of technological sophistication (i.e. somewhere between a traditional and a modern technology) or particularly easy to operate and maintain by unskilled people.

These criteria are not, of course, the only ones that can be taken into account, but they will, we hope, serve to give the reader a fair idea of what is generally understood as 'appropriate' technology, both in the literature and in the present Directory. Some of them are essentially technical, and therefore easily measurable (e.g. the investment cost per workplace or the output per year of a raw materials processing plant), while others are more a question of individual judgement and personal values, and therefore open to conflicting interpretations (this is the case, for instance, of a technology's appropriateness to a particular cultural or social environment). It is important to recognise that there always is, and probably always will be, a certain amount of subjectivity in defining what constitutes an appropriate technology. Furthermore, in most cases, a technology *per se* is neither appropriate nor inappropriate: its appropriateness can only be defined in relation to certain economic, social, cultural and political circumstances. Thus a set of technologies, for instance in the agricultural field (e.g. large-scale tractors and harvesters), which may appear perfectly appropriate in the eyes of the economic planner, may turn out to be rather inappropriate when considered from the viewpoint of the agricultural extension officer or the rural development specialist. In the same way, a highly sophisticated modern technology (e.g. remote sensing from space) can be highly appropriate for solving some basic problems of a very poor country.

INSTITUTIONAL COVERAGE OF THE DIRECTORY

One of the critical issues in preparing a Directory such as this one was to decide what sort of institutions were to be included in it. The initial idea was to cover what were thought to be the main innovators in this field, namely the specialised appropriate technology centres operating throughout the industrialised and the developing world, and which could easily be identified by their title or by their active participation in the rapidly growing community, or network, of appropriate technology specialists.

However, it soon became clear that the appropriate technology 'movement' extended far beyond this rather specialised and politically somewhat marginal community. Research on the subject suggested that some of the most active and successful promoters of appropriate technology were such established institutions as international development banks, agricultural research centres, foreign aid agencies, voluntary associations and private industrial firms. In order to be representative of the innovation efforts currently under way in the field of appropriate technology, the Directory clearly had to take these other actors into account.

Since any attempt to define what constitutes an appropriate technology is open to controversy, the decision to include or not to include any particular institution in the Directory inevitably raises difficulties. The criteria used in this Directory are necessarily somewhat subjective.

Our first criterion was whether the organisation in question considered itself to be involved in one way or another in the promotion, development or diffusion of appropriate technology. One indication of this was the willingness to respond in detail to the questionnaire sent out by the OECD Development Centre in preparation of this Directory(1). Except in a few particular cases, we did not attempt to refine this criterion further by assessing whether this involvement in appropriate technology was central or peripheral to the organisation's main goals, whether it was a well-established activity or an entirely new area of concern.

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(1) The full text of the questionnaire can be found on p. 21 at the end of this introduction.

The second criterion was that of public recognition: included in this Directory are a certain number of organisations which do not consider themselves as appropriate technology institutions in the wide sense, but which are increasingly recognised by leading thinkers and practitioners in this field as being, directly or indirectly, among the major agents of innovation in appropriate technology. This is the case, for instance, of the big international development banks, as well as of several inter-governmental organisations.

The third criterion of selection was the availability of information on the organisation concerned. In a few cases, the data provided in response to the OECD questionnaire and to further queries proved insufficient to prepare a meaningful entry(1). As a result, a small number of institutions had to be left out, although they are known to be active in the field.

One of the working hypotheses that developed in the course of the preparation of this Directory was that the field of appropriate technology was considerably larger than envisaged only five years ago. This hypothesis however leaves open one question, namely: Just how large is the field? Or, expressed in more quantitative terms: Do the activities of the organisations figuring in the present Directory represent 20 per cent or 80 per cent of world-wide activities in appropriate technology?

The question is a crucial one, and can perhaps best be approached with the help of an analogy to describe the appropriate technology 'movement'. By movement, we mean a set of institutions, individuals and networks interested in one way or another, centrally or peripherally, in any one aspect of appropriate technology. This movement can rather schematically be described as having the same structure as an onion, with its successive layers, which are contiguous yet distinct, and which become larger as one moves outwards from the core to the skin. At the centre of the 'onion' are the specialised appropriate technology organisations, which deal primarily with the promotion and diffusion of appropriate technology. These are, by most standards, fairly small institutions, but they have played a seminal role in promoting new ideas about technology. Moving from the centre to the periphery, one then finds traditional research institutions (and notably agricultural research centres), government agencies, international organisations, various types of community development organisations and voluntary associations, and, right at the periphery (or close to the outer skin of the onion), a large number of industrial firms, multinational or national. The further away an institution is from the core, the less important its involvement in appropriate technology tends to be, at least as a share of its overall activities.

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(1) Sometimes it proved possible to complement the data provided by information obtained from other sources, e.g., press articles, visits, personal information, etc.

Although it is somewhat meaningless to try to quantify the coverage of this Directory, some reasoned 'guesstimates' can be made. As far as the specialised appropriate technology institutions (or 'core' institutions) are concerned, our coverage measured in terms of number of organisations or overall scale of activities, is of the order of 80 to 90 per cent of the world total. For industry, the outermost layer of the appropriate technology onion, the coverage is probably under 10 per cent. As for the organisations which are structurally located between these two extremes, the coverage ranges anywhere between 30 per cent (community development organisations, voluntary associations) and 60 per cent (e.g. international agricultural research centres).

The major difficulty in trying to measure the size and scope of world-wide activities in the field of appropriate technology is that, for the time being at least, no one has a clear idea of how big the 'onion' really is. This is not because of lack of research on the subject - a growing number of sociologists and political scientists are in fact working on this at the moment - but rather because the concept of appropriate technology is still rather ill-defined. Further and perhaps this is still more important, a large number of institutions (and notably industrial firms) are involved de facto in the development and promotion of more appropriate types of technology without really knowing it; rather like Molière's Monsieur Jourdain who spoke in prose without knowing it. These organisations represent what might be called the unconscious appropriate technology sector.

This Directory is intended to serve as a tool, or more precisely as a rough map, in the exploration of this new world of appropriate technology. Its level of sophistication and comprehensiveness is somewhat similar to the maps of America and the world drawn up by the Dutch and German cartographers of the end of the 16th century. Seventy years after Columbus' discovery, the general contours of the New World had been broadly and fairly precisely sketched, but much of the interior remained blank, and several mistakes were dutifully copied without verification for almost two hundred years. At the same time, many of these geographers (Ortelius and Mercator for instance) suspected that there might also be yet other continents to discover, and on the basis of rather slim evidence, boldly added on to their world maps a vast 'Terra Australis' which in the event was only discovered two hundred years later, and formed in fact two separate continents, Australia and the Antarctic.

The appropriate technology map which this Directory is trying to draw has some of the same weaknesses as Ortelius' world map of 1587: its 'America' (i.e. the appropriate technology movement as it is today consciously recognised) is fairly accurate in its broad lines, but sketchy on details, while its 'Terra Australis', composed for the most part of industrial firms which are working on appropriate technology without really knowing it and without being recognised as true practitioners in this field, is still very much an unknown territory, of which the map gives only very partial glimpses. Identifying and evaluating what industrial firms are doing in this area is in itself a major task which will take several years to carry out. Indeed, it could be ventured that this may well be one of the

most important and fruitful areas of research for students of appropriate technology. It is also a critically important area for national decision-makers in science and technology (1).

PRIMARY SOURCES OF INFORMATION

In the same way that scientific researchers always draw heavily upon the work of their colleagues, professors and predecessors, this Directory owes a major debt to those institutions and individuals who, in the last few years, have been drawing up lists of addresses of organisations involved in this field, directories, information sheets, lists of contacts and other general sources of information. The most difficult directory to prepare, like the most difficult dictionary, is always the first one: others are slowly built up upon the work of the pioneers, and this Directory as a late-comer is no exception. In establishing the initial lists of contacts for this work, we have drawn very heavily on the information provided among others by TRANET's quarterly newsletter, the Intermediate Technology Development Group's directories of organisations in Africa, the Indian sub-continent and the Commonwealth, VITA's directory of appropriate technology organisations in Latin America, Integrative Design Associates' survey of organisations in the United States (sponsored by the National Science Foundation) the Appropriate Technology Sourcebook prepared by Volunteers in Asia, Brace Research Institute's Appropriate Technology Handbook, the Directory of Organisations Involved in Environmentally Sound and Appropriate Technology issued by the United Nations Environment Programme, as well as a number of magazine articles, notably in the New Scientist.

These earlier directories proved invaluable in identifying the organisations which were ultimately to figure in the present work and, in many cases, in complementing and eventually in helping to verify the information provided in response to the OECD questionnaire. As can be seen, the present Directory is but one in a growing list of similar publications, and the question which undoubtedly will come to the mind of many readers (or rather browsers, since a Directory is essentially a reference work) is: why yet another directory? The reason is fairly simple, and typical of the origins of most books: these earlier directories, in many cases, did not seem to provide the answers many people (including the authors of this work) were asking about appropriate technology. What we have attempted to do here is to present in a standardized and necessarily rather cursory way (the presentation of each organisation had to be kept to a maximum of one printed page) all the basic information about organisations involved in the promotion of appropriate technology, both in the industrialised and the developing countries.

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(1) Some very significant research on appropriate technology in industry is currently under way in Latin America - notably at the U.N. Economic Commission for Latin America.

METHODOLOGY

The first step in the preparation of this work was the establishment of a detailed list of organisations which were likely to be included in the Directory. This list, culled in large part from earlier directories on the same subject, was gradually enlarged as more information from other sources became available, and finally included some 680 organisations throughout the world.

The second step, carried out in parallel, consisted in drawing up a detailed questionnaire to be sent to each of these organisations. Questionnaires at first sight would seem to be a suitable instrument in a work of this kind. They do however raise two difficulties. The first is that they are difficult to design or, to put things rather differently, the quality of the answers is determined to a very large extent by the quality of the questions. But designing good questions can only be done once one has received the answers: if the latter are unsatisfactory, it is usually because the questions have been badly formulated. One obvious solution is to do a test run with a pilot questionnaire, which can then be corrected in the light of the first answers. This has the drawback of taking a considerable amount of time; the effort however is well worth it. But if a pilot questionnaire can help to identify some of the most glaring shortcomings, there are a number of more subtle weaknesses in a questionnaire which become evident only once all the answers have been received and collated. The other big difficulty with questionnaires is that someone has to fill them in .... . This may sound easier than it is, but it is well known that the usual fate of a questionnaire is the recipient's waste-paper basket.

In any event, the preparation of this Directory was rather successful as far as responses to the questionnaire are concerned: the overall response rate came out to 57.1 per cent (388 responses from a total of 680 organisations contacted). The following table summarizes the overall situation by giving the number of responses received and the number of questionnaires sent out (the latter figures are in brackets), broken down by geographic area and by type of organisation.

By response, we mean the receipt of a fully completed questionnaire (or in a few cases of a partly completed questionnaire complemented by other written information sufficient to prepare a valid entry in the Directory), or of a letter indicating that the organisation in question was not involved in any way in appropriate technology, had ceased its activities in this area, or was only contemplating carrying out such activities. In 309 out of 388 cases, the response was in the form of a fully completed questionnaire (292 cases) or partly completed (17 cases), while the remaining responses (79 cases) were in the form of negative letters.

RESPONSES TO OECD QUESTIONNAIRE - BREAKDOWN BY GEOGRAPHIC AREA AND TYPE OF ORGANISATION

	North America	Western Europe	Australia & Pacific	Socialist Countries	Latin America & Caribbean	Black & Southern Africa	North Africa Middle East	Indian sub-continent	Southeast and East Asia	World Total	Response Rate
AT Centres	24 (46)	22 (30)	5 (7)	-	4 (10)	7 (18)	-	7 (11)	5 (5)	74 (127)	58.3%
Universities	19 (28)	13 (19)	4 (6)	-	8 (13)	12 (23)	3 (6)	5 (8)	3 (4)	67 (107)	62.6%
Other research centres	11 (22)	15 (21)	2 (3)	0 (6)	14 (34)	13 (30)	11 (11)	9 (20)	11 (17)	86 (164)	52.4%
Industry	8 (15)	8 (20)	2 (3)	-	3 (14)	4 (9)	1 (1)	5 (7)	5 (7)	36 (76)	47.4%
Government agencies	10 (11)	8 (13)	1	0 (2)	8 (19)	15 (32)	5 (5)	6 (10)	1 (1)	54 (96)	56.3%
International organisations	2 (3)	3 (4)	0 (3)	-	4 (6)	16 (25)	-	1 (3)	3 (4)	29 (48)	60.4%
Financial institutions	4 (10)	1 (3)	-	-	8 (12)	2 (3)	-	0 (1)	2 (3)	17 (32)	53.1%
Other non-governmental organisations	7 (8)	8 (12)	2 (2)	-	4 (4)	2 (2)	-	1 (1)	1 (1)	25 (30)	83.3%
World Total	85 (143)	78 (122)	16 (27)	0 (8)	53 (112)	71 (142)	20 (23)	34 (61)	31 (42)	388 (680)	57.1%
Response rate	59.4%	63.9%	59.2%	0%	47.3%	50.0%	86.9%	55.7%	73.8%	57.1%	-

Notes : The figures in brackets indicate the number of questionnaires sent out. The figures immediately above indicate the number of responses.

If the breakdown by geographic area given in this Table was easy to establish the breakdown by type of institution was somewhat more complex, particularly in the case of respondents who did not fill in a questionnaire. As for those who did, some ambiguities remain: should a traditional research centre working for the most part on appropriate technology be classified as an AT centre or come under the heading of other research centres? Does a government agency working primarily on the promotion of industrial development belong to the industry category or the government category? Such questions of judgement are often difficult to answer, and although all due care has been taken it must be admitted that the breakdown of organisations by category given in this Table is subject to a margin of error of the order of ± 10 per cent. With one significant exception - that of the socialist countries - the differences in response rate to the questionnaire do not appear to be particularly significant, whether they are measured by category of institution or by geographic area.

The case of the socialist countries is rather particular. In order to obtain a world-wide coverage for this Directory, it seemed sensible to try to include some institutions from that part of the world. This appeared particularly important in the case of China, which is considered by many specialists as one of the leading countries in the world in the field of appropriate technology, if not in name, at least in practice. As for the countries of Eastern Europe and the Soviet Union, it appeared likely that several of their research institutions were involved in the promotion of new types of technology which in the Western world might be classified as appropriate technology.

Because of the highly centralised nature of the research system in these countries, the central role of government, the difficulty of communication, and the security problems involved in contacting individual research centres or industrial firms, the decision was taken to contact in each country the central decision-making institution dealing with science and technology, and within each of these institutions, either the senior decision-maker or another top official with whom we had had previous professional and personal contacts(1). As can be seen from the response rates presented in the Table, the results were disappointing to say the least.

Of the 309 completed or partly completed questionnaires received in response to our inquiry, a certain number (29) had to be discarded, and the organisations which filled them in were not included in the Directory. Among the rejects was a very small number of organisations which should probably never have figured in the original mailing list in the first place, but which got onto it either through an oversight on our part or on the basis of incorrect information. The other

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(1) We would like to acknowledge here the major support given to the China side of this undertaking by Dr. Ola Svensson (Swedish Embassy in Peking), Dr. Manfredo Macioti (Commission of the European Communities) and Dr. Jon Sigurdson (Research Policy Program, University of Lund).

institutions which were left out of the Directory despite having filled in the questionnaire were those which, to the best of our judgement, appeared not to be involved, in the promotion and diffusion of appropriate technology in any direct way. This was the case, among others, of several educational institutions, of a few organisations devoted to the promotion of small-scale industries, and of the national research council in three countries.

HOW TO USE THE DIRECTORY

For reasons of convenience, and in order to fit into the standard format of reference works of this type, the information relating to each of the organisations listed in the following pages has been normalised and kept as homogeneous as possible.

Code Letters and Digits

At the top left of each page, the reader will find a code consisting of three letters and three digits. The three letters refer to the country (e.g. AUL for Australia, IND for India or USA for the United States) and the three digits indicate the rank assigned to each organisation within any given country. Thus the code USA 010 for instance refers to an institution which can be found at the beginning of the entries dealing with the United States, while the code USA 950 refers to an organisation which is at the end of the alphabetical list for that country. This code of three letters and three digits is important in using the index at the end of the book: subjects and names are referenced not by page number, but by the code of the centre.

Country Name

Each organisation is listed under a specific country, the name of which appears at the top right of each page. The country names used here are those of geography and common sense, and do not imply any judgement as to political status or territorial extension. With one exception (the United Nations Childrens' Fund which can be found in the entries for Kenya, where it has its main demonstration centre for village technology), all international organisations are listed under the country in which their main headquarters are located.

Name of Organisation

The full title of each organisation is always given here in English and, where appropriate, is followed by a subtitle or, as the case may be, by the name in the original language if other than English. Within each country, the organisations

are presented alphabetically according to their English title, and in the body of the text of presentation, the reader will find the official abbreviation of the organisation's name, if any. In case of difficulty in finding any particular institution, the reader is invited to use the Index, which gives the full English and foreign titles of each organisation, their English and foreign abbreviation, their subtitle and, where there is one, their common name (e.g. 'World Bank' for the International Bank for Reconstruction and Development).

Name of Director, Address and Telephone

When no name of director has been given, it is generally because the post was vacant at the time this book went to press. For certain very large organisations we have indicated an 'AT contact', i.e., the person who can be contacted if further information is required on the organisation's activities in appropriate technology. Addresses are given by street and post box number where relevant. When no telephone number appears, it is most generally because the organisation does not have a telephone.

Main Activities and Main Fields of Concentration

The item 'main activities' is based on the response to question 15 of the questionnaire (a copy of which can be found at the end of this Introduction), and is intended to give a brief summary of the type of activities of the organisation. This can help to show, for instance, whether an institution is working primarily on research and development, on the extension of new technologies, on commercial production or on information networking. For reasons of space, the number of items which figure under this heading had to be kept short, and the list should therefore not be considered as exhaustive. Where possible, we have indicated the approximate breakdown of these activities by category. This breakdown is given as a percentage of total activities, measured in terms of number of man-months of work per year, or in some cases, in terms of budgetary allocations. When percentages are given, they do not necessarily add up to 100 per cent. This is either because we have shown only a selection of main activities, or because some percentages are too small to be really meaningful.

The 'main fields of concentration' refer to item 16 of the questionnaire. This was the longest question of all (112 different boxes could be checked), the most difficult to formulate and, as responses were to show, the one which was probably the least satisfactory, both because of its length and its intrinsic importance. Although some errors undoubtedly remain in this presentation of the main fields of concentration, it should be noted that all the information given in this Directory was submitted for verification to each of the organisations covered here, except for a very small number of last-minute entries.

Climatic/Geographic Focus

This item, based on question 17, should be considered as essentially indicative. One of the central ideas of the appropriate technology proponents is to adapt technology to, or develop new technologies for, specific local conditions. What we have tried to do here is to show the extent to which certain organisations are developing technologies with these parameters of geography and climate in mind.

Text of Presentation

For each organisation, the main body of the text of presentation gives details about their origin, sources of funding, institutional affiliation and main objectives. This is followed by a few illustrations of the types of innovations in appropriate technology they have sought to promote and, wherever possible, by some indications about future plans.

The last part of the entry presents a few more specific indications about budget, staff, scale of activities in appropriate technology, channels of technology diffusion, obstacles to technology diffusion. Unless otherwise specified, all these data refer to 1977. Data for other years have been given only insofar as they differ substantially (i.e. $\pm$ 30 per cent) from those of 1977. The scale of activities in appropriate technology is usually a rough estimate, and should be read in conjunction with the data on staff and budget.

CONCLUSION AND ACKNOWLEDGEMENTS

The high response rate to our questionnaire was a most welcome and encouraging surprise. Another and more overwhelming surprise was the amount of data generated by this exercise. Our original intention was to present these data in the form of general tables and charts, to serve as an introduction to the Directory. As things turned out, this was a considerably larger undertaking than expected, which in the best of cases would have retarded the publication of the present work by several months.

The data are presently at the processing stage and will be published as a separate work, which will hopefully help to answer some of the unsolved questions concerning appropriate technology throughout the world today. What, for instance, is the overall size of research and development activity in this field? How many people are working today on the development of more appropriate forms of technology? What are the main communications networks and technology transfer channels? Who are the leaders and who are the followers? What share of the world's overall activities in appropriate technology are devoted to agricultural

machinery? To public health? Or to the scaling down of industrial processes? For the moment, no one really knows, but the data are here, waiting to be exploited.

In conclusion we would like to express our deepest gratitude to all those individuals and institutions which have devoted much time to filling in our rather lengthy questionnaire, and without whose work this Directory would have remained a mere intention.

QUESTIONNAIRE FOR OECD DIRECTORY OF APPROPRIATE TECHNOLOGY CENTRES

1. Name of Centre :
(Include English translation if in foreign language and official abbreviation if you have one.)

2. Address :
(And post box if any.)

3. Telephone number:

4. Name of Director/Head of Centre

5. a. Date founded:
b. Date of beginning of activities in AT:

6. Total number of people employed in 1976 : _____ in 1977; (mid-year) _____
6a. of which full time : _____ _____
6b. of which part time : _____ _____
6c. breakdown between professional and non-professional staff : _____ _____
6d. Total man/months of work on AT in 1976 : _____ in 1977: _____

7. Approximate budget in 1976 : *(if in local currency, give approximate equivalent in US$)*

1975	1976	1977 (estimate)

8. Institutional affiliation of your centre: *(put X in relevant box or boxes)*

a. Governmental centre [ ]
b. Linked with public agency [ ]
c. Part of the university [ ]
d. Affiliated with university [ ]
e. Affiliated with church or missionary organisation [ ]
f. Independent non-profit AT centre [ ]
g. Independent profit-oriented AT centre [ ]
h. Independent consulting firm [ ]
i. Affiliated with foreign aid agency [ ]
j. Linked with or part of industrial firm [ ]
k. Voluntary help organisation [ ]
l. Foundation: operating [ ]
m. Foundation: grant making [ ]
n. International governmental organisation [ ]
p. International non-governmental organisation [ ]
q. other (specify) [ ] *(Please give further details below if necessary)*

9. Name of institution with which you are affiliated *(if any)* _____

10. If your centre has set up branches or affiliates, either in home country or abroad, please indicate names, addresses and type of relationship.

11. If your centre is itself a branch or an affiliate of another centre, at home or abroad, give name and address of parent centre.

12. Please give in 10-15 lines a brief historical sketch of the origins of your centre and of your plans for the future.

13. Which are the AT centres, foreign or local, with which you have the closest working relationships *(List by order of importance.)*

a.

b.

c.

d.

e.

f. If you have no direct contacts with other AT centres, please check this box. [ ]

14. Sources of funding of your centre

(If relevant, put an X in the box and, in the right hand column, give approximate percentage of budget accounted for by this source of funds.)

		1976	1977
a. government	[ ]	____ %	____ %
b. foundations	[ ]	____ %	____ %
c. donations	[ ]	____ %	____ %
d. industry	[ ]	____ %	____ %
e. university	[ ]	____ %	____ %
f. foreign aid programme	[ ]	____ %	____ %
g. consulting fees	[ ]	____ %	____ %
h. church or missionary organisation	[ ]	____ %	____ %
i. commercial or industrial activities	[ ]	____ %	____ %
j. banks or other financial institutions	[ ]	____ %	____ %
k. membership fees	[ ]	____ %	____ %
l. subscriptions for publications	[ ]	____ %	____ %
m. other (specify)	[ ]	____ %	____ %

Note If you wish this information to be kept confidential, please put an X in box [ ]

15. Main type of activities in AT at your centre

(Put X in appropriate boxes and give approximate share of total budget and of total man hours of work per year devoted to each type of activity.)

		% of budget	% of man-hours	comments (if any)
a. information and documentation	[ ]	____ %	____ %	____
b. occasional publications	[ ]	____ %	____ %	____
c. regular publications	[ ]	____ %	____ %	____
d. technology extention services	[ ]	____ %	____ %	____
e. promotion of local technological traditions	[ ]	____ %	____ %	____
f. research and development activities	[ ]	____ %	____ %	____
g. testing and evaluation of new equipment	[ ]	____ %	____ %	____
h. pilot production	[ ]	____ %	____ %	____
i. commercial production	[ ]	____ %	____ %	____
j. policy analysis and economic studies	[ ]	____ %	____ %	____
k. technical feasibility studies	[ ]	____ %	____ %	____
l. education and training of personnel	[ ]	____ %	____ %	____
m. technology diffusion	[ ]	____ %	____ %	____
n. influencing governmental or political decision-making	[ ]	____ %	____ %	____
p. financing AT activities of other institutions	[ ]	____ %	____ %	____
q. other (specify)	[ ]	____ %	____ %	____

16. Fields of concentration of your work in AT
(Put an X in relevant box or boxes : left box = important activity; right box = occasional activity)

1. Energy
   a) energy savings [ ] [ ]
   b) solar [ ] [ ]
   c) wind [ ] [ ]
   d) water [ ] [ ]
   e) methane [ ] [ ]
   f) muscular [ ] [ ]
   g) other (specify) [ ] [ ]

2. Public Health [ ] [ ]
   a) hygene, disease prevention [ ] [ ]
   b) birth control [ ] [ ]
   c) training of medical personnel [ ] [ ]
   d) health care equipment [ ] [ ]
   e) local medical traditions [ ] [ ]
   f) nutrition [ ] [ ]
   g) other (specify) [ ] [ ]

3. Water
   a) water resources [ ] [ ]
   b) irrigation [ ] [ ]
   c) waste waters [ ] [ ]
   d) other (specify) [ ] [ ]

4. Primary sector: agriculture, forestry fishing
   a) crop processing and conservation [ ] [ ]
   b) agricultural tools [ ] [ ]
   c) agricultural machinery [ ] [ ]
   d) cultivation techniques [ ] [ ]
   e) new crops and plants [ ] [ ]
   f) soil protection [ ] [ ]
   g) hydroponics [ ] [ ]
   h) aquaculture [ ] [ ]
   i) husbandry [ ] [ ]
   j) fishing [ ] [ ]
   k) forestry [ ] [ ]
   l) pest control [ ] [ ]
   m) other (specify) [ ] [ ]

5. Industry
   a) handicrafts [ ] [ ]
   b) small industry promotion [ ] [ ]
   c) reduction of scale of industrial processes [ ] [ ]
   d) community goods [ ] [ ]
   e) textile industry [ ] [ ]
   f) small metal-working [ ] [ ]
   g) other (specify) [ ] [ ]

6. Infrastructures and Services
   a) means of transportation [ ] [ ]
   b) roads [ ] [ ]
   c) telecommunications [ ] [ ]
   d) credit and lending systems [ ] [ ]
   e) land reform [ ] [ ]
   f) alternative institutions [ ] [ ]
   g) other (specify) [ ] [ ]

7. Education
   a) school system organisation [ ] [ ]
   b) training of adults [ ] [ ]
   c) pedagogy, school equipment [ ] [ ]
   d) other (specify) [ ] [ ]

8. Housing
   a) building materials [ ] [ ]
   b) architecture [ ] [ ]
   c) domestic waste disposal [ ] [ ]
   d) urbanism [ ] [ ]
   e) other (specify) [ ] [ ]

9. Environmental problems (specify) [ ] [ ]

10. Other activities (specify) [ ] [ ]

. . . . . .

. . . . . .

. . . . . .

17. What are the geographical regions to which your technologies are the most appropriate?
(Put X in relevant box or boxes.)

a) tropical rain forests [ ]
b) tropical savannas [ ]
c) arid and semi-arid regions [ ]
d) temperate regions [ ]
e) coastal regions [ ]
f) arctic or cold regions [ ]
g) mountains [ ]
h) no particular geographical distinction [ ]
i) other (specify) [ ]

_____

_____

18. What is the diffusion of the appropriate technologies you have developed or studied
(Put X in relevant box or boxes.)

a) only within the centre [ ]
b) local diffusion [ ]
c) regional diffusion [ ]
d) national diffusion [ ]
e) international diffusion [ ]
f) other (specify) [ ]

_____

_____

19. What are the framework and means of diffusion of your technology?
(Put X in relevant box or boxes.)

	Major means of diffusion	Secondary means of diffusion	Comments (if any)
a) only by your own	[ ]	[ ]	. . . . .
b) advertisement, mass media	[ ]	[ ]	. . . . .
c) government agencies	[ ]	[ ]	. . . . .
d) international agencies	[ ]	[ ]	. . . . .
e) international aid programmes	[ ]	[ ]	. . . . .
f) banks, private credit agencies	[ ]	[ ]	. . . . .
g) schools, universities	[ ]	[ ]	. . . . .
h) big industrial firms	[ ]	[ ]	. . . . .
i) no diffusion until now	[ ]	[ ]	. . . . .
j) private voluntary foreign assistance agencies	[ ]	[ ]	. . . . .
k) Other means of diffusion (specify)	[ ]	[ ]	. . . . .

. . . . . .

. . . . . .

20. What are the major obstacles you have met when diffusing your technology?

a) attitude of political leaders [ ]
b) bureaucracy [ ]
c) inadequate legislation [ ]
d) cultural and social unacceptability [ ]
e) reluctance to accept innovation [ ]
f) lack of competitiveness relative to traditional technologies [ ]
g) lack of competitiveness relative to modern technologies [ ]
h) lack of funds
i) lack of reliability [ ]
j) lack of technical support [ ]
k) maintenance difficulties [ ]
l) other (specify [ ]

21. Some appropriate technologies have a very low cost and need no large spending from the user. Some others require preliminary investments which the average users (individuals or communities) cannot afford directly and for which they have to find sources of financing

i) What were these sources of financing for the diffusion of technologies you have developed?

a) user's own sources of funds [ ]
b) local private credit system [ ]
c) local public credit system [ ]
d) government loans [ ]
e) international banks [ ]
f) international development agencies [ ]
g) international development programmes [ ]
h) self help technologies requiring no investment [ ]
i) other (specify) [ ]

ii) Did you help your customers (or your potential customers) in finding their sources of financing?

Yes [ ] No [ ]

iii) What is the percentage of cases where your appropriate technologies could not be diffused because the potential customers did not manage to find a proper source of financing?

. . . . . %

22. Please give a brief description (maximum 5 lines per item) of the various appropriate technologies (hardware and software) you have developed and diffused or on which you are currently working. If relevant, give number of units built, number of units equipped and date of installation, and number of units presently working *(use extra sheets of necessary)*.

a.

b.

c.

d.

e.

f.

g.

23. Please list all publications of your Centre (if any) and publications on AT by staff associated with your centre. (Please send these publications to OECD for inclusion in forthcoming annotated bibliography on AT.

LIST OF ORGANISATIONS

APPROPRIATE TECHNOLOGY AND COMMUNITY ENVIRONMENT

President: Dr. J. R. E. Waddell

Box 81, Sydney University Union
(Wentworth Building)
Sydney, New South Wales 2006

Main activities

Regular publications (30%)
Testing and evaluation of new equipment (30%)
Research and development (20%)
Information and documentation (10%)

Main fields of concentration

Energy
Waste waters
Crop processing and new crops
Aquaculture
Fishing
Housing and building materials

Climatic/Geographic focus

None in particular

Appropriate Technology and Community Environment (APACE) is a voluntary organisation, drawing its support and expertise mainly from university staff. Projects underway include the design of a housing complex, to be powered by sun, wind and methane biogas; the design and construction of a cassava chipper and cassava pelleting machine; the production of alcohol from cassava; design of a vertical axis windmill; design of a simple DC/AC inverter; design of ice-making and coolroom systems for small-scale fishing project; analysis of cassava types in the Solomon Islands; the testing of water-pumping machine and micro-hydro-electric system, and the investigation of soap-making from hardwood ash. APACE keeps a register of consultant experts, provides free advice, and plans in the future to publish manuals and designs.

Staff	-	Not specified
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through international aid programmes and private voluntary foreign assistance agencies
Obstacles to technology diffusion	-	Bureaucracy, lack of funds
Publications	-	A newspaper (published three times a year).

APPROPRIATE TECHNOLOGY DEVELOPMENT GROUP

Director: Dr. Gordon Innes

20 Holdsworth Street
Woollahra, New South Wales 2050
Tel : 32 97 05

Main activities

Research and development (50%)
Technology extension services
Technical feasibility studies
Pilot and commercial production
Policy analysis and economic studies

Main fields of concentration

Energy
Credit and lending system
Water
Nutrition

Climatic/Geographic focus

South Pacific region

The Appropriate Technology Development Group (ATDG) was set up in 1976 as a small consulting group to work among developing nations, and in particular in the South Pacific and South East Asian regions.

ATDG provides its members' expertise to assist in carrying out AT projects. It has already participated in the development of a vertical axis wind turbine, small-scale sugar plants, biogas plants, and simple appliances for disabled people. Extensive work has been carried out in Papua New Guinea and the South Pacific nations to design new credit and investment procedures for small businesses.

Staff	-	5 people (1 full-time) of which all are professionals
Budget	-	$9 500 (1976)
Scale of activities in AT	-	30 man-months
Channels of technology diffusion	-	Through the Group's own activities
Obstacles to technology diffusion	-	Not specified
Publications	-	Papers on AT and development.

ARCHITECTURAL SCIENCE UNIT

Director: Steven V. Szokolay

University of Queensland
St. Lucia, Queensland 4067
Tel : (07) 377 38 78 or 377 22 57

Main activities

Research and development (50%)
Education and training (20%)
Technical feasibility studies (16%)
Testing and evaluation of new equipment (6%)

Main fields of concentration

Solar energy
Energy savings
Building materials
Architecture

Climatic/Geographic focus

None in particular

The Architectural Science Unit (ASU) of the University of Queensland was set up in 1974 to promote graduate and post-graduate research and project work in addition to its undergraduate teaching. It is financed mainly by the University and industry. Several projects have been carried out for various client bodies on a voluntary basis.

Projects undertaken by students and staff members include an experimental solar air conditioned house, the planning of a new residential suburb (4000 houses to be built over the next 5 - 7 years, each equipped with rationalised thermal design and a solar water heater), the planning of an "autonomous" village as a satellite to the city of Darwin for the Northern Territory Environment Council, and the planning of a suburban "energy estate" for 20 families in Brisbane for a private estate developer.

ASU has also conducted a survey of housing standards in tropical Australia and published several reports about solar cooling, thermal controls in Northern Australia, a domestic scale water recycling unit, solar energy and environmental design.

Staff	-	11 people (2 full-time) of which 3 are professionals
Budget	-	$112,000
Scale of activities in AT	-	51 man-months
Channels of technology diffusion	-	Through the centre's own efforts
Obstacles to technology diffusion	-	Lack of competitiveness relative to traditional technology, lack of funds
Publications	-	Technical papers and reports.

AUSTRALIAN INNOVATION CORPORATION

General Manager: J. H. Seidler

150 Queen Street
Melbourne, Victoria 3000
Tel : (03) 67 77 96

Main activities

Promotion of local technological traditions (70%)
Technology extension services (15%)

Main fields of concentration

Energy
Small industry promotion
Building materials
Small metal working industries

Climatic/Geographic focus

None in particular

The Australian Innovation Corporation was established in 1970 in order to assist in the commercialisation of Australian inventions and provide guidance support to innovation. It later expanded to provide research and development, technology transfer and licensing services to clients in any country.

Since 1976, the Corporation has been interested in helping identify, develop and implement AT projects particularly in the South-East Asia region. These AT activities are very recent and have been primarily directed to helping others identify and develop appropriate technologies.

Staff, Budget, Scale of activities in AT	-	Not available (integrated with other type of work)
Channels of technology diffusion	-	Through international aid programmes and licensing agreements
Obstacles to technology diffusion	-	Not relevant (insufficient experience to date)
Publications	-	Series of notes on AT published in the magazine "Innovation Newsletter".

INTERMEDIATE TECHNICAL DEVELOPMENT GROUP

Hon. Secretary: M. Ashworth

c/o Community Aid Abroad
75 Brunswick Street,
Fitzroy, Victoria 3065
Tel : (03) 419 70 55

Main activities

Information and documentation
Promotion of local technological traditions
Technical feasibility studies
Training of adults

Main fields of concentration

Energy
Agricultural tools and machinery
Small industry promotion

Climatic/Geographic focus

None in particular

In 1969 a small group of professional engineers established an Intermediate Technical Development Group (ITDG - not to be confused with the London-based ITDG) in Australia to work within the framework of Community Aid Abroad (CAA), an Australian voluntary agency which assists self-help projects in Asia, Africa and the Pacific.

The group does not offer grants nor provide equipment. It only provides advice and information, but the wide range of technical people available for voluntary assistance covers nearly any field of engineering. Problems examined so far include raw material supplies for electrolytic condensers, the application of hydraulic rams for cheap irrigation and water supply, low-cost fencing, low-cost metal working workshops, pumps, low-cost bridge construction, simple hillside ploughs, leather harnesses for oxen and methods of preserving food in remote and hot areas.

Staff	-	8 - 10 professionals, all part-time
Budget	-	Nil
Scale of activities in AT	-	Approximately 6 man-months
Channels of technology diffusion	-	Through the Group's own efforts, international aid programmes and private voluntary foreign assistance agencies
Obstacles to technology diffusion	-	None to date
Publications	-	List can be supplied on request.

INTERNATIONAL SOLAR ENERGY SOCIETY

Director: F. G. Hogg

National Science Centre
191 Royal Parade
P.O. Box 52
Parkville, Victoria 3052

Main activities

Publications
Information and documentation

Main fields of concentration

Solar energy

Climatic/Geographic focus

None in particular

The International Solar Energy Society (ISES) is an international non-governmental association founded in Arizona in 1954 as the Association for Applied Solar Energy. The name was later changed and the headquarters transferred to the Melbourne region in 1970.

Sections of the Society have been established in Australia, New Zealand, the U.S., the United Kingdom, Italy, Japan, Belgium, Holland, Ireland, India, South Africa, West Germany and the Scandinavian countries. The headquarters' activities are mainly the operating of the society, the coordination of national sections, the publication of several magazines on solar energy and the organisation of international conferences every two years.

Staff	-	4 people (all part-time), 1 of whom is a professional. Number of members of the ISES is currently 7,550
Budget	-	$90,000
Scale of activities in AT	-	10 man-months
Channels of technology diffusion	-	Through its own activities
Obstacles to technology diffusion	-	Reluctance to accept innovation; lack of competitiveness; lack of funds
Publications	-	"Solar energy" (monthly); "Sunworld" (quarterly); "ISES news" (quarterly newsletter for members).

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
DEVELOPMENT AND TRANSFER OF TECHNOLOGY SECTION

Director General: Dr. A. Khene
Head of Section: Mr. G. S. Gouri

Lerchenfeldstrasse 1
P.O. Box 707
A-1011 Vienna
Tel : 4 35 00

Main activities

Information, documentation and publications
Technology extension and diffusion
Pilot and commercial production
Policy analysis and economic studies
Influencing political and governmental decision-making

Main fields of concentration

Industry
Agricultural tools and machinery
Energy
Housing
Transportation
Irrigation

Climatic/Geographic focus

None in particular

The United Nations Industrial Development Organization (UNIDO) was established in 1967 within the United Nations system to promote and accelerate the industrialisation of the developing countries. It is financed for the most part by member governments, and receives some money from the regular U.N. budget.

Its Development and Transfer of Technology Section (DTTS) came into being in 1976. Its aims are to help governments formulate relevant policy measures in the field of technology, promote the development of indigenous technological capabilities in member countries, encourage the most appropriate choices of technology, stimulate the flow of information on technology in general and AT in particular, and provide technological advisory services.

UNIDO has published a wide range of studies relating to AT and technology policies and recently organised the International Forum on Appropriate Industrial Technology (New Delhi) and two meetings of the Consultative Group on Appropriate Industrial Technology.

Staff	-	15 people (all full-time), 9 of whom are professionals (staff of DTTS only)
Budget	-	$1 million
Scale of activities in AT	-	180 man-months
Channels of technology diffusion	-	Through governmental and international agencies, international aid programmes, universities and industrial firms
Obstacles to technology diffusion	-	Lack of funds
Publications	-	Reports, conference documents and series on development and technology transfer.

AGRICULTURAL DEVELOPMENT AGENCIES IN BANGLADESH

Director: R. W. Timm

79, Road 11A
Dhanmandi
P.O. Box 5045
Dacca 9
Tel : 31 39 23

Main activities

Publications (60%)
Information and documentation
Forums and workshops

Main fields of concentration

Agriculture (all aspects)
Energy savings and bio-gas
Irrigation
Land reform
Handicrafts

Climatic/Geographic focus

Tropical lowlands

Agricultural Development Agencies in Bangladesh (ADAB) was launched in 1974 to continue the work of the government office which was dealing with voluntary agencies in Bangladesh. It is financed from membership fees, foreign aid agencies and other organisations.

ADAB provides a link between voluntary agencies working on all aspects of agricultural development in Bangladesh. Most of its work is devoted to its monthly magazine which provides a survey of all AT activities in the country. If offers consulting services to bilateral and multilateral agencies, and organises occasional workshops and seminars on AT.

Staff	-	7 people (all on a full-time basis) 4 of whom are professionals
Budget	-	$30 000
Scale of activities in AT	-	77 man-months
Channels of technology diffusion	-	Through publications, education, institutions and private voluntary foreign assistance agencies
Obstacles to technology diffusion	-	Bureaucracy, social and cultural unacceptability, maintenance difficulties, priority given to modern technologies
Publications	-	ADAB News (monthly), Bengali quarterly, occasional papers, technical reports.

APPROPRIATE AGRICULTURAL TECHNOLOGY CELL

Director: M. A. K. M. Moniruzzaman

130-B, Road No.1
Dhanmondi Residential Area
Dacca 5
Tel : 31 50 01

Main activities

Information and documentation
Financing AT activities of other institutions
Technical feasibility studies

Main fields of concentration

Agriculture and forestry
Energy
Water resources and irrigation
Housing
Small industry

Climatic/Geographic focus

None in particular

The Appropriate Agricultural Technology Cell (AATC) was established in 1973 within the Bangladesh Agricultural Research Council to promote the more effective use of indigenous resources (including labour) in order to increase the country's food production. It is primarily an AT information and coordination centre: research and field work is carried out by other institutions and individuals.

Technologies which have been tested, evaluated or imported by the AATC include bullock-driven seed drills, small diesel engines, steam generators powered by rice hulls for rice milling, rodent control, agricultural implements (locally designed or supplied by the International Rice Research Institute), hand-operated seed spreaders, jute-reinforced plastic bins for food storage and pedal-operated grain mills. Information is being collected on composting plants, Chinese agricultural implements and technology, pheromones for pest control, storage of sweet potatoes, pineapple fibre, bee-keeping and water hyacinth control.

Staff	-	10 people
Budget	-	$36,000 ($18,000 in 1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies, international agencies, educational institutions, industrial firms and the mass media
Obstacles to technology diffusion	-	Reluctance to accept innovation, lack of competitiveness, lack of reliability and technical support, maintenance difficulties
Publications	-	Annual report, monograph series and information bulletins.

PEOPLE'S HEALTH CENTRE
Gonoshastya Kendra

Projects Coordinator: Dr. Zafrullah Chowdhury

P.O. Navarhat
Via Dhamrai
Dacca District

Main activities

Technology extension and diffusion (60%)
Education and training (25%)
Pilot and commercial production (5%)

Main fields of concentration

All fields of public health
Small industry
Agriculture
Fishing and pisciculture
Housing
AT software

Climatic/Geographic focus

Rural areas

The People's Health Centre was originally established in 1971 as a field hospital during the war of liberation and made use of paramedics in the absence of trained nurses. It later developed its basic health care activities in the rural areas, and expanded into agriculture, vocational training and cottage industries. The Centre, which is a non-profit voluntary organisation, is currently financed for the most part by foreign aid programmes and by insurance and service fees.

In addition to its basic training in primary health care, the Centre has begun to manufacture low-cost drugs under their generic name, has organised a credit union for landless and marginal farmers, promoted family planning programmes and developed on-the-job vocational training through the establishment of a small shoe factory, a metal-working shop, a wood-working shop and a canteen. It has also created a school for the children of landless labourers. The Centre's basic health care system now reaches over 100,000 people, and is financed to the tune of 44% by insurance premiums from subscribers.

Staff	- 170 people, 50 of whom are volunteer trainees
Budget	- $120,000 ($90,000 in 1976)
Scale of activities in AT	- 2040 man-months
Channels of technology diffusion	- Through the Centre's own efforts (extension services, training, lectures, etc.), and through international aid agencies
Obstacles to technology diffusion	- Attitude of political leaders, bureaucracy, inadequate legislation, cultural and social unacceptability and reluctance to accept innovation
Publications	- Progress reports and 20 articles and technical reports.

APPROPRIATE TECHNOLOGY RESOURCES SERVICE

Director: Rev. G. Andrew Hatch

P.O. Box 616
Bridgetown
Tel : 7 26 81, 7 26 83

Main activities

Information and documentation
Technology diffusion

Main fields of concentration

Energy (solar, wind and savings)
Handicrafts
Agriculture
Small industry promotion
Building materials

Climatic/Geographic focus

None in particular

Christian Action for Development in the Caribbean (CADEC) is an ecumenical programme for social and economic development of the Caribbean, started in 1976/77 by the Caribbean Conference of Churches (CCC). It is financed mostly by foundations and acts as a contact between local development needs and resources (people and funds) within and outside the Caribbean. It helps to identify financial assistance for projects in the area.

The aim of its Appropriate Technology Resources Service (ATRS) programme is to collect material on AT which is placed in CADEC's documentation centre in Barbados, disseminate information about AT and promote the use of AT in the various projects funded by CADEC and which concern the developmental needs of the poorer sections of the community. CADEC has affiliated offices in Trinidad, Antigua, Guyana, Curaçao and Jamaica.

Staff	-	1 person (part-time)
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through CADEC's own activities
Obstacles to technology diffusion	-	Not specified
Publications	-	AT Newsletter.

APPROPRIATE TECHNOLOGY FOR DEVELOPING COUNTRIES
Aangepaste Technologie voor Ontwikkelingslanden

President: A. van Istendael
Secretary: L. Creuwels

Blijde Inkomstraat 9
3000 Leuven
Tel : (016) 22 45 17

Main activities

Information, documentation and publication
Technology diffusion
Technical feasibility studies
Influencing governmental decisions

Main fields of concentration

Energy
Public health
Agriculture
Small industry
Water resources
Housing

Climatic/Geographic focus

None in particular

Appropriate Technology for Developing Countries (ATOL) was founded in 1976 by a group of individuals interested in developing country problems. It is an independent non-profit voluntary organisation financed mainly by donations, as well as by foundations and by church organisations. ATOL works with volunteers and provides technical advice to field workers in the developing countries. Its activities until now have focused mainly on solar heaters, methane tanks, wood-stoves, underwater wheels, windmills and brick presses.

In the future, ATOL plans to make descriptions of a number of simple technologies for rural areas, print and distribute information on these technologies and stimulate research on AT in universities and technical schools. Another project is an inventory of old and traditional technologies used in Europe and which could be useful in development projects.

Staff	-	2 professionals (part-time)
Budget	-	$6,000
Scale of activities in AT	-	12 man-months
Channels of technology diffusion	-	Through private voluntary aid agencies, Belgian missionaries and volunteers
Obstacles to technology diffusion	-	Cultural and social unacceptability; lack of competitiveness relative to traditional technologies; lack of funds
Publications	-	Numerous booklets and articles (in English, French and Flemish).

POST-GRADUATE CENTRE OF THE UNIVERSITY OF LEUVEN

Director: Han Verschure

University of Leuven
Departement Constructie
Kasteel Arenberg
B 2030 Leuven (Heverlee)
Tel : (016) 22 09 31, ext. 1371

Main activities

Research and development
Pilot production
Testing and evaluation of new equipment
Information and documentation
Publications

Main fields of concentration

Housing
Building materials
Urbanism

Climatic/Geographic focus

Tropical rain forests and savannas
Arid and semi-arid regions

In 1969, the section of architecture of the Faculty of Applied Sciences at the University of Leuven initiated a post-graduate programme to study the problems of the man-made environment in the developing countries. Its aim was to provide a sound basis for the training and education of foreign students and researchers. The programme evolved into a Post-Graduate Centre which now has three sections (architecture, civil engineering, urban and regional planning) offering a number of post-graduate courses. The Centre is also expanding its research and development activities.

A pilot housing project is currently being carried out in Rwanda. It involves the construction of 200 low-cost dwellings using local materials and self-help construction methods. A study is under way on the use of puzzolane-lime binding as a substitute for cement and on the development of a small production unit. In Tunisia, the Centre has initiated a project in the forest villages district which emphasises the use of stabilized earth blocks and other local building materials. Proposals are also being worked out for kampung improvement schemes and for housing projects in Indonesia.

Staff	-	5 people (3 full-time)
Budget	-	Not specified
Scale of activities in AT	-	36 man-months
Channels of technology diffusion	-	Through the university and private voluntary aid agencies
Obstacles to technology diffusion	-	Bureaucracy, lack of reliability
Publications	-	Newsletter.

SOCIAL AND ECONOMIC DEVELOPMENT CENTRE
Centro para el Desarrollo Social y Economico

Director: Juan Demeure V.

Casilla 1420
Cochabamba
Tel : 2 12 01

Main activities

Technology extension services (45%)
Education and training (26%)
Pilot production (20%)
Promotion of local technological traditions (6%)

Main fields of concentration

Agriculture
Handicrafts
Credit and lending system
Alternative institutions
Urbanism

Climatic/Geographic focus

Tropical rain forests
Arid, semi-arid and temperate regions

The Social and Economic Development Centre (DESEC) is an independent non-profit centre founded in 1963 in order to promote the development of rural activities. While not devoted specifically to the investigation, application or diffusion of AT as such, it nevertheless has many activities in this field. It is financed partly by donations and partly by fees for services and consultation.

DESEC works closely with local rural organisations with which it tries to promote rural development in different parts of Bolivia. It has helped the creation of services for the development and commercialisation of agricultural products and handicrafts; it has organised wool producers, has improved potatoe-growing techniques, has built a model dairy farm and has participated in the creation of a new village relying on local and traditional materials. DESEC has set up four branches in Cochabamba, dealing with education, services for agriculture, handicrafts, housing and health.

Staff	-	87 people (84 full-time), 26 of whom are professionals
Budget	-	$300,000
Scale of activities in AT	-	132 man-months
Channels of technology diffusion	-	Through the Centre's own activities and advertisements and the mass media
Obstacles to technology diffusion	-	Cultural and social unacceptability, lack of competitiveness relative to traditional technologies
Publications	-	A bi-monthly magazine for rural people (in Spanish).

KWENENG RURAL DEVELOPMENT ASSOCIATION

Executive Secretary: David Inger

Private Bag 7
Molepole
Tel : 386; 387; 388

Main activities

Commercial production
Training of personnel

Main fields of concentration

Irrigation
Soil protection
Handicrafts
Textiles industry
Building materials

Climatic/Geographic focus

Arid and semi-arid countries

The Kweneng Rural Development Association (KRDA) is a locally run non-profit AT organisation which relies on financial and other assistance from the Botswana Government, donations and international aid agencies. It was founded in 1969 and its major objective is to create full-time productive employment for the people of Botswana.

The oldest KRDA project is a workshop where garments are produced on a co-operative basis. A forestry programme launched in 1975 focuses on erosion control techniques, soil conservation, and experiments with new run-off irrigation and water storage techniques. The Molepole Builders Brigade built the KRDA estate and is now involved in an hotel building project to provide local employment, and which will also serve as a rural conference centre. Future projects include a bicycle assembly plant and an intensive horticulture project.

Staff	-	250 people (including plant workers)
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the Association's own projects
Obstacles to technology diffusion	-	Not specified
Publications	-	Annual report and technical notes on problems of employment generation (in English).

PELEGANO VILLAGE INDUSTRIES

Director: Frank W. Taylor

P.O. Box 464
Gaborone

Main activities

Research and development
Testing and evaluation of new equipment
Pilot and commercial production
Education and training

Main fields of concentration

Energy
Water resources
Dryland agriculture
Small-scale industries
Building materials and architecture
Credit and lending systems

Climatic/Geographic focus

Arid and semi-arid regions

Pelegano Village Industries (PVI) is an independent non-profit company founded in 1976 to research, develop and promote income-generating activities in the rural areas of Botswana. It is financed by foundations, industries and churches, as well as by its own industrial activities.

It assists and advises small-scale industries, notably in the handicrafts sector, in textiles and in food processing. Its innovations in the AT field include poultry equipment, ox-carts, delivery tricycles, vending and hawking handcarts, windmills, water catchment and storage systems, solar ovens and solar heaters, and dry land orchard farming.

Staff	-	200 people (50 full-time) 2 of whom are professionals
Budget	-	$100,000 ($50,000 in 1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through seminars and workshops
Obstacles to technology diffusion	-	Bureaucracy, inadequate legislation, lack of competitiveness relative to modern technologies and lack of funds
Publications	-	Not specified.

LABORATORY OF SUN ENERGY

Co-ordinator: Prof. Eriberto José Rodrigues

University Campus
Paraiba Federal University
58 000 Joao Pessoa, Paraiba

Main activities

Research and development

Main fields of concentration

Solar energy
Water distilling

Climatic/Geographic focus

Arid and semi-arid regions

The Laboratory of Sun Energy was established in 1973 and is a part of the Centre of Technology of Paraiba Federal University, which is entirely financed by the Brazilian Government. Its founders are three teachers at the University.

The first activity of the Laboratory was to establish a network of 15 sun observation stations in Paraiba State. In 1974, the Laboratory developed a solar stove and a big solar furnace (1.5 kW), and the following year a plant for distilling water and drying food. The first solar pump in South America, developed by the French firm SOFRETES, was installed in co-operation with the Laboratory, and work is now under way to develop a solar pump of its own design. The Laboratory is planning to install a 200 kW sun and wind power plant to produce hydrogen.

Staff	-	Not specified
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through banks and private credit institutions
Obstacles to technology diffusion	-	Not specified
Publications	-	None at present.

TECHNOLOGY CENTER OF MINAS GERAIS

Head of AT projects: Claudio Martins

Avenida José Candido da Silveira 2000
Horto 30 000
P.O. Box 2306
Belo Horizonte, Minas Gerais
Tel : 461 79 33

Main activities

Research and development
Pilot production
Technical feasibility studies
Promotion of local technological traditions
Education and training

Main fields of concentration

Energy
Agriculture and forestry
Small industry
Housing
Nutrition

Climatic/Geographic focus

None in particular

The Technology Center of Minas Gerais (CETEC) is an operational centre of the Science and Technology Department of the State of Minas Gerais. It is financed for the most part by the government, with some support from foundations.

Its activities in AT, which began in 1977, have focused on eco-development, i.e. on the development and diffusion of technologies which are ecologically sound and culturally well adapted to the social environment. A pilot project is currently being carried out in Juramento City, 400 kilometers away from the centre, to demonstrate and test this concept through specific applications. Technologies developed in this framework include local building materials, low-cost household utensils, community vegetable gardens and orchards, inexpensive milk and meat processing methods, new types of trees for firewood, stabilization ponds for sewage treatment, and village water supplies. The Centre is also working on nutrition, crop storage and the application of wind energy.

Staff (Working in AT)	-	Approximately 25 people (all professionals)
Budget	-	$20,000 ($133,000 in 1978)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through demonstration projects, government agencies and educational institutions
Obstacles to technology diffusion	-	Not specified
Publications	-	Not specified.

PANAFRICAN INSTITUTE OF DEVELOPMENT
Institut Panafricain pour le Développement

Director: Benoît Atangana-Onana

P.O. Box 4056
Douala
Tel : 42 43 35

Main activities

Education and training

Main fields of concentration

Rural development
Agriculture
Urban settlements

Climatic/Geographic focus

None in particular

The Panafrican Institute of Development is an international non-governmental education and training institution dedicated to promoting integrated rural development in Africa. It is financed for the most part by governments, with some support from foundations. It has two branches in Cameroon (Douala for francophone countries, Buea for anglophone countries), one in Upper Volta, and a general secretariat in Geneva, Switzerland. In addition to its training and education activities, it conducts research on rural development and provides consulting services.

While AT as such is not its main field of interest, all its activities have a substantial AT component. Field research work and projects carried out in the rural areas by the students (most of whom ultimately become rural development agents) in the course of their two-year training has contributed to creating a vast pool of knowledge on traditional farming techniques, the effects of technological innovation, the mode of operation of social innovation, the structure of the handicrafts and cottage industries and the most effective approaches to community participation and grassroots rural development.

Staff	-	Not specified
Budget	-	$2.5 million
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through education and training
Obstacles to technology diffusion	-	Not specified
Publications	-	Student field reports (in French and English) and a survey of the handicrafts sector in one region of Cameroon (in French).

SWISS ASSOCIATION FOR TECHNICAL ASSISTANCE
Association Suisse d'Assistance Technique

Head of Centre: Matthias Zimmermann

P.O. Box 279
Yaoundé (Administrative Office)

P.O. Box 32
Buea (Direction)

Main activities

Self-help infrastructural projects
Training craftsmen

Main fields of concentration

Rural roads
Village water supply
Hydraulic energy

Climatic/Geographic focus

Tropical rain forests and savannas

The Swiss Association for Technical Assistance (SATA), which has been working in Cameroon since 1964, is a non-profit non-governmental organisation aimed at promoting rural development through self-help projects carried out by the local population.

SATA has helped to construct a number of low-cost village water supply systems and has been involved in the construction of secondary roads (farm to market) in rural areas. It has also trained a number of masons, carpenters and plumbers.

Staff	-	13 full-time professionals
Budget	-	$625,000
Scale of activities in AT	-	156 man-months
Channels of technology diffusion	-	Through development projects and training programmes
Obstacles to technology diffusion	-	Not specified
Publications	-	Not specified.

ASSOCIATION OF GEOSCIENTISTS FOR INTERNATIONAL DEVELOPMENT

Secretary-Treasurer: Dr. A. R. Berger

Department of Geology
Memorial University
St. John's, Newfoundland A1C 557
Tel : (709) 753 12 00 ext. 3145

Main activities

Information and documentation
Education and training
Technology diffusion
Influencing governmental decisions

Main fields of concentration

All fields of the geosciences
Small-scale mining
Use of mining wastes
Groundwater resources
Building materials

Climatic/Geographic focus

None in particular

The Association of Geoscientists for International Development (AGID) is an international non-governmental organisation founded in 1972 and operated on a voluntary basis. It consists of individual and institutional members. Its aims are to encourage and promote activities in the geoscience fields which are related to the needs of the developing countries and to increase the earth scientists' awareness of their responsibility in the management of world resources.

Besides disseminating information through meetings, workshops and training courses, AGID has developed a personnel roster to help in the recruitment of geoscientists for developing countries, an AT advisory service for geoscientists and a survey of groundwater information in developing countries. It has also promoted several production-oriented AT projects in developing countries: small-scale production of glass from silica sands in Ghana and Botswana, uses of serpentine waste and brick-making from low-grade iron ore in India, quality control improvement for a solar salt co-operative in Honduras, shelf carbonates for Guyana's lime industry and the use of local bentonite and kaolin for sugar refining in Colombia.

Staff	-	2 people (1 full-time), 1 of whom is a professional
Budget	-	Not specified
Scale of activities in AT	-	100 man-months
Channels of technology diffusion	-	Through the Association's own work and through various international agencies
Obstacles to technology diffusion	-	Not available
Publications	-	At the planning stage.

BRACE RESEARCH INSTITUTE

Director: T. A. Lawand

McDonald College
McGill University
Ste. Anne de Bellevue, Quebec H0A 1C0
Tel : (514) 457 65 80, ext. 341

Main activities

Research and development
Information and documentation
Publications
Policy analysis and economic studies
Technology extension
Promotion of local technological traditions
Education and training

Main fields of concentration

Energy
Water
Crop processing
Agricultural tools
Housing

Climatic/Geographic focus

None in particular

The Brace Research Institute was founded in 1961 as a part of McGill University, Montreal. Its mandate is to undertake research and development on economic and effective methods of desalting water and on irrigation techniques and other means of making arid lands available and economically useful for agricultural purposes.

It has concentrated upon the development of small-scale AT devices suitable for application in individual communities and agricultural holdings. It has designed among others several low-cost solar energy devices (an instrument for the measurement of the daily solar radiation, solar dryers and cookers, domestic heating systems), greenhouses, distillation units (among them a very successful plant in Haiti), wind-powered water pumping units and turbines, and a low-cost steam turbine to be used in conjunction with solar steam power.

Brace is now one of the leading international research centres for solar energy applications and has recently begun to carry out research into controlled environment agriculture as a means of reducing the water requirements of arid rural regions.

Staff	-	10 people (4 full-time), of whom 3 are professionals
Budget	-	$90,000
Scale of activities in AT	-	36 man-months
Channels of technology diffusion	-	Through the Institute's own activities and through universities
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy and lack of funds
Publications	-	Handbook of Appropriate Technology in collaboration with the Canadian Hunger Foundation, Ottawa, a manual on solar agricultural driers and technical notices on how to make solar devices - in English; some publications also available in French, Spanish and Arabic.

CANADIAN HUNGER FOUNDATION

Executive Director: John Laidlaw

323 Chapel Street
Ottawa, Ontario, K1N 7Z2
Tel : (613) 237 01 80

Main activities

Research and development
Publications
Technical feasibility studies
Education and training of personnel

Main fields of concentration

Nutrition
Water resources
Handicrafts
Crop processing and conservation
Agricultural tools and machinery
Credit and lending systems
Boat construction

Climatic/Geographic focus

None in particular

The Canadian Hunger Foundation (CHF) is an independent non-profit organisation formed in 1964 in the framework of the Freedom from Hunger Campaign of the Food and Agriculture Organisation (FAO) with which it remains affiliated. After a period mainly devoted to development education, CHF switched its emphasis to overseas projects.

Though CHF does not consider itself as an AT centre, it sponsors many AT development projects, mostly in South America, the Caribbean, Africa and the Indian subcontinent. These projects are grouped under six programmes: appropriate technologies (boat building, agricultural tools, pumps), food technology and applied nutrition, improvements in agricultural and food production, rural development training, assistance to non-governmental organisations of developing countries and contracts with the Canadian International Development Agency (CIDA).

Staff	-	12 people (8 full-time), of whom 5 are professionals
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through international development agencies
Obstacles to technology diffusion	-	Lack of funds
Publications	-	A Handbook of Appropriate Technology (co-published with the Brace Research Institute, Montreal), available in English, French and Spanish.

INSTITUTE OF MAN AND RESOURCES

Director: K. T. MacKay, Ph.D.

Little Pond
Souris, RRNo4
Prince Edward Island C0A 2B0
Tel : (902) 583 24 10

Main activities

Research and development (50%)
Technology diffusion (20%)
Information and documentation (15%)
Occasional publications (10%)
Community education (5%)

Main fields of concentration

Energy
Architecture
Biological Agriculture
Aquaculture

Climatic/Geographic focus

Temperate regions
Cold and arctic regions

The Prince Edward Island Ark Project began in 1975 as a result of efforts by the New Alchemy Institute (Woods Hole, Massachusetts) and the Canadian and Prince Edward Island Governments, as a demonstration project for the 1976 United Nations Habitat Conference in Vancouver. The Canadian Government funded the design, construction and initial operation of the Ark, solar greenhouse, living space and research centre and continues to fund the research and development.

Efforts on the Island have focused on solar architecture design and evaluation, soil restoration and biological agriculture techniques applied both outdoors and in the greenhouse, aquaculture and the design of wind power systems. The Project has explored biological pest control both outdoor and in the greenhouse as well as low energy aquaculture. The technologies in which the Prince Edward Island Ark are most interested, are those aimed at producing self-sustaining ecosystems supporting human life.

Staff	-	8 people
Budget	-	$300,000 / year
Scale of activities in AT	-	75 man-months
Channels of technology diffusion	-	Through seminars, publications, co-operative research projects and personal contact
Obstacles to technology diffusion	-	Lack of personnel, lack of bureaucratic support
Publications	-	New Alchemy Institute Journal; Proceedings of the P.E.I. Ecological Agriculture Conference; The Attached Solar Greenhouse for Maritime Canada; A Most Prudent Ark.

MINIMUM COST HOUSING GROUP

Director: Witold Rybczynski

School of Architecture
McGill University
3480 University Street
Montreal, PQ, H3A 2A7
Tel : (514) 392 80 21

Main activities

Research
Testing and evaluation of new equipment
Information and documentation
Publications
Graduate teaching

Main fields of concentration

Energy savings
Waste water
Housing

Climatic/Geographic focus

None in particular

The Minimum Cost Housing Group was established in 1971 and is a part of the Graduate Program in Housing Design. It is concerned with the development and field application of low-cost housing technologies.

The work of MCHG is focused on sanitation and servicing systems, the impact of industrialisation on housing construction, and materials for low-cost housing.

Staff	-	2 - 3 architects, 2 - 4 graduate students
Budget	-	Varies
Scale of activities in AT	-	Varies
Channels of technology diffusion	-	Through publications, personal contacts, lectures, graduate courses, consulting contracts
Obstacles to technology diffusion	-	Not specified
Publications	-	Technical reports.

SASKATCHEWAN RESEARCH COUNCIL

Director: Dr. T. P. Pepper

30 Campus Drive
Saskatoon, Saskatchewan S7N 0X1
Tel : (306) 343 82 51

Main activities

Research and development (80%)
Technology extension services (5%)
Pilot production (5%)
Information and documentation (5%)
Publications (5%)

Main fields of concentration

Energy
Water
Biomass
Crop processing and conservation

Climatic/Geographic focus

Temperate, arctic and cold regions

The Saskatchewan Research Council was formed in 1947 by the provincial government to conduct applied and developmental research related to the industrialisation of Saskatchewan and the more effective use of renewable and non-renewable resources.

Its work on AT, which began in 1972 focuses mainly on agricultural and industrial processing, and renewable energies suitable for farms or small industrial firms. It has worked on the improvement of the feeding value of straw, crop residues and dried alfalfa forage, on the testing of various organic soil amendments to improve crop production on soils affected by salinity, on the production of potable water from saline water through natural refrigeration, the use of aquatic plants for purifying waste water and the design, construction and monitoring of a super-insulated solar-heated house for cold northern climates. Most of this work however is still at the research and development or demonstration stage. AT activities are only one part of the Council's overall activities. Other activities relate to more conventional approaches to agriculture and industrialisation.

Staff	-	150 people (130 full-time), 50 of whom are professionals
Budget	-	$3,780,000
Scale of activities in AT	-	140 man-months
Channels of technology diffusion	-	Government agencies
Obstacles to technology diffusion	-	Cultural and social unacceptability; lack of competitiveness relative to modern technologies
Publications	-	Not specified.

SUDBURY 2001

Contact: William Bradley
Honorary Chairman: George McRobie

P.O. Box 1313
Sudbury, Ontario P3E 4S7
Tel :(705) 674 20 01

Main activities

Technology diffusion
Research and development

Main fields of concentration

Community development
Employment creation
Cottage industries
Energy

Climatic/Geographic focus

Depressed industrial areas

Sudbury 2001 is a large-scale multi-partite coalition of business, labour and government leaders, ethnic and cultural groups, students and concerned citizens of the city of Sudbury, Ontario. This group, which operates through community self-help, fund-raising and research and development, aims at one goal, creating jobs for people in Sudbury. The city has recently lost 4,000 jobs (10% of the total work force) in the local mining industry controlled by two large multinational corporations, and in the summer of 1978, over one-third of the city's total work force was laid off.

The group is currently looking for good projects to generate meaningful jobs and plans to give a major emphasis to AT as the basis of an alternative development strategy. It has recently set up an Alternate Development Paradigm Network (ALDEP), a network of over 400 members interested in alternative self-reliant approaches to community development and is assembling a team for its research on AT.

Staff	-	Not available
Budget	-	Not available
Scale of activities in AT	-	All activities are related to AT
Channels of technology diffusion	-	Demonstration projects and community self-help organisations
Obstacles to technology diffusion	-	Difficulty in identifying good AT's
Publications	-	Press releases and progress reports.

MINISTRY OF RURAL DEVELOPMENT
Ministerio do Desenvolvimento Rural

Head of Department: Horacio Soares
AT contact: Joop van Meel

P.O. Box 66
Praia

Main activities

Technology extension
Testing and evaluation of new equipment
Technology diffusion

Main fields of concentration

Wind energy
Water resources and irrigation
Small metal-working industry

Climatic/Geographic focus

Arid and semi-arid regions
Trade wind regions

There is at present no formal appropriate technology centre in the Cape Verde Islands. However, in 1977 the Ministry of Rural Development set up a Department of Non-Conventional Energy, which is mostly involved in the promotion and diffusion of water pumping methods by means of wind power. This is not an unknown technology in the islands: local production of small windmills has been going on for more than 30 years. Since 1977 several new units have been installed. They include imported wind pumps of the American multi-blade types as well as wind generators to drive submersible electric pumps. Work is currently under way to develop larger machines and there are plans to establish a non-conventional energy centre. All the machines which have been installed are the property of the Government.

Staff	-	5 full-time professionals
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies
Obstacles to technology diffusion	-	Lack of funds
Publications	-	None

INDUSTRIAL CORPORATION FOR METROPOLITAN DEVELOPMENT
Corporacion Industrial para el Desarrollo Metropolitano

Director: Gonzalo Diaz Albonico

Merced 136, Oficina 31
Santiago
Tel : 33 378

Main activities

Commercial production (60%)
Research and development (20%)
Education and training of personnel (20%)

Main fields of concentration

Handicrafts and cottage industries
Cultivation techniques
Food processing

Climatic/Geographic focus

Temperate regions

The Industrial Corporation for Metropolitan Development (CIDEME) is a non-profit corporation established in 1975 and funded half by the U.S. Agency for International Development, half by commercial and industrial activities and banks. Its purpose is to develop new labour opportunities for the poor by applying simple labour-intensive technologies.

CIDEME has promoted cottage industries in the handicrafts sector, has set up a centre for the collection and recycling of glass bottles and has created several wicker basket production centres. It has also organised the collection of wild fruit from the Santiago region, which are pre-processed for the local food industry, and has been involved in the collection and sale of animal pancreases which until then were thrown away by the local slaughterhouses.

Staff	-	8 people (6 full-time), 3 of whom are professionals
Budget	-	$42,000 ($22,000 in 1976)
Scale of activities in AT	-	74 man-months
Channels of technology diffusion	-	Through the Corporation's own activities and through personal contacts
Obstacles to technology diffusion	-	Reluctance to accept innovation, lack of competitiveness relative to other technologies, lack of funds
Publications	-	None.

INDUSTRIAL CORPORATION FOR THE DEVELOPMENT OF THE BIOBIO REGION
Corporación Industrial para el Desarrollo Regional del Biobio

General Manager: Juan Raffo Sivori

Calle Aníbal Pinto 372-72
Casilla Postal 2177
Concepción
Tel : 2 77 52

Main activities

Identification of productive potentialities (40%)
Technical and commercial feasibility studies (including prototype production) (20%)
Technology diffusion (10%)
Technical and commerical assistance (10%)

Main fields of concentration

Natural resources and by-products utilisation
Small industry

Climatic/Geographic focus

Temperate and coastal regions
Mountainous and cold regions

The Industrial Corporation for the Development of the Biobio Region (CIDERE Biobio) is an independent private non-profit corporation founded in 1967. It is funded by the regional industries, universities and voluntarily associated banks.

CIDERE collects ideas of productive potentialities in the field of the Biobio region through research undertaken by the Corporation. CIDERE has promoted AT in domains such as: dehydration of edible wild plants; distillation of essential oils from aromatic leaves from tree species; processing of wild fruits; utilisation of diverse by-products.

Some of the productive activities created by CIDERE which were in operation up to June 30, 1978 were the following: substitution of sawdust for petroleum, transformation of sawdust into humus, apiculture in pine woods, resination of pine gum and distillation of the oleoresine obtained; wild pine tree mushrooms in brine for export; dehydrated wild rosehip export, digester of animal manure for producing fertilizer and bio-gas, intensive horticulture under polyethylene covers, micro hydro-electric power plants.

Staff	-	4 people (all full-time)
Budget	-	US$140,000 (July 1977-June 1978) US$105,000 (July 1976-June 1977)
Scale of activities in AT	-	Permanent work for 14,900 workers during the period July 1977/June 1978
Channels of technology diffusion	-	Through CIDERE's own activities
Obstacles to technology diffusion	-	Lack of funds for expanding activities
Publications	-	Annual Reports (in Spanish, with a brief translation in English, French and German).

INTERNATIONAL CENTER FOR TROPICAL AGRICULTURE
Centro Internacional de Agricultura Tropical

Director: John L. Nickel

P.O. Box 67-13
Cali
Tel : 67 17 37 Cali
27 169 Palmira

Main activities

Research and development (50%)
Education and training (20%)
Technology diffusion (10%)
Information and documentation (10%)
Publications (10%)

Main fields of concentration

Cultivation techniques
New crops and plants
Pest control

Climatic/Geographic focus

Tropical rain forests and savannas

The International Centre for Tropical Agriculture (CIAT) is an international non-governmental research organisation founded in 1968 and funded by foundations, governments and foreign aid programmes. A 522 hectare estate has been provided by the Colombian Government for its experiments.

CIAT has developed several high yielding varieties of rice, one of which has become widely diffused in Latin America and has replaced most traditional varieties. New high yielding varieties of field beans and cassava are now being tested regionally and internationally in co-operation with national institutions. In the framework of its swine programme and in co-operation with the cassava programme, research is carried out on protein enrichment of cassava for swine feeding. The beef programme concentrates on developing improved pastures and forages adapted to the infertile, acid soils of tropical savannas. Regional trials on several grasses and legumes are also currently underway.

Staff	-	1100 people (all full-time), 300 of whom are professionals
Budget	-	$8.6 million ($6.6 million in 1976)
Scale of activities in AT	-	3,600 man months
Channels of technology diffusion	-	Through national and international agencies and through international aid programmes
Obstacles to technology diffusion	-	No direct diffusion by CIAT
Publications	-	Annual report, 60 technical reports and 30 bibliographical notes.

LAS GAVIOTAS

Director: Pablo Lugari

c/o Faculdad de Ingenieria
Universidad de los Andes
Bogota

Main activities

Research and development
Testing and evaluation of new equipment
Education and training

Main fields of concentration

Rural development
Water resources
Solar and wind energy
Crop processing and conservation

Climatic/Geographic focus

Tropical savannas

The Centre for Integrated Rural Development of Las Gaviotas (The Seagulls) was established in the late 1960's with the technical support of the University of the Andes in an underpopulated tropical savanna region of the Orinoco river basin, 400 kilometers south of Bogota. The purpose of this project, initially financed by several ministries and now also supported by foreign agencies, is to explore and develop new settlement and rural development methods which are both ecologically and technologically appropriate.

Las Gaviotas has developed and tested a wide range of AT's: among them soil-cement polythene tubes for irrigation and drainage, small-scale hydro-turbines (1 kW output, for an investment cost of around $150), a manual induction pump inspired by a traditional Afghan model, a hydraulic ram, a low-cost windmill ($300), an aluminium solar water heater and a pedal-operated cassava crusher. Las Gaviotas has begun to manufacture on a relatively large scale several of its new equipments, and is actively involved in the diffusion of its technologies to other AT institutions.

Staff	-	Not available
Budget (indicative)	-	$1 million
Scale of activities in AT	-	Not available
Channels of technology diffusion	-	Through training activities, sales of equipment and information networking
Obstacles to technology diffusion	-	Not available
Publications	-	Technical reports (in Spanish).

RESEARCH CENTRE FOR INTEGRAL DEVELOPMENT
Centro de Investigaciones para el Desarrollo Integral

Director: Anguito L. Uribe d'E.

Apartado Aereo 117B
Medellin
Tel : 48 93 87

Main activities

Technology diffusion (70%)
Promotion of local technological traditions (20%)
Occasional publications (5%)
Education and training (5%)

Main fields of concentration

Energy
Nutrition
Aquaculture

Climatic/Geographic focus

Tropical rain forests

The Research Centre for Integral Development (CIDI) is a part of the Universidad Pontificia Bolivariana. It is funded by the University and the Colombian Government. In 1976, it started to run small development projects in rural communitics, involving both sociological and technical work.

The CIDI has designed several prototypes of solar heaters, wind generators and small pumps as well as a textile machine. Two rural electric generators have been installed and it has also initiated an aquaculture project.

Staff	-	6 people
Budget	-	$20,000 ($12,000 in 1976)
Scale of activities in AT	-	60 man-months
Channels of technology diffusion	-	Through the Centre's own activities and universities
Obstacles to technology diffusion	-	Bureaucracy, cultural and social unacceptability, lack of funds
Publications	-	No regular publications.

TECHNICAL DEVELOPMENT DIVISION - NATIONAL TRAINING SERVICE
División de Analisis y Desarrollo Tecnologico - Servicio Nacional de Aprendizaje

Director: Raul Gomez A.

SENA, Direccion general
Apartado aereo 53 329
Bogota
Tel : 37 83 81

Main activities

Information, documentation and publications (40%)
Technical feasibility studies (20%)
Promotion of local technological traditions (10%)
Pilot production (10%)
Testing and evaluation of new equipment (10%)
Technology diffusion (10%)

Main fields of concentration

All fields of AT

Climatic/Geographic focus

None in particular

The Technical Development Division of the National Training Service (SENA) was established in 1976 as a part of this large skilled labour training institution (5000 instructors), which has been collecting, analysing and demonstrating technology since 1957, and training about half a million people per year in its 80 regional training centres. In 1976 SENA decided to use this infrastructure to collect, adapt and diffuse AT through a technical development programme and a centre to coordinate it.

The Centre has developed several technologies some of which are still at the prototype stage: brick-making machines, shoe-making devices, a rice thresher, a sugar-cane processing unit and two different prototypes of a natural fibre machine to produce bags, shoes and other items. Ten fish farming pools are currently under testing and evaluation.

SENA's regional units cover the whole country and take part in this technological development programme. The technologies developed by the Centre are diffused at the grass-roots level by SENA instructors.

Staff	-	20 people (all full-time) 15 of whom are professionals
Budget	-	$250,000 ($3000 in 1.76)
Scale of activities in AT	-	40 man-months
Channels of technology diffusion	-	Through the training of professionals, government agencies and universities
Obstacles to technology diffusion	-	Reluctance to accept innovation, lack of competitiveness relative to modern technologies, lack of coordination with financing institutions
Publications	-	AT Collection (6 issues already published).

TECHNOLOGICAL RESEARCH INSTITUTE
Instituto de Investigaciones Tecnologicas

Director: Jaime Ayala R.

Avenida 30 No. 52A-77
Apartado aereo 7031
Bogota
Tel : 35 00 66

Main activities

Technical assistance
Research and development
Publications
Pilot production

Main fields of concentration

Small industry promotion
Food processing
Water pollution

Climatic/Geographic focus

None in particular

The Technological Research Institute (IIT) is an autonomous non-profit organisation established in 1958 under the sponsorship of Colombian banks and industrial associations. Most of its budget comes from consulting fees, the remainder from donations. It conducts applied industrial research, provides technical assistance and advice in various fields and offers technical and economic consultancy services to the Colombian government and industries.

IIT's research activities focus mainly on food technology: dehydration of fruits and vegetables, fruit concentrates, juices and jams; protein enrichment of cereals, isolated cotton protein, soluble vegetable protein, conservation of cassava roots, to name a few. Its advisory services to small and medium industries are mostly oriented towards the chemical industries.

Staff	-	133 people (131 full-time), 56 of whom are professionals
Budget	-	$1,600,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Own activities
Obstacles to technology diffusion	-	Inadequate legislation, reluctance to accept innovation, lack of funds
Publications	-	Bimonthly magazine "Technologia" Yearly report.

FOOD TECHNOLOGY RESEARCH CENTRE
Centro de Investigaciones en Tecnología de Alimentos

Director: Ing. Luis Fernando Arias Molina

Universidad de Costa Rica
San José
Tel : 25 98 85

Main activities

Research and development
Technology extension
Promotion of local technological traditions
Education and training
Commercial production

Main fields of concentration

Solar energy
Crop processing and conservation
Small industry promotion

Climatic/Geographic focus

Temperate and coastal regions

The Food Technology Research Centre (CITA) is a part of the University of Costa Rica. It was founded in 1974 and is financed by the government, the university and foreign aid programmes.

CITA's activities in AT, which began in 1977, focus on the development of simple, low-cost food processing techniques applicable at the local level, and which reduce post-harvest losses and increase the range of available foods. The Centre has developed a solar dryer for fruit, as well as a small-scale steam generator and a small-scale blancher which work together to blanch, dehydrate or pasteurize a wide range of agricultural products.

Staff	-	47 people (40 full-time) 22 of whom are professionals
Budget	-	$764,000 ($129,000 in 1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies and the university
Obstacles to technology diffusion	-	Bureaucracy, lack of competitiveness relative to modern technologies
Publications	-	None at present.

DANISH INVENTION CENTER
Opfinderkontoret

Director: Bjoern Westphal Eriksen

Technological Institute
Gregersensvej
DK2630 Taastrup
Tel : (02) 99 66 11

Main activities

Information and documentation (34%)
Testing, construction and evaluation of new equipment (32%)
Technology extension (24%)
Licensing (10%)

Main fields of concentration

Any invention in any field

Climatic/Geographic focus

None in particular

The Danish Invention Centre is a non-profit government-supported organisation established in 1972 by the Danish Society for the Promotion of Inventions, the Copenhagen Technological Institute, the Federation of Danish Industries and other organisations. It assists, free of charge, the technical and commercial assessment of inventions, the planning of product development and contacts with financial organisations and industrial firms. When a project involves external consultants or when the Centre takes an active part in development work, financing or marketing, some fees are levied.

The Centre deals with any type of invention in any field. It has promoted modern as well as appropriate technologies. Among the latter are a low-cost water purification plant based on a flotation system, a double-walled insulated curtain for horticultural greenhouses which helps to save more than 25 per cent on heating costs and a 'language fan' (a new form of book, with the pages spread out in the form of a fan).

Staff	-	14 people (8 full-time), 6 of whom are professionals
Budget	-	$1,000,000 ($700,000 in 1976)
Scale of activities in AT	-	175 man-months
Channels of technology diffusion	-	Through industrial firms, advertisements, the mass media and government agencies
Obstacles to technology diffusion	-	Bureaucracy, reluctance to accept innovation, lack of funds and lack of reliability
Publications	-	Brochures and leaflets on heat pumps, wind generation and wave generators (in English).

ZAC-CONSULT

Director: John Zachariassen

Gladsaxe Møllevej 23
DK 2860 Søborg
Tel : (01) 67 36 00

Main activities

Research and development (60%)
Technical feasibility studies (10%)
Promotion of indigenous invention and innovation in developing countries (10%)
Information and documentation (10%)
Technology diffusion (10%)

Main fields of concentration

Housing
Education
Small industry promotion
Public works
Alternative institutions
Waste water
Crop processing and conservation

Climatic/Geographic focus

Tropical savannas
Arid, semi-arid and temperate regions

ZAC-CONSULT is an independent consulting firm founded in 1958 and composed of a group of development advisers, consulting engineers and architects. It is financed exclusively from consulting fees. Its involvement in appropriate technology includes the design of a low to medium-cost building system for self-construction in earthquake-prone regions (a pilot construction has been completed in Lima, Peru), methodology studies related to small-scale industrialisation and public works and study of alternative institutions to promote indigenous invention and innovation in developing countries.

Staff	-	Not specified
Budget	-	Not specified
Scale of activities in AT	-	24 man-months
Channels of technology diffusion	-	Through government agencies, international agencies and international aid programmes
Obstacles to technology diffusion	-	Bureaucracy, lack of funds, lack of continuity of programmes
Publications	-	None for general circulation.

SOLIDARIOS - COUNCIL OF AMERICAN DEVELOPMENT FOUNDATIONS
Solidarios - Consejo de Fundaciones Americanas de Desarrollo

President: Leonel Argüello R.
General Secretary: E. A. Fernandez

Ave. Lope de Vega 44, Apt. 204
Apartado postal 620
Santo Domingo
Tel : (809) 567 63 13

Main activities

Financing AT activities of other institutions
Influencing governmental and political decisions

Main fields of concentration

Credit and lending system
Community development

Climatic/Geographic focus

Latin America and the Caribbean

Solidarios, the Council of American Development Foundations is a non-profit association composed of non-profit Latin American development institutions engaged in technical assistance to marginal sectors of the Latin American countries. It is financed by donations and membership fees.

The major aim of Solidarios is to provide financial support to social development activities, mainly to groups or individuals who cannot have access to traditional forms of credit. Solidarios also organises co-operation and exchange of information between its members. It does not deal directly with AT as such but strongly encourages the use of AT in the projects it sponsors.

Staff	-	Not specified
Budget	-	$190 000 (1976)
Scale of activities in AT	-	Not applicable
Channels of technology diffusion	-	Through member foundations
Obstacles to technology diffusion	-	Not specified
Publications	-	"Solidarios" (quarterly magazine) Catalogue of non-profit development institutions in Latin America and the Caribbean (in Spanish).

COMPREHENSIVE AGRICULTURAL TRAINING CENTRE
Centro de Capacitacion Agropecuaria Integral

Director: William E. Prentice

Casilla 757
Puyo, Pastaza

Main activities

Leadership training
Technology extension services
Promotion of local technological traditions
Pilot production

Main fields of concentration

Agriculture and sylviculture
Rural development
Native people's rights

Climatic/Geographic focus

Humid high jungles of the Amazon basin

The Centro de Capacitacion Agropecuaria Integral (CECAI) is a private agricultural appropriate technology and training centre founded in 1975 to identify, develop and promote agricultural technology appropriate to the environment of Ecuador's Amazonia and to relate that technology to the welfare of the native people of the region.

Toward that end CECAI is active in five areas of work: (1) an appropriate technology farm where various packages of land usage are tested and presented for perusal by others; (2) an apprenticeship programme for future leaders of the native population; (3) an appropriate land usage and farmer welfare oriented extension programme in local communities; (4) a short course on request services available to local organisations interested in agricultural production and/or marketing; (5) the development of a regional training centre for agricultural technicians working in the Amazon region.

Staff	-	5 people (all full-time) 3 of whom are professionals
Budget	-	Not specified
Scale of activities in AT	-	All activities are tied to technologies appropriate to the physical and social conditions of the region
Channels of technology diffusion	-	AT demonstration farm, training courses, short courses, printed materials
Obstacles to technology diffusion	-	Unfavourable land usage and credit policies
Publications	-	None.

ECUADORIAN DEVELOPMENT FOUNDATION
Fundación Ecuatoriana de Desarrollo

Director: Gonzalo Ortiz Crespo

Colon 1120
P.O. Box 2529
Quito
Tel : 23 79 45

Main activities

Financing AT activities of small peasant groups (50%)
Promotion of local technological traditions (25%)
Training of adults

Main fields of concentration

Agriculture and husbandry
Small industry promotion
Credit and lending system

Climatic/Geographic focus

Temperate regions
Mountainous regions

The Ecuadorian Development Foundation (FED) is a grant-making foundation established in 1968 by a group of local businessmen under the sponsorship of the Pan American Development Foundation and the Organization of American States. It is financed through donations and membership fees and is affiliated with Solidarios (Council of American Development Foundations).

In 1974, FED started to give loans to small farmers and groups of craftsmen and initiated several micro-development projects with the help of various American and European agencies. Projects now under way include a small metalworking unit (adaptation of a small gun producing co-operative to build small agricultural implements), new agricultural techniques (tests of organic versus chemical fertilizers and of traditional versus improved technologies) and the storage and commercialisation of agricultural products such as wheat, sugar cane, potatoes and others.

Staff	-	18 (12 full-time), 8 of whom are professionals
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies, banks and private agencies
Obstacles to technology diffusion	-	Reluctance to accept innovation, lack of competitiveness relative to modern technologies
Publications	-	None.

TECHNICAL INFORMATION SERVICE
Servicio de Información Técnica

Director: Dr. Victor D. Martínez C.

P.O. Box 5833
Guayaquil
Tel : 30 76 28, 30 85 00

Main activities

Information and documentation (60%)
Bibliographic infrastructure building (20%)
Research and development (15%)

Main fields of concentration

Small chemical and food processing industries
Small industry promotion
Scaling down of industrial processes
Aquaculture and fishing
Husbandry

Climatic/Geographic focus

Tropical rain forests and savannas
Coastal regions
Mountainous regions

The Technical Information Service is an advisory body for small and medium-scale industry whose mission is to provide technical assistance and help in the choice of technology. It was established in 1972 as a part of the governmental Industrial Development Centre of Ecuador (CENDES).

The experience generated in its work with established firms led to a widening of its activities to entrepreneurship development. It presently has a technical inquiry service (360 inquiries per year), a data bank with 36,000 documents and a unit for the evaluation of technological alternatives; it also publishes a monthly technical information bulletin.

The Service has provided assistance to several new small industries using AT:- manufacturing of high quality carpenter gum from hides' scraps from local tanneries, small-scale production of polyurethane foam, manufacturing adhesives from local raw materials, low-cost preservation of fresh flowers for export, replacement of a U.S. technology by a much less expensive Brazilian technology in the brake-lining industry.

Staff	-	16 people (all full-time), 10 of whom are professionals
Budget	-	$180.000
Scale of activities in AT	-	176 man-months
Channels of technology diffusion	-	Through the Service's own activities
Obstacles to technology diffusion	-	Reluctance to accept innovation, lack of technical support
Publications	-	Monthly technical information bulletin (in Spanish).

THE ENGINEERING INDUSTRIAL DESIGN DEVELOPMENT CENTRE

Director General: Dr. Yusef K. Mazhar

P.O. Box 2267
Cairo
Tel : 84 68 83 and 85 25 50

Main activities

Technology extension services (55%)
Education and training (15%)
Research and development (10%)
Pilot production (10%)
Commercial production (10%)

Main fields of concentration

Small industry and handicrafts
Industrial design
Engineering industry
Transportation
Consumer goods

Climatic/Geographic focus

None in particular (some emphasis on arid areas)

The Engineering Industrial Design Development Centre (EIDDC) is a governmental centre established in 1968 jointly with the United Nations Industrial Development Organisation (UNIDO) to carry out product design and to develop prototypes for manufacture by local firms, particularly in the engineering sector. The Centre later expanded into industrial design, engineering process design, and capital equipment design. It is now an autonomous unit attached to the Ministry of Industry, and incorporates the former Small Scale Industry Institute.

Most of its work deals with the design, development and testing of AT in the industrial sector. The Centre has developed a wide range of new AT products which includes low-cost washing machines, new housing materials, a prototype of a rugged and inexpensive automobile, improved methods of production in ceramics and other cottage industries as well as several types of industrial machines. The Centre is also actively involved in the provision of services to local small industries and in the transfer of foreign AT.

Scale	-	375 people (all full-time), 220 of whom are professionals
Budget	-	$860,000
Scale of activities in AT	-	80% of total work
Channels of technology diffusion	-	Through the Centre's own work, through international agencies and through industrial firms
Obstacles to technology diffusion	-	Bureaucracy, inadequate legislation and reluctance to accept innovation
Publications	-	Not specified.

SALVADORIAN FOUNDATION FOR DEVELOPMENT AND MINIMUM HOUSING
Fundacion Salvadoreña de Desarrollo y Vivienda Minima

Director: Antonio Fernandez Ibanez, S.J.

18 Avenida Norte Nº 633
Apartado postal
San Salvador
Tel : 22 53 33

Main activities

Research and development
Policy analysis and economic studies

Main fields of concentration

Community development
Housing
Credit and lending systems
Small industry promotion

Climatic/Geographic focus

None in particular

The Salvadorian Foundation for Development and Minimum Housing (FSDVM) started in 1968 as a volunteer project initiated by a Jesuit priest to build houses for 30 families which had lost their homes in a flood. The project was so successful that the people who had been involved in it were motivated to continue it in order to promote the development of the poorest sectors of the population.

Up to now, FSDVM has built more than 5000 housing units through mutual aid and self-help construction methods; 13,200 new units are programmed until 1980. It also has a programme for community development and has set up 13 co-operatives which provide employment for 610 people living within the project area.

FSDVM has two research units. One, sponsored by the World Bank and the International Development Research Centre of Canada, deals with socio-economic evaluations, cost-benefit analysis, market analysis and the evaluation of social change programmes evaluation. The other, sponsored by the Organization of American States, deals with research on construction materials and earthquake resistant building methods, housing project evaluation, technology transfer and AT for housing.

Staff	-	135 people (131 full-time), 21 of whom are professionals
Budget	-	$7,475,000 ($5,205,000 in 1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through projects, international agencies and aid programmes, banks, private credit agencies
Obstacles to technology diffusion	-	Attitude of political leaders, inadequate legislation, reluctance to accept innovation
Publications	-	A survey of the urban housing situation in El Salvador (four volumes). Various reports, case studies and documents on self-help housing problems (in Spanish).

INTERNATIONAL LIVESTOCK CENTRE FOR AFRICA

Director: Mr. D. J. Pratt

P.O. Box 5689
Addis Ababa
Tel : 15 13 22

Main activities

Research and development (79%)
Information and documentation (8%)
Training and education

Main fields of concentration

Animal husbandry
New crops and plants

Climatic/Geographic focus

Tropical rain forests and savannas
Arid and semi-arid regions
Mountainous regions

The International Livestock Centre for Africa (ILCA) is an autonomous non-profit research institution established in 1974 by the Consultative Group on International Agricultural Research (CGIAR). Most of its research, which is highly multidisciplinary, focuses on the problems of livestock development in the various ecological zones of Africa, and has a strong emphasis on management control. New implements, technologies and scientific methods are components of a highly interacting system which covers both AT hardware and software.

ILCA has been working on a number of livestock development schemes, on livestock production systems in arid and semi-arid areas, on small-scale livestock production in highland zones combined with crop production, on the control of the tse-tse fly and new methods of pasture and ranch development in sub-humid zones, and on production systems based on goats and sheep for small farmers. In addition to these major programmes, ILCA is carrying out a study on trypano-tolerant livestock.

The Centre has country programmes in Kenya, Botswana, Mali and Nigeria and is actively involved in disseminating information and training African scientists.

Staff	-	344 people (all full-time), 51 of whom are professionals
Budget	-	$10.5 million ($6.4 million in 1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies, international agencies and aid programmes, credit institutions and educational institutions
Obstacles to technology diffusion	-	Attitude of political leaders, inadequate legislation, cultural and social unacceptability, reluctance to accept innovation and lack of funds
Publications	-	Not specified.

VILLAGE TECHNOLOGY PROGRAMME OF THE TRAINING AND RESEARCH CENTRE FOR WOMEN

Head of Centre: Mary Tadesse
Head of Programme: Dr. Marilyn Carr

United Nations Economic Commission for Africa
P.O. Box 3001
Addis Ababa

Tel : 44 72 00

Main activities

Socio-economic research (40%)
Influencing governmental and political decisions (30%)
Information, documentation and publications (20%)
Education and training
Promotion of local technological traditions

Main fields of concentration

Food crops drying and storage
Muscular energy
Small industry promotion
Social impact analysis of innovation

Climatic Geographic focus

Tropical rain forests and savannas
Arid and semi-arid regions

The Training and Research Centre for Women (ATRCW) of the United Nations Economic Commission for Africa (ECA) was set up in 1975 to encourage the integration of African women in the development process through access to employment and credit, through better training, more appropriate technologies and improved institutions. The Village Technology Programme, which is an integral part of the Centre, assists governments in the identification and implementation of pilot projects aimed at improving the life of rural women and their families. Its activities are financed by the United Nations and church/missionary organisations.

Socio-economic research was conducted in 10 Ethiopian villages to strengthen an ongoing programme of self-help well-digging. A survey was conducted in Sierra Leone to improve traditional village technologies. An attempt is being made in Upper Volta to introduce hand operated grinding mills in 30 villages and a similar pilot project is under way in Sierra Leone. In Gambia, a pilot project is devoted to simple post-harvest equipment (pedal threshers, hand-operated winnowers, rice hullers, etc.). A workshop on solar drying was conducted in Tanzania. A project in Mauretania involves the introduction of simple date-pitting equipment.

Staff	-	3 people (1 full-time), all professionals (does not include administrative support from Centre and consultants)
Budget	-	$70,000
Scale of activities in AT	-	21 man-months
Channels of technology diffusion	-	Through government agencies, international agencies and pilot projects
Obstacles to technology diffusion	-	No specific obstacles
Publications	-	Scientific articles and technical reports.

INSTITUTE OF NATURAL RESOURCES
UNIVERSITY OF THE SOUTH PACIFIC

Director: Professor J. F. Ward

P.O. Box 1168
Suva, Fiji Island (South Pacific)
Tel : 27 131 extension 257

Main activities

Research and development (40%)
Education and training (30%)
Technology extension services (20%)

Main fields of concentration

Energy
Public health
Agriculture
Telecommunications
Environmental problems of tropical ecosystems

Climatic/Geographic focus

Tropical coral and volcanic atolls
Tropical rain forests
Arid and semi-arid regions
Coastal regions
Mountainous regions

The Institute of Natural Resources (INR) is a part of the University of the South Pacific, which is a regional body of eleven South Pacific countries. It was founded in 1969 in order to coordinate courses, training, research and consultation in the science and technology of natural resources within the University. It is funded by the governments of the South Pacific countries, and through foreign aid programmes.

Active investigations have been undertaken in the fields of alternative sources of energy (including bio-gas and the utilisation of wave energy), environmental management of resources, the development of appropriate communication systems, environmental health education, the study of indigenous medicinal plants, and the training of technologists in basic earth sciences.

The INR has set up affiliated centres in seven countries of the South Pacific region.

Staff	-	45 people (42 part-time) all of whom are professionals
Budget	-	Not specified
Scale of activities in AT	-	Approximately 60 man-months
Channels of technology diffusion	-	Through government, international agencies, international aid programmes and educational institutions
Obstacles to technology diffusion	-	Reluctance to accept innovation, lack of competitiveness, lack of funds, lack of technical support and reliability, maintenance difficulties
Publications	-	Course and project manuals.

APPLICATIONS OF RESEARCH ON ENERGY AND SOCIETY
Applications de Recherches sur l'Energie et la Société

Director: Jean Roger Mercier

39 rue Croix-Baragnon
31000 Toulouse
Tel (61) 52 02 05

Main activities

Policy analysis and economic studies (40%)
Education and training (30%)
Technical feasibility studies (30%)

Main fields of concentration

Energy
Integrated agricultural development
Architecture
Domestic waste disposal

Climatic/Geographic focus

Arid and semi-arid countries
Temperate countries
Mountainous areas

The centre for the Applications of Research on Energy and Society (ARES) is an independent consulting firm created in 1977 in order to undertake advanced research on energy and society, as well as to promote practical applications of AT realisations. As a multidisciplinary team whose members have already worked in the field of solar energy, agriculture and Third World development, ARES is working in such areas as architecture, engineering, and the training of technicians, engineers and craftsmen.

ARES has already designed several solar-energy houses (passive systems), a solar-energy air-conditioned pig farm and a bio-gas production method. It has also worked on animal-drawn agriculture in Senegal, Upper Volta, Benin and India and has conducted a socio-economic study on the potentialities of solar energy in rural mountainous areas of Southern France. The training sessions organised by ARES deal with solar and wind energy, and self-building techniques. ARES is also interested in wind energy and co-operates with the University of Montpellier in the framework of project ENEOLE.

Staff	-	7 people (all part-time)
Budget	-	$20,000
Scale of activities in AT	-	21 man-months
Channels of technology diffusion	-	Mainly through international agencies
Obstacles to technology diffusion	-	Attitude of political leaders, reluctance to accept innovation, lack of funds
Publications	-	Several books and articles on energy and agriculture, solar energy, bioclimatic architecture and rural development (in French).

CENTRE FOR THE STUDY AND EXPERIMENTATION OF TROPICAL AGRICULTURAL MACHINERY
Centre d'Etudes et d'Expérimentation du Machinisme Agricole Tropical

Director: Claude Uzureau

Parc de Tourvoie
92 160 Antony
Tel : (01) 237 32 90

Main activities

Research and development, testing and evaluation of new equipment
Information and documentation
Technical feasibility studies

Main fields of concentration

Crop processing and conservation
Agricultural tools and machinery
Cultivation techniques

Climatic/Geographic focus

Tropical rain forests and savannas
Arid and semi-arid regions

The Centre for the Study and Experimentation of Tropical Agricultural Machinery (CEEMAT) took over from the Overseas Agricultural Machinery Committee (CMAOM) in 1962. It is linked to the French Cooperation Ministry through the Group for Studies and Research and Development of Tropical Agronomy (GERDAT) and works in collaboration with the National Centre for the Study and Experimentation of Agricultural Machinery (CNEEMA).

Its activities were initially oriented towards animal-drawn cultivation techniques (field tests, advice to constructors, training). Since 1970 its work has focused more on intermediate mechanization (simplified power tillers and tractors). The CEEMAT has worked in co-operation with manufacturers and research centres in France and developing countries for the development of motocultors, low-power tractors, cassava and peanut processing machinery and crop storage technologies. AT activities represent only about half the budget of the CEEMAT.

Staff	-	25 people, 10 of whom are working on AT (8 professionals, 4 full-time people)
Budget	-	(whole activities) $630,000
Scale of activities in AT	-	60 man-months
Channels of technology diffusion	-	Through government agencies, industrial firms and private development organisations
Obstacles to technology diffusion	-	Lack of competitiveness relative to modern technologies, lack of funds, lack of technical assistance, lack of co-ordination at the international level
Publications	-	Machinisme Agricole Tropical (quarterly) Several handbooks on tropical agricultural cultivation techniques and machinery; monthly newsletter.

CENTRE FOR STUDY AND RESEARCH ON NEW ENERGY SOURCES FOR BUILDINGS
Etudes et Recherches des Energies Nouvelles Appliquées aux Bâtiments

Director: Georges Chouleur

6 rue Fresque
30000 Nîmes
Tel : (66) 36 15 15

Main activities

Technical feasibility studies (100%)

Main fields of concentration

Architecture
Solar energy
Energy savings

Climatic/Geographic focus

Sunny areas

The Centre for Study and Research on New Energy Sources for Buildings (EREN) is an independent consulting centre founded in 1977 in order to study new energy sources and their applications to building problems. It has conducted studies on energy savings and recovery in buildings (through ventilation, passive systems, etc.), general studies on soft energies, and is particularly interested in solar pumps and in the architectural integration of solar captors in buildings.

Staff	-	6 people (all full-time)
Budget	-	$150 000
Scale of activities in AT	-	72 man-months
Channels of technology diffusion	-	Through the Centre's own activities, and through advertisements and the mass media
Obstacles to technology diffusion	-	Bureaucracy, inadequate legislation, lack of competitiveness, lack of funds
Publications	-	None.

FRENCH ASSOCIATION FOR THE STUDY AND DEVELOPMENT OF SOLAR ENERGY APPLICATIONS
Association Française pour l'Étude et le Développement des Applications de l'Energie Solaire

General Delegate: Paul Girard

28 rue de la Source
75016 Paris
Tel : 224 59 35

Main activities

Information and documentation (50%)
Publications (30%)
Technology diffusion

Main fields of concentration

Solar energy
Architecture
Water desalination
Aquaculture

Climatic/Geographic focus

Tropical savannas
Arid, semi-arid and temperate regions

The French Association for the Study and Development of Solar Energy Applications (AFEDES) is an independent non-profit association which originated from the Société Française des Thermiciens in 1966. It organises working groups, meetings, conferences and workshops. It participates in various committees, notably in the field of solar housing, and its study groups are attended by members and outside specialists.

AFEDES has studied the improvement of flat collectors (reliability, thermic characteristics), solar building, heating (materials for heat conveying fluid circuits) and architecture. It has sponsored a working group on meteorological data necessary for the design of projects using solar energy. In 1978, it organised a symposium on aquaculture and has planned an international conference on the legal problems posed by the use of solar energy (which should be held sometime in 1979).

Staff	-	4 people (2 full-time)
Budget	-	$80,000
Scale of activities in AT	-	4 man-months
Channels of technology diffusion	-	Through the mass-media, workshops and conferences
Obstacles to technology diffusion	-	Lack of funds
Publications	-	AFEDES - Actualités solaires (quarterly) Technical notes, workshop reports, textbook on specific scientific knowledge necessary for the study of solar energy applications (in preparation).

FRENCH COMMITTEE FOR INVENTIONS AND INNOVATIONS ADAPTED TO DEVELOPING REGIONS
Comité Français d'Inventions et d'Innovations Adaptées aux Régions en Développement

Director: Marc Bullio

42 rue Cambronne
75015 Paris
Tel : (01) 783 42 88

Main activities

Coordinating and promoting AT activities (53%)
Stimulation of innovation (15%)
Research and development (10%)
Education and training (6%)

Main fields of concentration

Water
Agriculture
Energy
Small-scale industries

Climatic/Geographic focus

Arid and semi-arid regions
Tropical rain forests and savannas

The French Committee for Inventions and Innovations Adapted to Developing Regions (CIARD) is an independent non-profit association established in 1976 to promote inventions and innovations which are particularly well adapted to the conditions of developing countries. It is financed by donations and membership fees.

The association, which works closely with governmental agencies, AT centres, industry and individual inventors, has been particularly active in the promotion of low-cost water pumps (manual and mechanical), notably for the Sahel region, and through its network of members, is seeking to promote innovations in a wide number of other areas relating to basic human needs.

Staff	-	2 full-time coordinators and a large number of part-time helpers
Budget	-	$200,000 ($330,000 in 1978)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Governmental and international agencies, mass-media
Obstacles to technology diffusion	-	Lack of prestige of AT relative to modern technology
Publications	-	*Not specified.*

HYDRO M - WATER STUDY AND MANAGEMENT RESEARCH CENTRE
Hydro M - Bureau d'Etudes et d'Aménagement des Eaux

Director: Michel Mustin

47 bis, Boulevard de Strasbourg
31000 Toulouse
Tel : (61) 23 32 88

Main activities

Technical feasibility studies (50%)
Pilot production
Technology extension
Information and publications

Main fields of concentration

Water resources
Aquaculture and fisheries
Domestic waste disposal
Biological agriculture
Environmental impact studies

Climatic/Geographic focus

Temperate and coastal regions
Mountainous regions

Hydro M is an independent consulting firm created in 1975 to work in the field of aquaculture, pisciculture and ecological agriculture, using solar and wind energy. It also deals with water pollution problems and the physical, chemical and biological methods to process waste waters.

Hydro M has a 110 hectare experimental estate near Toulouse with a large variety of fauna and flora, in which it is undertaking a complete study of a new agrosystem (agriculture, animal husbandry and pisciculture). A regional development project on fishing and pisciculture is currently in progress in co-operation with regional public agencies dealing with agriculture and administration.

Staff	-	5 people (2 full-time)
Budget	-	$6,000
Scale of activities in AT	-	12 man-months
Channels of technology diffusion	-	Through the firm's own activities, through local and regional government agencies and through the universities
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, reluctance to accept innovation, lack of funds
Publications	-	Various booklets, reports and general articles (in French).

INTERNATIONAL RESEARCH CENTRE ON ENVIRONMENT AND DEVELOPMENT
Centre International de Recherches sur l'Environnement et le Développement

Director: Ignacy Sachs

54 Boulevard Raspail
75270 Paris Cedex 06
Tel : 544 38 49

Main activities

Publications (40%)
Information and documentation (20%)
Education and training of personnel (10%)

Main fields of concentration

Eco-development
All areas related to AT

Climatic/Geographic focus

None in particular

The International Research Centre on Environment and Development (CIRED) was established in 1972 as a part of the Ecole des Hautes Etudes en Sciences Sociales. It is financed mostly by contracts from French and foreign public administrations.

CIRED works within the conceptual framework and philosophy of the 1972 Stockholm Conference on the Environment. Its main objective is the interdisciplinary study of strategies for the harmonisation of social and economic growth and the rational management of natural resources and the environment. One of the main themes of these studies is the concept of eco-development which aims at integrating all aspects of Third World countries' development (life styles, consumption patterns, technology, land management practices, environment). Studies have been conducted for different geo-climatic conditions (wet and dry tropics, arid and semi-arid zones in Algeria, Amazonian rain forest, lagoons) and have considered numerous topics related to AT, such as aquaculture, nutrition, public health, industrialisation, rural areas management, etc. CIRED also operates an Eco-development Liaison and Information Unit.

Staff	-	15 people (11 full-time), 4 of whom are professionals
Budget	-	Not specified
Scale of activities in AT	-	Approximately 45 man-months
Channels of technology diffusion	-	Through the Centre's own activities, international agencies (notably UNEP) and the university
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, lack of technical support
Publications	-	Four books and numerous reports on eco-development, AT, development, health, agriculture and the environment (in French). "Ecodevelopment News" (information periodical on eco-development - in English).

LA ROQUETTE LABORATORY
Laboratoire de la Roquette

Director: Ripley D. Fox

34190 St. Bauzille de Putois
Tel : (67) 29 60 60

Main activities

Technical feasibility studies
Technology diffusion
Training of personnel

Main fields of concentration

Aquaculture and algaculture
Solar energy
Cultivation techniques

Climatic/Geographic focus

Tropical countries
Arid and semi-arid regions

The Laboratoire de la Roquette is an independent non-profit AT centre whose aim is to help fight malnutrition in the developing countries. It was founded in 1969 and is financed by grants, membership fees and funds from churches and missionary organisations.

The Laboratory is developing simple, low-cost techniques for growing the protein-rich alga Spirulina at the village level, with equipment built, owned and operated by the villagers themselves in hot countries. No fuel is consumed, and solar energy is used to stabilize the temperature, provide carbonic gas, help stir the system and harvest the algae. A village sanitation system using aerobic fermentation to produce fixed nitrogen (NH_3) is part of the system. Seven prototypes have been built and tested. Another, combined with the village sanitation system is now under construction in Wardha (India).

Staff	-	Not specified
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through personnal contacts
Obstacles to technology Diffusion	-	Bureaucracy, lack of funds
Publications	-	Several reports on experimental systems. A book on algaculture is in preparation.

MEDITERRANEAN CO-OPERATION FOR SOLAR ENERGY
Coopération Mediterranéenne pour l'Energie Solaire

President: Professor M. Perrot
Secretary: Professor J. P. David

Boîte Postale 33
13671 Aubagne Cedex

Main activities

Information and documentation
Publications

Main fields of concentration

Solar energy

Climatic/Geographic focus

None in particular

The Mediterranean Co-operation for Solar Energy (COMPLES) is an international non-profit association created in 1964 by several personalities of the Mediterranean basin. Its members are scientists and engineers directly engaged in solar energy research and its applications.

Its objectives are to carry out an inventory of achievements in the field of solar energy and of the practical problems relating to the application of solar energy, collect and disseminate information, organise annual international meetings and to outline new directions for research.

COMPLES has now overstepped the bounds of the Mediterranean and group members are now active in more than 50 countries. National sections have been created in eleven countries.

Staff	-	Not specified
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Publications, annual conference
Obstacles to technology diffusion	-	Not specified
Publications	-	Revue Internationale d'Héliotechnique (in French) Heliotechnic Research Analytic Index (in French).

MOVEMENT FOR THE PROMOTION OF BALANCED TECHNOLOGIES
Mouvement pour la Promotion des Technologies d'Equilibre

President: Mme. G. Rivoire

7 rue Jean Prédali
49000 Angers

Main activities

Technology diffusion
Education and training
Testing of new equipment

Main fields of concentration

Solar energy
Wind energy
Roads and transportation

Climatic/Geographic focus

Temperate regions

The Movement for the Promotion of Balanced Technologies (MPTE) is an independent non-profit association founded in 1976 which aims to promote ecologically sound technologies which reduce social inequalities and which increase the autonomy of man.

MPTE is active mainly in two fields: energy and transportation (public transportation and bicycle promotion). It has developed a solar water heater and has studied various housing projects combining solar and wind energy. It also organises regional training sessions and workshops on solar energy.

Staff	-	No permanent remunerated staff; about 50 volunteers
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the mass media, training sessions, advertising, educational institutions and universities.
Obstacles to technology diffusion	-	Lack of funds, lack of technical assistance
Publications	-	Mimeographed notes and reports.

NATIONAL CENTRE FOR THE EXPLOITATION OF THE OCEANS
Centre National pour l'Exploitation des Océans

President: Gérard Pikety

66 Avenue d'Iéna
75116 Paris
Boîte Postale 10716
75763 Paris Cedex 16
Tel : (01) 723 55 28

Main activities

Research and development
Pilot production
Technology extension
Technical feasibility studies

Main fields of concentration

Exploitation of ocean resources
Sea energies
Aquaculture and fishing
Pollution of the seas

Climatic/Geographic focus

Oceans and coastal regions

The National Centre for the Exploitation of the Oceans (CNEXO) is an industrially- and commercially-oriented public agency set up in 1967 in order to develop knowledge of the oceans and to promote studies and research on the exploitation of ocean resources. Since its creation, CNEXO has accumulated a vast amount of knowledge and technical expertise concerning the oceans which is now at the application stage, particularly in the field of AT (aquaculture and fight against pollution).

CNEXO's research in aquaculture has led to the selection of new species for breeding and commercial production. Its development projects in this field have led to significant outputs of shrimps, shellfish and other animals. The Centre has specialised research stations in Brittany and the Pacific (Polynesia and New Caledonia) and has set up a subsidiary, France-Aquaculture (same address) specialised in the commercialisation of aquaculture technologies.

Staff	-	154 people (all full-time)
Budget	-	$42.6 million
Scale of activities in AT		1,560 man-months
Channels of technology diffusion	-	Through the Centre's activities and government agencies
Obstacles to technology diffusion	-	Lack of funds
Publications	-	Scientific, technical, economic and legal reports, summaries of research campaigns and proceedings of the work of its Centre in Brittany.

OECD DEVELOPMENT CENTRE
Centre de Développement de l'OCDE

President: Professor Louis Sabourin
AT Contact: Nicolas Jéquier

94 rue Chardon-Lagache
75016 Paris
Tel : 524 82 00

Main activities

Policy analysis
Economic studies
Documentation and information
Publications

Main fields of concentration

Problems of interdependence between industrialised and developing countries
Technology and industry
International trade
Raw materials processing and food

Climatic/Geographic focus

None in particular

The Organisation for Economic Co-operation and Development (OECD) is an international inter-governmental organisation grouping 24 countries of Western Europe, North America and the Asia-Pacific region (Japan, Australia and New Zealand). It was established in 1960 as the successor of the Organisation for European Economic Co-operation (OEEC) whose origins go back to the Marshall Plan. Its aim is to promote economic growth of Member countries and foster the expansion of world trade on a non-discriminatory basis.

The Development Centre of OECD, an autonomous body established within the OECD in 1962 is a research, policy analysis and liaison centre working on problems of mutual interest to industrialised and developing countries. It has conducted a number of studies on international trade, technology transfer, multinational corporations, industrialisation (including scaling down of industrial processes and engineering) and AT, as well as in the fields of demography, nutrition, rural development and statistics. In the future, most of the work on technology will focus on problems of decision making. The Centre also acts as a liaison centre for research institutes throughout the world working on development problems.

Staff	-	63 people (all full-time), 24 of whom are professionals
Budget	-	Not available
Scale of activities in AT	-	Approximately 18 man-months
Channels of technology diffusion	-	Mainly through publications
Obstacles to technology diffusion	-	Lack of time for dissemination of research results
Publications	-	Numerous books, reports and working papers (in French and English).

RESEARCH GROUP ON RURAL TECHNIQUES
Groupe de Recherches sur les Techniques Rurales

Contact: J. M. Collombon

34 rue Dumont d'Urville
75116 Paris
Tel : 260 36 80

Main activities

Information and documentation
Publications
Research and development
Promotion of local technological traditions

Main fields of concentration

All fields of AT

Climatic/Geographic focus

None in particular

The Research Group on Rural Techniques (GRET) is a non-profit association founded in 1976 and financed largely by the French foreign and co-operation ministries. Its aim is to establish contacts with individuals, groups and institutions interested in AT, gather information on these technologies and promote dissemination to development professionals working in the field. GRET is not itself a research centre, but sponsors research activities in other organisations.

The information collected by GRET is stored in the files of its "Fichier Encyclopédique" (Encyclopaedic File). It is disseminated mainly through its Réseau de Communications pour le Développement (RCD : communication network for development). GRET has set up Project Oikos, which aims to improve this network and help it become self-sustaining in the near future.

Staff	-	15 people (all part time)
Budget	-	Not specified
Scale of activities in AT	-	Around 100 man-months
Channels of technology diffusion	-	Through governmental and international agencies, universities, advertisements and the mass media
Obstacles to technology diffusion	-	Lack of competitiveness relative to traditional technologies, lack of funds, lack of technical support
Publications	-	Fichier Encyclopédique du GRET (quarterly); Reports and occasional papers.

STUDY GROUP FOR SOLAR FURNACES APPLIED TO TROPICAL CONDITIONS
Groupe d'Etudes de Fours Solaires à Applications Tropicales

Heads of experiment: Mr. Hameury and Mr. Salomon

Head office : 106 rue du Bac
75341 Paris Cedex 07
Tel : 320 14 14, ext. 309

Field address : 136 Chemin Haut du Mas de Roulan
30000 Nîmes
Tel : (66) 36 21 43

Main activities

Research and development
Testing of new equipment

Main fields of concentration

Solar energy applications

Climatic/Geographic focus

Tropical regions
Arid and semi-arid regions

The Groupe d'Etudes de Fours Solaires à Applications Tropicales (GEFOSAT) is an independent non-profit association established in 1978 and financially supported by the Secours Catholique and the Fondation de France. Its aim is to help developing countries through the study, design and operation of simple low-cost solar furnaces and ovens. The heat provided by these equipments can be used for small-scale metal-working (iron, light alloys and aluminium), for cooking pottery and other earthenware, for making glass, cement or lime, and for producing steam for food processing and the moulding of plastics.

GEFOSAT has designed and built an experimental furnace for the Sahelian countries. This 11 kW prototype is currently being tested in Southern France for manufacturing bricks and pottery.

Staff	-	2 professionals
Budget	-	Not available
Scale of activities in AT	-	Not available
Channels of technology diffusion	-	Not yet relevant
Obstacles to technology diffusion	-	Not yet relevant
Publications	-	None.

THIRD WORLD INNOVATION GROUP
Groupe Innovation - Tiers Monde

Director: Claude Laigle

25 bis rue du Château
92200 Neuilly-sur-Seine
Tel : 745 54 30

Main activities

Technical feasibility studies
Technology diffusion
Influencing governmental decision making
Information and documentation

Main fields of concentration

Telecommunications
Solar energy
Energy savings
Scaling-down of industrial processes
Transportation

Climatic/Geographic focus

Tropical rain forests and savannas
Arid and semi-arid regions

The Groupe Innovation-Tiers Monde (ITM) is an interdisciplinary non-profit organisation created in 1977 by a group of experts, engineers, entrepreneurs, and scientific researchers, whose aim is to design viable AT projects. In all its projects ITM tries to involve the users in the design of the technology and it carries out economic, social, cultural and ecological impact studies at the very beginning of each project. It attempts to carry out most of its projects in the country of the users.

Until now ITM has worked mainly in the fields of telecommunications (rural telephone exchange, low-cost low-energy microwave links, low-cost satellite television network; collective television networks, small-scale production of transmission links), solar energy, (photovoltaic generator) and the production of organic fertilizer. It has also studied the possibilities of transportation by airships.

Staff	-	20 people (1978)
Budget	-	$215,000 (1978)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Not yet applicable
Obstacles to technology diffusion	-	Not yet applicable
Publications	-	None yet.

INSTITUTE FOR PRODUCTION TECHNIQUES AND AUTOMATION
Institut für Produktionstechnik und Automatisierung

Director: Prof. Dr. Ing. H. J. Warnecke

Holzgartenstrasse 17
Postfach 951
7000 Stuttgart 1
Tel : (0711) 207 39 00

Main activities

Information and documentation (40%)
Publications (20%)
Research and development (10%)
Pilot production (10%)
Technical feasibility studies (10%)
Influencing governmental and political decision-making (10%)

Main fields of concentration

Small industry promotion
Scaling-down of industrial processes
Small metal working
AT software

Climatic/Geographic focus

None in particular

The Institute for Production Techniques and Automation (IPA) was established in 1960, and is associated with the Fraunhofer Gesellschaft (a German public agency) and the University of Stuttgart. Its objective is to conduct applied research in the field of production engineering and automation.

Since 1974 it has oriented part of its activities towards the promotion of AT for developing countries. IPA has designed and produced a small motor-bicycle, developed industrial profiles in wire and sheet-metal technology, devised an evaluation scheme in order to select the appropriate technologies and developed a computer-aided model to select machinery equipment.

Staff	-	145 people (all full-time), 115 of whom are professionals
Budget	-	Not specified
Scale of activities in AT	-	84 man-months
Channels of technology diffusion	-	Through the Institute's own activities and through fairs
Obstacles to technology diffusion	-	Bureaucracy, cultural and social unacceptability, lack of competitiveness relative to modern technology and maintenance difficulties
Publications	-	Several papers on technology transfer (all in German).

INTERDISCIPLINARY PROJECT GROUP FOR APPROPRIATE TECHNOLOGY
Interdisziplinäre Projektgruppe für Angepasste Technologie

Contacts: Rolf Peter Owsianowski
Friedrich von Bismarck

Technische Universität
Lentzeallee 86
D-1000 Berlin 33
Tel : (030) 314 73 37

Main activities

Research and development (60%)
Information and documentation (15%)
Publications (15%)
Technology extension (10%)

Main fields of concentration

Energy
Water
Agricultural machinery
Waste disposal
Preventive medicine

Climatic/Geographic focus

Tropical savannas
Arid and semi-arid regions
Temperate and coastal regions

The Interdisciplinary Project Group for Appropriate Technology (IPAT) was set up in 1976 within the Berlin Technical University by a group of students interested in the practical application of AT in developing countries. The Group is presently funded for the most part by the German Government.

IPAT is now composed of a group of technicians and scientists working together on a co-operative basis. Its current work consists of four major groups of projects : wind and solar pumping systems (three types of wind-converters and the corresponding water pumps have been developed and built), utilisation of organic materials (greenhouse design for semi-arid areas, a fishpond-greenhouse complex, bio-gas converters and use of water hyacinths as bio-mass, alcohol fermentation from sugar cane by-products, composting methods) and solar desalination of sea and brackish water and methods of irrigation (drip irrigation, motorised irrigation).

Rising interest in AT at the Berlin Technical University has led to the development of a teaching programme in AT which will start in 1979.

Staff	-	15 people (all full-time)
Budget	-	$220,000
Scale of activities in AT	-	180 man-months
Channels of technology diffusion	-	Through government agencies
Obstacles to technology diffusion	-	Not yet applicable
Publications	-	Research reports (in German, with brief summaries in English).

RESEARCH INSTITUTE FOR INTERNATIONAL TECHNO-ECONOMIC CO-OPERATION
Forschungsinstitut für Internationale Technisch-Wirtschaftliche Zusammenarbeit

Director: Prof. Hans A. Havemann

Henricistrasse 50
D-5100 Aachen
Tel : (0241) 80 61 97

Main activities

Policy analysis and economic studies
Publications
Information and documentation
Research and development

Main fields of concentration

Technical education planning
Regional planning
Agriculture
Industry

Climatic/Geographic focus

None in particular

The Research Institute for International Techno-economic Co-operation (FIZ) is a part of the Rheinisch Westfälische Technische Hochschule of Aachen (RWTH). It was set up in 1957 and financed mainly by the university, but also receives funds from contracts with industry or the government.

The main activity of the Institute is techno-economic and socio-economic research. This research falls into five categories: methodology; technology and development; society and culture; industry and science; co-operation and planning. The main themes of study have been regional planning in the developing countries, the planning of technical assistance projects, technology transfer and the planning and organisation of technical training and education centres. This research is backed up by a number of case studies carried out in various developing countries.

The Institute works in co-operation with the major international agencies (UNIDO, UNESCO, ILO, OECD, World Bank). While it does not consider itself as an AT centre in the strict sense of the word, many of the issues it has worked on have a direct bearing on the problems of the AT community.

Staff	-	33 people, 12 of whom are professionals
Budget	-	Included in the budget of the university
Scale of activities in AT	-	Cannot be estimated exactly; according to requirements
Channels of technology diffusion	-	Own activities, international and government agencies
Obstacles to technology diffusion	-	Not applicable
Publications	-	International co-operation series; Inter-Technique Series; Research Reports.

SCIENTIFIC RESEARCH INSTITUTE FOR WIND ENERGY TECHNIQUES
Forschungsinstitut für Windenergietechnik

Director: Professor Dr. U. Hütter

University of Stuttgart
Pfaffenwaldring 31
7000 Stuttgart 80
Tel : (0711) 784 24 02, 784 24 04

Main activities

Research and development
Pilot production
Technical feasibility studies
Information and documentation
Publications
Influencing governmental and political decision-making

Main fields of concentration

Wind energy
Glass fibre reinforced plastics

Climatic/Geographic focus

All areas except tropical rain forests

The Scientific Research Institute for Wind Energy Techniques (FWE) is the successor organisation, established in 1975, of the Studiengesellschaft für Windkraft (StGW or Society for the Study of Wind Energy), which was dissolved in 1967. It is affiliated with the Institut für Flugzeugbau (Institute for Aircraft Construction) of the University of Stuttgart, and it is financed by industry, consulting fees and the sale of publications.

The FWE is developing a small-scale wind energy converter with a diameter of 10 metres and an output of approximately 6 kW. A special part of this work is the development of rotor blades in glass fibre and carbon fibre reinforced plastic materials.

Staff	-	Not specified
Budget	-	Not available
Scale of activities in AT	-	Not available
Channels of technology diffusion	-	Through schools and universities
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, lack of competitiveness and lack of funds
Publications	-	Technical reports (mostly in German, some in English).

TECHNOLOGY CONSULTANCY CENTRE

Director: Dr. J. W. Powell

University of Science and Technology
Kumasi
Tel : 53 51 ext. 308

Main activities

Commercial production (37%)
Technology extension services (27%)
Pilot production (25%)
Research and development (5%)

Main fields of concentration

Solar energy and methane
Agriculture
Small industry (textiles, metal-working, handicrafts)
Building materials

Climatic/Geographic focus

Tropical rain forests and savannas

The Technology Consultancy Centre (TCC) was set up in 1972 as a department of the University of Science and Technology to strengthen the links between the institution and industry in the promotion of Ghana's industrial development. The centre enables government departments, industry and individual entrepreneurs to draw upon the services of the 300 or so professionally qualified staff in the various faculties of the University.

TCC has been engaged in three types of activities: consulting services to large-scale industries and government agencies; advice and assistance to craftsmen and entrepreneurs; promotion and development of pilot production units on and off the campus. Technologies developed by the Centre include a steel bolts and nuts production unit, a pedal-operated rice thresher, a pilot soap production plant (six units in operation); a broadloom weaving unit; a methane digestor and a pyrolytic convertor using sawdust to produce oil, gas and charcoal. It has also set up co-operative societies to promote the development of rural cottage industries.

It is envisaged in the next five years to set up town centres in other regions of the country to serve as extension units and to specialise in projects particularly adapted to the needs of the regions concerned.

Staff	-	65 people (11 full-time), 7 of whom are professionals
Budget	-	$250,000
Scale of activities in AT	-	84 man-months
Channels of technology diffusion	-	Through pilot production units, advertisement, the mass-media and international aid programmes
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, lack of technical supports and maintenance difficulties
Publications	-	Annual reviews, quarterly newsletter and numerous papers and research reports (in English).

THESSALONIKI AGRICULTURAL AND INDUSTRIAL INSTITUTE
THE AMERICAN FARM SCHOOL

Director: Bruce M. Lansdale

P.O. Box 140
Thessaloniki
Tel : (031) 41 15 22

Main activities

Education and training (50%)
Commercial production (40%)
Pilot production (5%)
Technology extension services (5%)

Main fields of concentration

Agricultural machinery
Cultivation techniques
Irrigation
Husbandry
Waste waters
Textile industry

Climatic/Geographic focus

Semi-arid regions

The Thessaloniki Agricultural and Industrial Institute, also known as the American Farm School (AFS), is an agro-technical training centre located about 20 km. south of Thessaloniki. It was founded in 1904 by Dr. J. H. House and now occupies 200 hectares. It is dedicated to the development of human resources for rural progress. The school has established a series of flexible, innovative educational programmes, a boys' school specialising in farm machinery and horticulture, a girls' school featuring home economics and crafts, a crafts centre, several agricultural production units for demonstration purposes, a community centre for the Thessaloniki area and a model institution for international development.

The school does not produce or develop AT items itself but tries to fill the gap between AT innovators and users. Among its main achievements are a 30-cow dairy unit, which seems the most appropriate size for a one-man village operation, a waste handling system for livestock operation, an exterior support greenhouse allowing the use of a small tractor, and a highly efficient drip irrigation system for olive groves and vineyards.

Staff	-	115 people (112 full-time), 40 of whom are professionals
Budget	-	$2,350,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through educational activities
Obstacles to technology diffusion	-	The fact that students of the school do not return home to the villages to engage in agricultural production after their graduation
Publications	-	Not specified.

ANTILLES AND GUYANA AGRONOMIC RESEARCH CENTRE
Centre de Recherches Agronomiques des Antilles et de la Guyane

Administrator: L. Salmon-Legagneur

Domaine Duclos
97170 Petit Bourg
Guadeloupe
Tel : 85 20 40, 85 22 27

Main activities

Research and development (80%)
Pilot production (5%)
Technology diffusion (5%)
Information and documentation (5%)

Main fields of concentration

Animal husbandry
Agriculture
Food processing
Aquaculture
Pest control

Climatic/Geographic focus

Arid and semi-arid regions
Tropical countries
Coastal regions

The Antilles and Guyana Agronomic Research Centre (CRAAG) is an overseas agency of the French National Agronomic Research Institute (INRA) devoted to the agricultural problems of the French West Indies. It was established in 1949, and its activities in the field of AT go back to 1964.

The CRAAG has developed a wide variety of plants adapted to tropical climates (tomatoes, cantaloupes, eggplants, beans, yams) as well as better animal husbandry methods (cows and sheep) for savanna regions and improved grasslands. Research is now being conducted on sugarcane (rhum technology, use of wastes), aquaculture (prawn breeding) and the biological control of insects (borers).

Staff	-	225 people
Budget	-	$4 million
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies and publications
Obstacles to technology diffusion	-	Reluctance to accept innovation; lack of technical support
Publications	-	A quarterly journal.

CENTRE OF MIDDLE-AMERICAN STUDIES AND APPROPRIATE TECHNOLOGY
Centro de Estudios Mesoamericanos y de Technología Apropiada

Director: Dr. Roberto Caceres Estrada

8 a. calle 6-06, zona 1
Edificio Elma, Apto. 602
Apartado Postal 1160
Guatemala City
Tel : 8 65 12

Main activities

Promotion of local technological traditions (20%)
Pilot production (20%)
Education and training (20%)
Technology diffusion (10%)
Policy analysis and economic studies (10%)

Main fields of concentration

Energy
Public health
Housing
Small industry promotion
Waste waters
Control of ecosystems

Climatic/Geographic focus

Temperate regions
Mountainous regions

The Centre of Middle-American Studies and Appropriate Technology (CEMAT) is an independent non-profit AT centre financed mainly by foreign aid programmes, donations and church organisations. It was established after the 1976 earthquake and its main function is to promote the diffusion of AT and facilitate exchanges of experiences in this field.

Technologies promoted by CEMAT include mud-sand stoves adapted from an original Indian design (200 units in operation), digester latrines adapted from a Chinese model, inexpensive hand-made cematita bricks made from puzzolanic materials and a simple wood and plastic solar water heater. It has organised a number of workshops on alternative medicine for the training of primary health care workers and is actively engaged in the development of non-formal educational methods in areas such as sanitation, housing, nutrition and decision-making. It is also working on the diffusion of AT through indigenous language speaking radio stations and has established a network for the diffusion of AT (RENET).

Staff	-	7 people (6 full-time), 5 of whom are professionals
Budget	-	$107,850 ($15,700 in 1976)
Scale of activities in AT	-	19 man-months
Channels of technology diffusion	-	Through the Centre's own efforts
Obstacles to technology diffusion	-	Bureaucracy and lack of competitiveness relative to modern technology
Publications	-	Not specified.

EXPERIMENTAL STATION CHOQUI
Estación Experimental Choqui

Governing Council (Larry Jacobs)

Apartado Postal 159
Quezaltenango

Main activities

Technology extension services (40%)
Research and development (20%)
Education and training (20%)
Publications (10%)

Main fields of concentration

Energy
Water resources
Soil protection and testing
Training of medical personnel

Climatic/Geographic focus

Temperate regions
Mountainous regions and high altitude plateaux

The Estación Experimental Choqui was established in 1973 as a non-profit non-governmental organisation to promote agriculture and soil conservation in the Western highlands of Guatemala. Its work in AT began somewhat later as a result of the need for a more integrated approach to development and following the realisation of the energy problems caused by the shortage of wood.

Most of the Station's work in AT is geared towards energy savings in cooking, water heating and drying, as well as towards a reduction in cost of proven AT's such as bio-gas generation. The Station has developed a simple low-cost ($4.00) mud cooking stove, a sun-tray solar water heater and solar driers for fruit and vegetables. It has also developed small bio-gas plants adapted to temperate and cold climates. The Station's testing laboratory provides technical services for small farmers. The Station has been involved in low-cost primary health care. New projects include wind-powered water pumps for irrigation and home use, and the testing of acceptance and feasibility of various latrine designs.

Staff	-	12 people (9 full-time), 6 of whom are professionals
Budget	-	$15,000
Scale of activities in AT	-	126 man-months
Channels of technology diffusion	-	Through the Station's own work, and notably through courses
Obstacles to technology diffusion	-	Cultural and social unacceptability
Publications	-	Information brochure (in English), magazine (in Spanish) and technical notes on cooking stoves and solar water heaters (in Spanish and English).

NUTRITION INSTITUTE OF CENTRAL AMERICA AND PANAMA
Instituto de Nutrición de Centro America y Panamá

Director: Carlos Tejada Valenzuela

Carretera Roosevelt, zona 11
P.O. Box 11-88
Guatemala City
Tel : 4 37 62, 4 56 55

Main activities

Research and development (40%)
Education and training (30%)
Technical co-operation between developing countries (30%)

Main fields of concentration

Nutrition
Food sciences

Climatic/Geographic focus

None in particular

The Nutrition Institute of Central America and Panama (INCAP) is a regional international organisation created in 1946 by the Governments of Costa-Rica, El Salvador, Guatemala, Honduras and Panama, and by the Pan American Sanitary Bureau (now called the Pan American Health Organization, a regional office of the World Health Organisation). Its mission is to study the nutritional problems of the region, to find solutions and ensure the effective application of these solutions. INCAP's wide variety of programmes fall into three main categories; research, training and advisory services.

Research activities have led to the development of many new products for human and animal nutrition, among others: low-cost vegetable mixtures of high nutritive value, sugar fortified with iron salts, vitamin A fortified sugar, new sources of protein, coffee pulp as an animal feed, and the use of industrial and agricultural by-products in animal nutrition.

The Institute also carries out nutritional activities in the health, agricultural and educational sectors.

Staff	-	520 people, 80 of whom are professionals
Budget	-	$4,500,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through governments, international agencies and universities
Obstacles to technology diffusion	-	Attitude of political leaders; bureaucracy; lack of funds
Publications	-	Not specified.

INDUSTRIAL INFORMATION CENTRE
Centro de Informacion Industrial

Director: Hernan Arguello

Universidad Nacional Autonoma de Honduras
Tegucigalpa, DC
Tel : 22 21 01 extension 114

Main activities

Information and documentation (60%)
Technology diffusion (10%)
Promotion of local technological traditions (10%)

Main fields of concentration

Small industry promotion
Scaling down of industrial processes
Building materials
Hydraulic energy

Climatic/Geographic focus

Tropical, temperate and coastal regions

The Industrial Information Centre (CII) was founded in 1976 under the patronage of the Organization of American States (OAS) and the University of Honduras and is financed by these two institutions. It is located in the engineering faculty of the university, with which it has close contact. The Centre is part of a project on the development of information services and technical assistance to industry in Central America and the Caribbean.

The Centre provides investigators and small entreprises with technical information, mainly in the field of mechanical and industrial engineering, civil constructions, the wood industry and leather and its derivates. The staff has also designed a few new technologies : a modified hydraulic ram; a hook-making machine for the clothing industry, an orange juice extracting machine and a winch for the fabrication of supports for horse saddles.

Future plans include the development of a methodology for the improvement of operations of industrial plant; and the creation of an Intermediate Technology Service (SETI).

Staff	-	9 people, all full-time
Budget	-	$35,000 (1976: $17,000)
Scale of activities in AT	-	72 man-months
Channels of technology diffusion	-	Through the university and the Centre's publications
Obstacles to technology diffusion	-	Reluctance to accept innovation; lack of competitiveness relative to traditional technologies
Publications	-	Numerous technical notes and reports.

INTERNATIONAL VOLUNTARY SERVICES IN HONDURAS
Servicio Internacional de Voluntarios en Honduras

Volunteer coordinator: Daniel J. Riederer

Apartado 1149
Tegucigalpa
Tel : 22 74 70

Main activities

Research and development
Promotion of local technological traditions
Testing and evaluation of new equipment
Technology extension services

Main fields of concentration

Water energy
Water resources
Public health
Cultivation techniques
Small metal-working
Human settlements

Climatic/Geographic focus

None in particular

International Voluntary Services (IVS) is a voluntary help organisation with headquarters in Washington, D.C. It has been working in Honduras since 1974. Its activities in that country, which are financially supported by foreign aid programmes, a foundation and missionary organisations, focus on agricultural development, rural infrastructures and public health.

Several volunteers have been involved in AT projects in irrigation and housing. Technologies which they have developed and diffused include oxydation lagoons for sewage treatment, water wheels for the irrigation of flood plains in the dry season, land-levelling equipment built from scrap and abandoned equipment, and self-help housing for low-income populations. One future activity is the application of animal power and wind energy for drawing water from deep wells.

Staff	-	9 volunteers (all professionals)
Budget	-	$190,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through projects carried out by field workers
Obstacles to technology diffusion	-	No generalisations can be made (obstacles vary considerably from project to project)
Publications	-	None in Honduras.

HONG KONG PRODUCTIVITY CENTRE

Director: Dr. John C. Wright

21st Floor, Sincere Building
173 Des Voeux Road
G.P.O. Box 6132
Hong Kong
Tel : 544 31 81

Main activities

Research and development
Technology diffusion
Technology extension services

Main fields of concentration

Technical assistance for industry
Technical information
Industrial development services

Climatic/Geographic focus

None in particular

The Hong Kong Productivity Centre (HKPC) is an autonomous non-profit organisation established in 1967 to promote the increased productivity of industry in Hong Kong. It offers professional services to industry in technology, industrial consultancy, computer usage, training and research and development.

AT represents only one part of its activities. Representative of its design work in this field is, for instance, a range of low-cost automation devices and automatic machines for secondary machinery operations, component assemblies, quality control and process control. The Centre has also conducted a number of economic analyses on Hong Kong industries such as clothing, textiles, electronics, watch-making, furniture, printing and publishing.

HKPC is affiliated with the Asian Productivity Organisation (APO) and Technonet Asia (Singapore).

Staff	-	126 people (all full-time), 57 of whom are professionals
Budget	-	$1.69 million
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through training and consultancy services, advertisement and the mass media
Obstacles to technology diffusion	-	Reluctance to accept innovation and lack of technical support
Publications	-	Industrial directory, reports on specific industries (in English and Chinese), 2 quarterly bulletins and a monthly newsletter (in English).

IND 100

INDIA

AGRO-INDUSTRIAL SERVICE CENTRE

Director: Moran Parikh

Suruchi Campus
P.O. Box 4
Bardoli, Gujarat 394601
Tel : Bardoli 95

Main activities

Commercial production (75%)
Education and training (15%)
Technology extension (10%)

Main fields of concentration

Agricultural tools and implements
Energy
Small industry promotion
Waste disposal

Climatic/Geographic focus

All regions except tropical savannas and cold regions

Yantra Vidyalaya (Agro-Industrial Service Centre) is a small non-profit AT centre affiliated with the Gandhi Rural University (Gandhi Vidyapith Vedchi). It was established in 1970 in the wake of the Land Gift Movement (Bhoodan) which, among others, pointed to the need for research on bullock-driven equipment and hand tools for agriculture. Research is carried out by the Agri-Tools and Research Centre Bardoli, and the tools and implements it develops are produced and sold by Yantra Vidyalaya.

Technologies developed and commercialized by these two centres include a wide range of agricultural tools and implements, a simple solar oven, a gas plant running on agricultural wastes and a bio-gas plant running on cow dung. Yantra Vidyalaya is also involved in the training of village artisans.

Staff	-	10 people (all full-time), 7 of whom are professionals
Budget	-	$3,000
Scale of activities in AT	-	120 man-months
Channels of technology diffusion	-	Through the Centre's own activities and the mass media
Obstacles to technology diffusion	-	Cultural and social unacceptability
Publications	-	Technical reports and booklets (all in Gujarati).

APPROPRIATE TECHNOLOGY DEVELOPMENT ASSOCIATION (INDIA)

Chairman: Shri A.K. Karan
Executive Director: M. M. Hoda

Gandhi Bhawan
P.O. Box 311
Lucknow, Uttar Pradesh 226001
Tel : 2 34 51

Main activities

Pilot production (60%)
Testing and evaluation of new equipment (15%)

Main fields of concentration

Crop processing and conservation
Small industry promotion
Scaling down of industrial processes
Textile industry
Waste disposal

Climatic/Geographic focus

None in particular

In 1972, the Appropriate Technology Development Unit was set up at the Gandhian Institute of Studies in Varanasi. Its purpose was to propagate the concept of AT and promote research in this field in India. In 1976, it was reorganised into the Appropriate Technology Development Association (India) and is affiliated with ITDG in London.

ATDA carries out surveys, analytical studies, research activities and pilot projects in AT. It also provides technical consultancy services, holds workshops and training programmes, and helps entrepreneurs and government agencies to set up new AT production units on a turn-key basis.

Technologies on which ATDA has been working include the scaling down of sugar production, rural pottery, small-scale production of cement, decentralised spinning, rice-milling at the village level, utilisation of animal corpses, bio-gas production, solar cookers and forestry.

Staff	-	15 people (11 full-time), 9 of whom are professionals
Budget	-	$40,000 ($20,000 in 1976)
Scale of activities in AT	-	110 man-months
Channels of technology diffusion	-	Through government agencies, international agencies and turn-key projects in AT
Obstacles to technology diffusion	-	Main difficulty is the imperfect development of AT; other obstacles are the attitude of political leaders, bureaucracy and lack of technical support
Publications	-	Annual progress report, technical reports and case studies, quarterly newsletter, directory of AT centres (all in English).

IND 200

INDIA

APPROPRIATE TECHNOLOGY UNIT

Director: S. J. Coelho

Ministry of Industry
Department of Industrial Development
168, Udyog Bhavan
New Delhi 110023
Tel : 37 63 36, 37 10 22

Main activities

Information and documentation
Policy analysis and economic studies

Main fields of concentration

Solar and wind energy
Building materials
Crop processing and storage
Agricultural residues and wastes
Textile industry and handicrafts
Leather and forest products

Climatic/Geographic focus

None in particular

The Appropriate Technology Unit (ATU) was established in 1971 in the Indian Ministry of Industry. Its objectives are to compile the information available on AT, identify special areas of application of AT methodology, carry out preliminary cost studies, farm out technological problems to research institutions, coordinate national research activities and encourage the adoption of AT in selected industries.

ATU is currently working on the conservation and disinfestation of foodgrains in the rural areas, the development of low-cost materials and construction methods for wells, pumps and irrigation systems, the harnessing of wind power, the utilisation of agricultural and vegetable wastes, small-scale brick-making, leather tanning, and the production of footwear and sports goods, the development of appropriate farm structures and housing designs, food storage facilities and the provision of safe drinking water.

Staff	-	Not available separately (included in Ministry staff)
Budget	-	Not available separately (included in Ministry staff)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies and research institutions
Obstacles to technology diffusion	-	Efforts are being made to identify them
Publications	-	"AT for Rapid Economic Growth" (1971) "AT for Balanced Regional Development" (two volumes, 1973) Brochure on AT (1975).

CELL FOR THE APPLICATION OF SCIENCE AND TECHNOLOGY TO RURAL AREAS

Director: Professor Amulya Kumar N. Reddy

Indian Institute of Science
Bangalore, Karnataka 560012
Tel : 3 44 11 ext. 447

Main activities

Research and development (100%)

Main fields of concentration

Energy
Water lifting
Forestry
Scaling down of industrial processes
Means of transportation
Housing

Climatic/Geographic focus

Arid and semi-arid regions

The Cell for the Application of Science and Technology to Rural Areas (ASTRA) was created in 1974 within the Indian Institute of Science (IIS) of Bangalore, which finances it together with the government and several Indian foundations. It represents a significant attempt to involve highly qualified scientists in a multidisciplinary approach to the solution of village problems.

The Cell has been active in the research, development and testing of a wide range of technologies for the rural areas: ultra-low cost housing based on compacted mud blocks and composite roofs, village-size bio-gas plants, modified failure-proof handpumps, small-scale lime puzzolana cement making, improvement of the traditional bullock cart, Savonius windmills, low-cost teaching materials and production of sodium silicate from rice husks. Great care is taken to identify the real needs of rural communities. The Cell runs an important extension centre in Tumkur District, 115 kilometers from Bangalore.

Staff	-	35 people (6 full-time) all professionals
Budget	-	$35,000
Scale of activities in AT	-	Not available
Channels of technology diffusion	-	Through government agencies
Obstacles to technology diffusion	-	Lack of competitiveness relative to modern technologies, reluctance of scientists/engineers to divert their efforts away from fashionable Western technologies
Publications	-	Annual report.

CENTRE OF SCIENCE FOR VILLAGES

Director: Devendra Kumar

Magan Sangrahalaya
Wardha, Maharashtra 442001
Tel : 24 12

Main activities

Information and documentation (30%)
Technology extension services (25%)
Promotion of local technological traditions (10%)
Testing and evaluation of new equipment (10%)
Technology diffusion (10%)

Main fields of concentration

Energy
Public health
Agriculture
Small industry
Housing
Infrastructures and services

Climatic/Geographic focus

Arid and semi-arid regions

The Centre of Science for Villages (CSV) is an independent non-profit AT centre established in 1976 in association with the Museum of Rural Technology founded by Gandhi in 1938. Its aim is to build a bridge between the 500-600 voluntary institutions working for rural development under the inspiration of Gandhi's ideas and the various scientific bodies which are carrying out research on rural problems. This is done by collecting information about AT from scientific institutions in India and abroad, testing and evaluating these technologies and diffusing them to the rural poor.

Technologies developed by CSV include hand flush lavatories, solar cookers, non-erodable mud plaster to protect mud walls from the rain, low-cost building methods, small clay silos for grain storage, and manufacturing of paper pulp from banana wastes. Emphasis has also been given to reduce the drudgery of women's work (smokeless ovens, use of ball bearings in the pulley of water wells, etc.).

Staff	-	12 people (6 full-time), 4 of whom are professionals
Budget	-	$8,000 ($3,000 in 1976)
Scale of activities in AT	-	100 man-months
Channels of technology diffusion	-	Through Ghandian voluntary agencies
Obstacles to technology diffusion	-	Reluctance to accept innovation, lack of confidence of poor people, lack of competitiveness relative to modern technology, lack of funds, maintenance difficulties
Publications	-	Monthly bulletin and 2 reports on AT for the villages.

GARG CONSULTANTS

Chief Consultant: M. K. Garg

C-10/1, River Bank Colony
Lucknow, Uttar Pradesh
Tel : 3 14 78

Main activities

Research and development
Technical feasibility studies
Commercial production

Main fields of concentration

Small industry promotion
Scaling down of industrial processes
Building materials
Domestic waste disposal

Climatic/Geographic focus

None in particular

This independent AT consulting firm was established in 1974 by Sri M. K. Gar who had been working for many years on AT for rural areas while at the service of the Government of Uttar Pradesh. The aim of this firm, which is financed essentially through consulting fees, is to provide technical knowhow and operational advice on a turn-key basis for small-scale industrial projects in AT.

A mini sugar production plant developed between 1955 and 1960 has been widely diffused throughout India (2,500 units in operation) and now accounts for around 10 per cent of the country's production of white crystal sugar. A cottage industry pottery programme started in 1942 was taken up again 25 years later and has now developed into urban, rural and semi-urban production clusters with a current annual output valued at $2 million. Other technologies developed by Sri Garg and now promoted by this consulting firm include leather tanning and shoemaking at the village level, cottage production of yarn, village sanitation and waste disposal installations and bio-gas plants. A mini-technology for the production of cement is currently at the development stage.

Staff	-	7 people (4 full-time), all of whom are professionals
Budget	-	$4,800
Scale of activities in AT	-	44 man-months
Channels of technology diffusion	-	Through the establishment of small industrial firms
Obstacles to technology diffusion	-	Lack of technical assistance; incomplete testing of new technologies
Publications	-	A number of case studies and working reports (in English). For further details, see the two articles by M. K. Garg in the book "Appropriate Technology - Problems and Promises" by N. Jéquier (ed.), OECD Development Centre, Paris 1976.

INSTITUTE OF DEVELOPMENT STUDIES

Director: R. P. Misra

Leela Vihar
Manasa Gangotri
Mysore 570 006, Karnataka
Tel : 2 20 29

Main activities

Policy analysis and economic studies
Education and training
Promotion of local technological traditions
Influencing governmental decisions

Main fields of concentration

Urbanism
Agriculture
Water resources
Small industry promotion

Climatic/Geographic focus

Arid and semi-arid regions

The Institute of Development Studies (IDS) was established in 1971 by the University of Mysore as a teaching and research centre on all aspects of planning and development. It is financially supported by the University of the State of Karnataka, the Indian Government and the Ford Foundation. The Institute, the first of its kind in India, has initiated a number of programmes on development planning, environmental planning, habitat and environment and rural development.

The IDS does not develop new technologies itself, but actively promotes AT through its rural development programme (e.g. mud brick architecture) and provides an opportunity for technologists to take a part in its training activities. The Institute is currently emerging as a regional clearing and coordinating agency for information on all aspects of development planning in Karnataka State.

Staff	-	20 people (all full-time)
Budget	-	$60,000 (plus $200,000 grant from the Ford Foundation)
Scale of activities in AT	-	48 man-months
Channels of technology diffusion	-	Through rural development programmes
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, inadequate legislation, cultural and social unacceptability
Publications	-	8 volume study on housing standards and technology in Asia, occasional papers and technical reports (in English).

INTERNATIONAL CROPS RESEARCH INSTITUTE FOR THE SEMI-ARID TROPICS

Director: Dr. Leslie D. Swindale

1-11-256 Begumpet
Hyderabad 500 016
Andhra Pradesh
Tel : 72 091, 72 628, 74 712

Main activities

Research and development
Training

Main fields of concentration

Crop improvement
Cultivation techniques
Irrigation
Agricultural machinery

Climatic/Geographic focus

Semi-arid tropics

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) was created in 1972 after a feasibility study conducted by the Consultative Group on International Agricultural Research (CGIAR) which consists of 35 members (government, international agencies, development banks, foundations, etc.). It is financially supported by CGIAR. The Institute is located on a 1400 hectare tract close to Hyderabad. This land represents the two big types of soils (red and black) of the semi-arid regions.

Its research programme has four main objectives: improving the genetic potential for grain yields and nutritional quality of sorghum, millet, chickpea, pigeon pea and groundnuts; developing farming systems appropriate to the semi-arid tropics and their erratic rainfalls; evaluating alternative means of alleviating the socio-economic constraints to agricultural development; assisting national and regional research programmes.

The Institute is still in its development stage, but has already tested and adapted several animal-drawn agricultural implements. Work has also been undertaken on crop dryers and irrigation tanks and pumps.

Staff	-	Not specified
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Training programmes, scientific publications
Obstacles to technology diffusion	-	Not specified
Publications	-	Not specified.

PROTEIN FOODS AND NUTRITION DEVELOPMENT ASSOCIATION OF INDIA

Executive Director: M. R. Chandrasekhara

Manalaxmi Chambers
22 Bhulabhai Desai Road
Bombay 400 026
Tel : 35 88 68

Main activities

Information and documentation
Publications
Education and training of personnel

Main fields of concentration

Food processing industry
Nutrition

Climatic/Geographic focus

None in particular

The Protein Foods and Nutrition Development Association of India was established in 1968 as a non-profit association. Its members are industrialists and entrepreneurs from the food industries. Its aim is to encourage research on nutritious protein foods and to help the marketing of these foods by increasing the nutritional awareness of the consumers. The association is financed through membership fees and funds from industry and government.

Its activities in the field of appropriate technology started in 1978. They involve the establishment of cottage food processing units in rural areas for the production of nutritious foods for local consumption.

Staff	-	6 people (all full-time), 2 of whom are professionals
Budget	-	$25,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through membership of the association and through the Newsletter
Obstacles to technology diffusion	-	Not specified
Publications	-	Monthly Newsletter.

REGIONAL CENTRE FOR TECHNOLOGY TRANSFER

Head of Centre: Not yet designated

Manickvelu Mansion
49 Palace Road
Bangalore 560052, Karnataka
Tel : 7 64 08, 7 69 31

Main activities

Research and development (20%)
Policy analysis and economic studies (20%)
Publications (20%)
Technology diffusion (10%)
Information and documentation (10%)
Influencing governmental and political decision making (10%)

Main fields of concentration

Agricultural machinery
Agrowastes utilisation
Energy
Public health
Small industry promotion
Technology transfer

Climatic/Geographic focus

Tropical regions

The Regional Centre for Technology Transfer (RCTT) is an international governmental institution established in 1977 by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). Its mission is to promote the development and transfer of technologies which are appropriate to the needs of the developing countries of the ESCAP region, and the Centre plans to operate mainly through the establishment of network linkages in selected areas of technology.

The RCTT has organised workshops on technology transfer in Bangladesh and Australia and on the utilisation of agricultural wastes to make cement-like materials in Pakistan. It has held a workshop on machine tools in Thailand and another on small hydro-plants in Nepal. A workshop was also organised in Korea to study that country's technology policy and planning and its information work in the field of AT.

The Centre's future work programme, which is still at the formative stage, will be carried out in close co-operation with other United Nations agencies.

Staff	-	4 full-time professionals
Budget	-	$1.2 million ($43,000 in 1976)
Scale of activities in AT	-	72 man-months (24 in 1976)
Channels of technology diffusion	-	Through workshops, expert missions and training activities, as well as through governmental and international agencies
Obstacles to technology diffusion	-	Bureaucracy, inadequate legislation, cultural and social unacceptability, lack of reliability and lack of technical support
Publications	-	Quarterly newsletter, occasional papers and directories of institutes and experts.

SCIENCE EDUCATION CENTRE
Vigyan Shisha Kendra

Director: Dr. Bhartendu Prakash

Atarra 210201
District Banda, Uttar Pradesh

Main activities

Pilot production (30%)
Education and training (30%)
Promotion of local technological traditions (20%)

Main fields of concentration

Agriculture
Building materials
Public health
Energy (methane)
Small industry promotion (textiles)
Waste recycling

Climatic/Geographic focus

None in particular

Vigyan Shisha Kendra (VSK, or Science Education Centre) is a non-profit voluntary AT organisation set up in 1973 by a group of young scientists to promote integrated rural development through education and the popular application of science and technology. Its current efforts focus on agro-industrial training for the youth of small and landless farmers, non-formal education in AT, sensitizing university staff and students to the needs of the villages and the development of groups of village youth to serve as catalyzers of rural development.

VSK has set up a pilot plant to make Asmoh cement from rice husk ash (a process developed by the Indian Institute of Technology in Kanpur). A bio-gas plant producing methane from cow dung and agricultural wastes has been set up in a village for demonstration purposes. Polyester fibre has been introduced to the local handlooms and the youth of the traditional non-weaving communities is being trained for weaving and helped in the establishment of their own production co-operatives.

Staff	-	17 people (12 full-time), 14 of whom are professionals
Budget	-	$12,000 ($8,000 in 1976)
Scale of activities in AT	-	7 man-months
Channels of technology diffusion	-	Through VSK's own projects and through private credit agencies and private voluntary aid agencies
Obstacles to technology diffusion	-	Bureaucracy, inadequate legislation, reluctance to accept innovation, lack of funds
Publications	-	Information bulletin and technical report on Asmoh cement production (in English).

SMALL INDUSTRY EXTENSION TRAINING INSTITUTE

Principal Director: S. V. Sharma

Yousufguda
Hyderabad 50045, Andhra Pradesh
Tel : 3 35 44, 3 35 45

Main activities

Information and documentation
Publications
Education and training

Main fields of concentration

Energy
Agriculture
Water
Small industry
Housing

Climatic/Geographic focus

None in particular

The Small Industry Extension Training Institute (SIET) was established as a Government of India Society in 1962 to assist in the promotion and modernisation of small industries by undertaking training, research and consultancy activities in the three related fields of small industry development, management and extension. In 1971 an information centre, the Small Enterprises National Documentation Centre (SENDOC) was set up at the SIET Institute.

SIET organises more than 50 training programmes every year, of which four or five are exclusively meant for foreign participants from the developing countries. Its activities stress both the commercial exploitation of products and processes and the technical problems of small industry. SIET has conducted two national seminars (1964, 1974) in the field of AT.

Staff	-	275 people (all full-time), 140 of whom are professionals
Budget	-	$450,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the Institute's own activities and documentation
Obstacles to technology diffusion	-	Not specified
Publications	-	AT documentation bulletin (bi-monthly) and five journals.

SRI A. M. M. MURUGAPPA CHETTIAR RESEARCH CENTRE

Head of Centre: C. V. Seshadri

Tiam House
11/12 North Beach Road
Madras 600 001
Tel : 2 53 06

Main activities (projected)

Research and development (35%)
Information, documentation and publication (20%)
Pilot production (15%)
Technology extension services (15%)

Main fields of concentration

Hydroponics
Aquaculture and algaculture
Solar and methane energy

Climatic/Geographic focus

Tropical savannas
Coastal regions

The Sri A. M. M. Murugappa Chettiar Research Centre (MCRC) is an independent non-profit AT centre set up in 1977 and funded by grants from private organisations. It originated as a philanthropic effort to work in areas of social relevance with a special emphasis on algal cultures.

The MCRC has already been active in the field of solar dryers, solar cookers, bio-gas plants, water storage tanks, and algal ponds. It has set up two demonstration units serving as extension laboratories for its project of a total-energy and total-materials system using algal cultures to produce at least one ton per day of food or fertilizer grade algal dry mass using the waste materials and energy of large power plants. It has also developed a solar cooker for processing areca nuts, and a solar dryer for fish.

The MCRC is now undertaking the dissemination and extension work of its techniques through local bodies. In future its work will focus mainly on energy, algae for food and fertilizer and publications on appropriate technologies.

Staff	-	8 people (4 full-time), 7 of whom are professionals
Budget	-	$30,000 (revenues) + $60,000 (capital budget)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through own publications
Obstacles to technology diffusion	-	Lack of competitiveness of AT relative to modern and traditional technologies
Publications	-	Periodical technical notes and a monograph series.

WATER DEVELOPMENT SOCIETY

Director: J. Rajan Alexander

C-2, C-5 Industrial Estate
Moulali
Hyderabad 500040, Andhra Pradesh
Tel : 7 84 86

Main activities

Pilot production

Main fields of concentration

Water resources
Agricultural tools and machinery
Solar and wind energy

Climatic/Geographic focus

Arid and semi-arid regions

The Water Development Society is an independent non-profit centre established in 1969 with the objective of exploiting the ground-water resources of Andhra Pradesh state. The Society is financed mostly by its commercial or industrial activities, which include the drilling of wells and the development and manufacturing of high-speed drilling tools.

The Water Development Society has been engaged in some AT activities since 1972 (well drilling rig, agrikart design and manufacture). It also plans to take up projects dealing with the application of solar and wind energy.

Staff	-	Not specified
Budget	-	Not specified
Scale of activities in AT	-	1 man-month
Channels of technology diffusion	-	Through the Society's own activities
Obstacles to technology diffusion	-	Not specified
Publications	-	None.

APPROPRIATE TECHNOLOGY GROUP - DIAN DESA
Proyek Teknologi Tepat - Dian Desa

Director: Ir. Anton Soedjarwo

Jalan Kerto Muja Muju 8
Yogyakarta

Main activities

Research and development
Technology extension services
Promotion of local technological traditions
Information and documentation

Main fields of concentration

Energy
Nutrition
Water resources and irrigation
Cultivation techniques
Husbandry

Climatic/Geographic focus

None in particular

Dian Desa ("Light for the People") is an independent non-profit association established in 1972 and entirely funded by donations. Its staff is composed of a professor and graduate and undergraduate students who want to contribute to solving the problems of rural poor areas. It selects and develops technologies which are adapted to local situations and which use local resources so that the rural population may achieve greater self-reliance and develop its self-confidence.

Dian Desa has developed an hydraulic ram and rural wind and water turbines for generating electricity. Several projects for rural water supply and collection have been carried out or are under way. Research has also been initiated in the production of new foods, larvae and worms for chicken feed and algae.

Staff	-	18 people (12 full-time), 8 of whom are professionals
Budget	-	$105,000 ($28,000 in 1976)
Scale of activities in AT	-	12 man-months
Channels of technology diffusion	-	Through the Group's own activities, government agencies and private voluntary foreign assistance agencies
Obstacles to technology diffusion	-	No major obstacles, but the problem is often the accumulation of many small obstacles
Publications	-	Technical notes on bio-gas, hydraulic ram, egg preservation, cross-flow turbine, village incubator (in Indonesian).

BATIK AND HANDICRAFT RESEARCH INSTITUTE

Director: Ir. Mrs. Soedewi Samsi

2 Jalan Kusumanegara
Yogyakarta
Tel : 25 57, 37 53

Main activities

Promotion of local technological traditions
Research, development and pilot production
Training and education
Testing of equipment

Main fields of concentration

Handicrafts
Batik industry
Small industry promotion

Climatic/Geographic focus

None in particular

The Batik and Handicraft Research Institute was established by the Indonesian Government in 1950. In 1968 activities were extended to other handicrafts (wood, bamboo, wicker, silver, copper, textiles, etc.). The aim of the Institute is to develop the small-scale cottage industries. Its activities focus on all the steps in the innovation process: production oriented surveys, research and development, industrial testing and the establishment of new cottage industries, as well as the promotion of existing small industries.

Staff	- 83 people
Budget	- $100,000 ($62,500 in 1976)
Scale of activities in AT	- Not specified
Channels of technology diffusion	- Through government agencies, local cooperatives
Obstacles to technology diffusion	- Lack of competitiveness, lack of funds, lack of reliability, lack of technical support, maintenance difficulties
Publications	- Several publications (all in Indonesian); Several folders (in Indonesian and English).

CHEMICAL RESEARCH INSTITUTE
Balai Penelitian Kimia

Director: Dr. Dardjo Somaatmadja

Jalan Ir.H.Juanda 5-9
Bogor
Tel : Bogor 68 and 645

Main activities

Research and development (70%)
Technology diffusion (20%)

Main fields of concentration

Nutrition
Food processing and conservation
Water resources and waste water
Small industry
Standardisation

Climatic/Geographic focus

None in particular

The Chemical Research Institute is a governmental research centre which goes back to the Agricultural Chemical Laboratory established in 1890 to serve to scientists working on various tropical plants and indigenous products. After its reorganisation in 1934 it became more and more engaged in research on new agricultural crops and crop processing.

The Institute has been very active in the fields of nutrition (it has published the first nutritional tables for most Indonesian foods), food industry (improvement of preservation, storage and preparation methods for various tropical foodstuffs), production of essential oils, dextrin manufacturing, cellulose research and waste water treatment.

It is also responsible for the formulation of standards of various products both for exportation or domestic consumption.

Staff	-	116 people (all full-time), 29 of whom are professionals
Budget	-	$553,400 ($365,000 in 1976)
Scale of activities in AT	-	1,392 man-months
Channels of technology diffusion	-	Through government agencies
Obstacles to technology diffusion	-	Lack of funds
Publications	-	Not specified.

DEVELOPMENT TECHNOLOGY CENTRE

Director: Dr. Filino Harahap

Jalan Ganesha 10
P.O. Box 276
Bandung
Tel : 8 20 51 extension 246

Main activities

Research and development
Testing and evaluation of new equipment
Technology diffusion
Information and documentation
Training of managers

Main fields of concentration

Energy
Hygiene
Water resources
Agriculture
Infrastructure and services
Small industry promotion
Building materials

Climatic/Geographic focus

Tropical rain forests and savannas

The Development Technology Centre (DTC) was set up in 1973 within the Institute of Technology Bandung by a group of professors and staff members interested in conducting research related to the development of Indonesia. It is financed by the university and the government as well as by consulting fees.

DTC has been involved both in the hardware and software sides of innovation in AT. It has developed a prototype rice dryer and a bio-gas fuelled ice maker, a gemstone processing machine and a mechanised nut-shelling process. Over 200 managers have been trained under its entrepreneurship development programme jointly sponsored by the Dagang Negara Bank. DTC is also involved in the total planning of new villages (including infrastructures) for the Indonesian Department of Transmigration's project for resettling large numbers of people from Java in the island of Sumatra. In a joint project with TOOL (a Dutch AT organisation), DTC has set up a number of field stations promoting AT in such areas as water supply and purification, sanitation, construction, small industry development and transportation.

Staff	-	56 people (17 full-time), 47 of whom are professionals
Budget	-	$200,000 (1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies, banks and credit agencies, and through the Centre's own efforts
Obstacles to technology diffusion	-	Not specified
Publications	-	Not specified.

HEALTH SERVICES RESEARCH AND DEVELOPMENT CENTRE
Pusat Penelitian dan Pengembangan Pelayanan Kesehatan

Director: Dr. R. H. Pardoko

Jalan Indrapura 17
Surabaya
Tel : 2 39 17, 2 30 45

Main activities

Research and development
Education and training
Information and documentation
Evaluation of public health programmes

Main fields of concentration

Public health
Nutrition
Training of medical personnel
Primary health care.

Climatic/Geographic focus

None in particular

The Health Services Research and Development Centre (Indonesian abbreviation: P4K), an executive unit of the National Institute of Health Research and Development of the Ministry of Health. It was founded in 1951, and its original function was to support the venereal diseases and yaws eradication programme. In 1964, its responsibilities were enlarged to cover other aspects of public health. Most of its budget is financed by the government (80%), with some support from foreign aid agencies. The Institute to which this Centre is attached is in charge of developing appropriate technologies for health care at different administrative levels (notably the health centre level, which covers a population of 50,000 people). Its programmes focus on the treatment of diseases, nutrition, maternal and child care, family planning, environmental sanitation, communicable disease control, dental health, school health and mental health.

It has produced and tested a number of manuals for health workers, nurses and midwives. It has engaged in the development of health management technologies, which include the planning, programming and evaluation aspects of health administration. It has developed health care technologies for non-medical workers in the rural areas and has explored the ways in which communities can be motivated to participate in the development of health programmes.

Staff	-	275 people (almost all on a full-time basis), 35 of whom are professionals
Budget	-	$283,000 (fiscal year 1976)
Scale of activities in AT	-	210 man-months
Channels of technology diffusion	-	Through government agencies, schools and universities
Obstacles to technology diffusion	-	Bureaucracy, cultural and social unacceptability, lack of competitiveness relative to traditional technology, lack of reliability
Publications	-	28 research reports.

INSTITUTE FOR SOCIAL AND ECONOMIC RESEARCH, EDUCATION AND INFORMATION

Director: Ismid Hadad

Jalan S. Parman 81
Jakarta Barat
P.O. Box 493
Jakarta
Tel : 59 15 28; 59 42 70

Main activities

Publications (35%)
Socio-economic research (25%)
Promotion of small-scale industry (30%)
Information and Documentation (10%)

Main fields of concentration

Small industry promotion
Introduction of new craft design
Credit and marketing systems
Training of change agents
Development of traditional community centres

Climatic/Geographic focus

Tropical regions (Java and outer islands of Indonesia)

The Institute for Social and Economic Research, Education and Information (Indonesian abbreviation: LP3ES) is an independent non-profit AT centre founded in 1971. It was associated with the Friedrich Naumann Foundation of West Germany and is financed by the Indonesian Government, foundations and subscriptions to publications.

The Institute conducts socio-economic research on small-scale industry, rural development and the urban informal sector. It develops rural appropriate technologies and promotes small-scale industries through training and extension services. It has introduced new machines and tools (textile, aluminium-made products, leather, wood, rattan, etc.), and promotes basic community services in rural areas by funding traditional community centres.

In the educational field, the institute has promoted "natural laboratories" (which use the available natural environment - plants, animals, skills - for science education in rural schools) as well as local community and rural school libraries (training for librarians, library management, reading promotion). It is also developing communications media for the development of small-scale industry, appropriate technology and the promotion of rural development.

Staff	-	70 people (56 full-time) 40 of whom are professionals
Budget	-	$660,000
Scale of activities in AT	-	500 man-months
Channels of technology diffusion	-	Through government agencies, community centres, schools and mass-media
Obstacles to technology diffusion	-	Lack of competitiveness relative to traditional technologies, lack of technical support
Publications	-	Monthly journal and bulletins.

LEATHER RESEARCH INSTITUTE

Director: Ir. Pietoyo Sukarborwo

Jalan Sokonandi 3
Yogyakarta
Tel : 36 55, 29 29

Main activities

Technology extension services (30%)
Research and development (20%)
Pilot production (15%)
Influencing governmental decisions (10%)

Main fields of concentration

Leather goods
Small industry promotion
Scaling down of industrial processes

Climatic/Geographic focus

None in particular

The Leather Research Institute (LRI) is a spin-off of the Chemical Research Institute, a government centre coordinated by the Research and Development Centre for Miscellaneous Industries and Handicrafts of the Indonesian Ministry of Industry. Its original vocation when it was founded in 1955 was to serve as a demonstration and training centre for tanneries and shoe factories. In 1968 its activities were extended to research and development, economics and art to meet the development needs of the leather and related industries.

The LRI has set up factories for treatment of hides and skins and the production of boots as well as cooperative centres. It has developed methods of producing rubber soles for shoes at rural level and plans a further expansion into rubber and plastic goods in 1978.

Staff	-	195 people (all full-time)
Budget	-	$495,000 ($326,000 in 1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through their own activities
Obstacles to technology diffusion	-	Bureaucracy, reluctance to accept innovation, lack of competitiveness relative to modern technologies, lack of technical support and lack of qualified personnel
Publications	-	Monthly magazine and research reports (all in Indonesian).

MATERIALS TESTING INSTITUTE
Balai Penelitian Bahan-Bahan

Director: Ir. J. Kusnadi

Jalan Sangkuriang 14
P.O. Box 32
Bandung
Tel : 82 028

Main activities

Testing and evaluation of new materials
Research and development

Main fields of concentration

Building materials, metal and alloys
Industrial uses of water
Environmental problems and corrosion

Climatic/Geographic focus

None in particular

The origin of the Materials Testing Institute goes back to a materials testing laboratory established in Jakarta in 1912. Since then it enlarged its activities and is now affiliated with the Centre for Research and Development for the Metal and Engineering Industries, of the Indonesian Department of Industry which finances it entirely.

The Institute conducts tests of materials mainly in the fields of engineering materials (e.g. metals and alloys), building materials (concrete and other elements) and calibration, (pressure, force, temperature, etc.), and has also set up a number of standard testing procedures. It has conducted surveys on corrosion, water utilisation by industry and air and water pollution in the island of Java.

Staff	-	124 people (115 full-time), 9 of whom are professionals
Budget	-	Not specified
Scale of activities in AT	-	1,500 man months
Channels of technology diffusion	-	Through industrial firms
Obstacles to technology diffusion	-	Not specified
Publications	-	Numerous technical reports and research reports (in Indonesian and English).

PROJECT FOR THE PROMOTION AND DEVELOPMENT OF SMALL-SCALE INDUSTRIES
Proyek BIPIK

Director: Ir. Benito Kodijat

Jalan Kebon Sirih 36
Jakarta Pusat
Tel : 36 49 67

Main activities

Technology extension services
Publications
Promotion of local technological traditions
Information and documentation
Influencing governmental decisions

Main fields of concentration

Small industry promotion
Community goods
Textile industry
Building materials

Climatic/Geographic focus

None in particular

Proyek BIPIK is a governmental project supervised by the Ministry of Industry and established in 1974 in the framework of Indonesia's Five-Year Plan. It has supported and promoted various kinds of small-scale industries and appropriate technologies, for instance garment industries, handlooms, food processing (equipment for cashew nut processing), brick and tile making, etc. A pilot plant for salt industry has been compieted.

Proyek BIPIK has set up Extension Service Centres in Yogyakarta and Surabaya, and is associated with Technonet Asia (Singapore).

Staff	-	400 people (80 full-time)
Budget	-	$1.8 million
Scale of activities in AT	-	2,500 man months
Channels of technology diffusion	-	Through government agencies, extension services, workers
Obstacles to technology diffusion	-	Lack of funds
Publications	-	36 profiles of small-scale industries.

VILLAGE TECHNOLOGY UNIT - BUTSI

Director: Ir. Sjamsu Ardian

Jalan Halimun 4
P.O. Box 3290
Jakarta Selatan
Tel : 58 42 49 and 58 42 50

Main activities

Publications (75%)
Education and training (10%)
Research and development (5%)
Promotion of local technological traditions (5%)
Research and development (5%)

Main fields of concentration

Agriculture
Public health
Water
Small industry
Housing
AT software

Climatic/Geographic focus

None in particular

The Indonesian Volunteer Corps (BUTSI) is an inter-departmental body of 11 governmental departments presided over by the Minister of Manpower, Transmigration and Co-operation. It trains thousands of young people as development agents, who spend two years as volunteers in the rural areas.

BUTSI's Village Technology Unit, which started in 1973 on a 'do-it-yourself' basis, originally distributed information on simple village technologies in leaflet form to BUTSI volunteers. It soon moved on to research and testing of new products and equipment, and has developed a wide range of low-cost publications dealing with home living technologies, primary health care, family planning, water supplies, nutrition, housing, and agriculture. The Unit is currently establishing an AT field station 300 kilometers from Jakarta, which is to serve as a research, development and training centre. This centre is geared specifically to those rural communities which have shown a strong interest in simple technology applications.

Staff	-	3 people (1 full-time), 2 of whom are professionals
Budget	-	$20,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through publications and BUTSI volunteers
Obstacles to technology diffusion	-	Bureaucracy, cultural and social unacceptability and lack of technical support
Publications	-	Several booklets on simple technologies for rural areas (mostly in Indonesian, some in English).

VOLUNTEERS IN ASIA - REGIONAL ASIAN OFFICE

Coordinator: Ann Hawkins

Kotak Pos 2733
Jakarta
Tel : 58 42 49

Main activities

Technology diffusion
Promotion of local technological traditions
Training
Publications
Information and documentation

Main fields of concentration

Hydraulic energy
Agriculture
Nutrition
Housing

Climatic/Geographic focus

None in particular

Volunteers in Asia (VIA) began as a summer English teaching project in Hong Kong in 1963. It spread to other countries, with volunteers working for periods of six months to two years. Until 1973 the majority of volunteers were working in English teaching. Since the founding of the AT project by Ken Darrow from VIA's main office in Stanford, California, there has been an increase in the number of volunteers working in AT, especially in information exchange.

The regional Asian office has contributed to the AT sourcebook published by VIA and is now preparing a supplement devoted to waterwheels and water power in South East Asia. It is also a member of the Indonesian Volunteer Corps (BUTSI).

Staff	-	20 people all non-professionals
Budget	-	$3,000 in 1976
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the Office's own activities and through universities
Obstacles to technology diffusion	-	Cultural and social unacceptability, reluctance to accept innovation, lack of competitiveness relative to modern technologies and maintenance difficulties
Publications	-	See publications of Volunteers in Asia (United States).

BUILDING AND HOUSING RESEARCH CENTRE

Director: F. Neghabat

P.O. Box 15 - 1114
Tehran
Tel : 639 94 56, 630 09 56

Main activities

Testing and evaluation of new equipment
Research and development

Main fields of concentration

Building materials
Architecture
Urbanism

Climatic/Geographic focus

Arid and semi-arid regions
Earthquake-prone areas

The Building and Housing Research Centre (BHRC) was established in 1973 in the Iranian Ministry of Housing and Urban Development. It now functions as a semi-autonomous organisation with its own statutes, operations and budget.

The Centre has been working on the design and construction of earthquake-resistant buildings (including building materials and the development of building codes) and is currently planning the layout for three rural towns in the earthquake-prone region of Chahar Mahal Bakhtiary province. It has also developed indigenous techniques for house construction. Two model rural houses have been built in an agricultural cooperative with stabilized mud bricks, to examine the economics of local materials and the savings on transportation costs.

Staff	-	61 people (all full-time), 24 of whom are professionals
Budget	-	$967,000
Scale of activities in AT	-	760 man-months
Channels of technology diffusion	-	Through government agencies
Obstacles to technology diffusion	-	Not specified
Publications	-	Research reports on housing specifications, standard costs of practice and design problems in earthquake-prone regions (in English).

LOW ENERGY SYSTEMS

Director: Brian Hurley

3 Larkfield Gardens
Dublin 6
Tel : (01) 96 06 53

Main activities

Research and development
Testing, evaluation and pilot production
Technical feasibility studies
Policy analysis and economic studies
Publications
Information and documentation

Main fields of concentration

Energy (solar, wind and energy savings)
Architecture

Climatic/Geographic focus

None in particular

Low Energy Systems is an independent non-profit consulting group devoted to the study, design, construction and dissemination of new technologies (both hardware and software) for the post-industrial society. It was founded in 1975 and is financed by consulting fees, donations, subscriptions to publications, universities and foundations.

This group has concentrated on the development of hardware appropriate to small scale, decentralised applications using renewable sources of energy. It has developed a vertical axis sail rotor which can be used for milling, water-pumping or for driving machinery, a trickle charger windmill, a solar greenhouse adapted to temperate cloudy climates and a fuel-less cooking stove (haybox).

Staff	-	5 people on a part time basis, 3 of whom are professionals
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies, international agencies, educational institutions, private voluntary aid agencies and industry
Obstacles to technology diffusion	-	Bureaucracy, inadequate legislation and lack of technical support
Publications	-	3 technical reports (on vertical axis sail rotor, on trickle charger windmill and on haybox cooker).

APPLIED RESEARCH INSTITUTE
BEN GURION UNIVERSITY OF THE NEGEV

President of the University: Yosef Tekoah
Director of the Institute: Yoel Schechter

P.O. Box 1025
Beersheva
Tel : (057) 7 83 82

Main activities

Research and development
Pilot production
Policy analysis and economic studies
Information and documentation
Publications

Main fields of concentration

Energy
Agriculture
Processing of raw materials
Water desalination
Industry

Climatic/Geographic focus

Arid and semi-arid regions (agricultural techniques)
No particular focus (industrial techniques)

The Negev Institute for Arid Zone Research, founded in 1958, joined Ben Gurion University of the Negev in 1973 and took the name of Applied Research Institute. It is administratively tied to the University through the latter's Research and Development Authority, and its income comes from grants, industrial contracts and the government.

The Institute's multidisciplinary research groups have focused in recent years on the development of water desalination processes (electro-dialysis, reverse osmosis and ion-exchange), novel chemical processes for the utilisation of local raw materials and new wind and solar energy applications. They have also worked on drought- and salinity-tolerant plants (e.g. jojoba and guayule) and on irrigation with geothermal brackish waters. Further activities include among others the beneficiation of low-grade ores, industrially-oriented research (chemicals, pharmaceuticals), economic feasibility studies and studies on science and technology policy and research management.

Staff	-	237 people, 166 of whom are professionals
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Sale of know-how, licensing, joint-ventures with local and foreign companies
Obstacles to technology diffusion	-	Lack of funds
Publications	-	Not specified.

INSTITUTE OF AGRICULTURAL ENGINEERING

Director: G. Felsenstein

P.O. Box 6
Bet Dagan
Tel : (03) 94 03 03

Main activities

Research and development (90%)

Main fields of concentration

Agricultural machinery

Climatic/Geographic focus

None in particular

The Institute of Agricultural Engineering is a governmental centre affiliated with the Agricultural Research Organization (Volcani Center). All machines and methods developed at the Institute are aimed at solving local problems in agriculture. Since its foundation in 1965 the Institute has been granted 40 patents and has developed 44 machines and systems of work which have been commercially introduced in Israel as well as in several other countries.

Among its many innovations are a peanut harvester and separator, a mobile tractor-powered onion-picking machine, mechanical aids for picking vegetables and other row crops, a machine for picking dates, methods and equipment for the transportation of banana bunches, machines for mulching, sowing and erecting low plastic tunnels, and a machine for sizing carrots by length. It has also developed a computerised system for marketing flowers to Europe.

Staff	-	80 people (all full-time), 69 of whom are professionals
Budget	-	$800,000
Scale of activities in AT	-	800 man-months
Channels of technology diffusion	-	Through government agencies
Obstacles to technology diffusion	-	Bureaucracy and lack of funds
Publications	-	Hundreds of articles and technical reports (in English and Hebrew).

INSTITUTE OF DESERT RESEARCH

Director: Amos Richmond

Sde Boker Campus
Ben Gurion University
Sde Boker
Tel : (057) 8 05 51

Main activities

Research and development
Pilot production
Promotion of local technological traditions
Education and training
Technology diffusion
Policy analysis and economic studies

Main fields of concentration

Agriculture and husbandry
Water resources and climatology
Human settlements
Energy
Ecology and environment

Climatic/Geographic focus

Arid zones

The Institute of Desert Research was recently established on the newly created Sde Boker Campus of the Ben Gurion University of the Negev to which it is administratively attached. This new campus, located some 25 miles south of Beersheva, also houses the University's Ben Gurion Research Institute and Archives.

The mission of the Institute is to become the national centre for desert research in Israel. Its multidisciplinary research teams focus on the development of a wide range of technologies and systems appropriate to an arid environment. These include the revival of traditional Nabatean agriculture, the harnessing of solar energy through shallow solar ponds, algal cultures, desert architecture and building climatology, closed systems agriculture, the domestication of desert wildlife, the study of nomad settlements and the understanding of desert eco-systems, hydro-geology and climatology. The Institute also works on economics, regional planning and environmental education, and its Applied Solar Calculations Unit acts as a consultant to the solar energy industry.

Staff	-	Approximately 40 people (all professionals)
Budget	-	Not available
Scale of activities in AT	-	All activities involving AT for arid zones
Channels of technology diffusion	-	Not available
Obstacles to technology diffusion	-	Not available
Publications	-	Not available.

CTIP SOLAR S.P.A.

Director: Ing. Luigi Cuozzo

Via Po 22
Rome
Tel : 86 92 86, 86 94 66

Main activities

Commercial production (35%)
Technical feasibility studies (20%)
Research and development (15%)
Pilot production (10%)

Main fields of concentration

Energy savings
Solar, wind and geothermic energies
Waste waters
Domestic waste disposal

Climatic/Geographic focus

None in particular

CTIP Solar is a branch of the industrial firm CTIP S.p.A. created in 1976 and specialised in the study and design of systems using alternative energy sources, with particular emphasis on solar technology and energy conservation. It is funded by the Italian Government, industry and consulting fees. It carries out feasibility studies in the field of solar energy, design and engineering for complete systems in housing, agriculture, industry and the production of electric power, evaluations of energy consumption that can be economically replaced by solar energy, consulting services to industry and government, and information services on solar energy.

It has developed computer programmes for various solar energy applications, designed and built solar plants for industrial or husbandry applications, greenhouses, solar air conditioners and heating systems. It has also conducted an overall study of water desalination methods using solar energy and research studies on energy consumption in Italian agriculture and the possibilities of using solar energy.

Staff	-	16 people (12 full-time) 2 of whom are professionals
Budget	-	$600,000 ($300,000 in 1976)
Scale of activities in AT	-	192 man-months
Channels of technology diffusion	-	Own activities
Obstacles to technology diffusion	-	Inadequate legislation, reluctance to accept innovation, lack of competitiveness relative to traditional technologies
Publications	-	Research studies on solar energy and energy consumption in Italian agriculture.

EUROPEAN CENTRE FOR AGRARIAN TRAINING
Centro Europeo di Formazione Agraria

President: Senator Giovanni Bersani
Director: Dr. Roberto Bertacchini

Via Lame 118 (headquarters)
40122, Bologna
Tel : (051) 23 74 19

Via Mora 115 (centre)
40061 Minerbio
Tel : (051) 87 92 15

Main activities

Education and training
Technology extension services
Research and development
Information and documentation

Main fields of concentration

Agriculture
Aquaculture and fisheries
Solar energy

Climatic/Geographic focus

Temperate regions

The European Centre for Agrarian Training (CEFA) is an independent non-profit organisation set up in 1968 by a group of Christian agricultural co-operative societies to promote the co-operative movement in the region of Emilia Romagna (Italy) through vocational training programmes. CEFA has a 40 hectare farm and runs a research and experimentation laboratory.

So far it has trained over 20,000 youths, among which 1,800 from other European countries and from the developing world. One section of the Centre deals specifically with integrated agricultural projects in developing countries. CEFA's research and training activities are increasingly oriented towards the development and use of AT. This includes the development of low-cost training programmes and audiovisual aids, as well as of specific items of hardware such as low-energy aquaculture systems.

Staff	-	4 people (3 full-time), 3 of whom are professionals
Budget	-	Not available
Scale of activities in AT	-	6 man-months
Channels of technology diffusion	-	Mainly through education and training
Obstacles to technology diffusion	-	Bureaucracy, reluctance to accept innovation and lack of funds
Publications	-	Quarterly newsletter (in English).

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Director-General: Edouard Saouma
AT contact: Declan J. Walton

Via delle Terme di Caracalla
00100 Rome
Tel : 57 97

Main activities

Technology diffusion
Research, development and testing
Policy analysis and economic studies
Influencing governmental and political decision-making
Information and documentation
Publications

Main fields of concentration

Agriculture
Forestry
Small industry promotion
Health and nutrition
Soil and water conservation

Climatic/Geographic focus

None in particular

The Food and Agriculture Organization (FAO) of the United Nations was set up in 1945 as a specialised agency within the U.N. system. It currently has 144 member countries. Its mission is to promote, and where appropriate, to recommend international actions with respect to scientific, technological, social and economic research relating to nutrition, food and agriculture.

While not an AT organisation in the conventional sense, FAO has been involved since its beginnings in the promotion of AT and the adaptation of technology to different ecological, social, economic and cultural conditions. It has promoted and helped to diffuse a wide range of AT's in all fields related to food, nutrition and agriculture: small hand tools for agricultural production, small-scale food processing and preservation, low-cost crop storage methods, home technologies (cookers, food preparation, water purification, etc.), to mention a few examples. It also maintains an important data base, from which much AT-related information can be retrieved.

Staff	-	6,250 people, 3,330 of whom are professionals
Budget	-	$167 million (regular two-year budget) + $400 million (estimated extra-budgetary funds)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through FAO's own efforts, national and international agencies, industry, educational institutions and aid programmes
Obstacles to technology diffusion	-	All the obstacles listed in OECD questionnaire
Publications	-	Wide range of publications on food, agriculture and nutrition (list available on request).

ITALIAN CENTRE FOR CO-OPERATION IN THE BUILDING DEVELOPMENT OF EMERGING NATIONS

Director: Arch. Eraldo Comoglio

Via Borgosesia 30
10121 Torino
Tel : (011) 74 51 38

Main activities

Technical feasibility studies
Testing and evaluation of new equipment
Technology diffusion
Information and documentation
Publications

Main fields of concentration

Building materials
Housing
Urbanism

Climatic/Geographic focus

None in particular

The Italian Centre for Co-operation in the Building Development of Emerging Nations (CICSENE) is an independent non-profit association established in 1972 and financed by the government, donations and membership fees. Its purpose is to help developing nations solve their housing problems and provide everyone with a home. It emphasizes the use of local materials, the application of self-help construction methods and the introduction of know-how from developed nations where appropriate.

The CICSENE conducts basic studies of Italian housing technologies in order to select those which can be transferred to and used in developing countries. It also designs social development projects for developing nations, provides advisory services, operates a documentation and consulting centre, and publishes studies on AT in housing. Through its members, it maintains close working contacts with the Turin University of Architecture.

Staff	-	8 people (1 full-time) all of whom are architects and engineers
Budget	-	$3,600
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through schools, universities and private voluntary foreign assistance agencies
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, cultural and social unacceptability
Publications	-	Articles and technical reports on development and low-cost housing (mostly in Italian, some in French and English).

INADES-FORMATION

Director General: Philippe Dubin
Contact: Michèle Etot

Boîte Postale 8008
15 Avenue Jean-Mermoz
Abidjan
Tel : 34 92 92

Main activities

Education and training
Publications
Promotion of local technological traditions

Main fields of concentration

Agriculture
AT software
Public health and nutrition
Transportation

Climatic/Geographic focus

Tropical rain forests and savannas
Arid and semi-arid regions
Coastal regions

INADES-Formation is the training branch of the Institut Africain pour le Développement Economique et Social (INADES, or African Institute for Economic and Social Development) which was established in 1962. It is an international non-governmental association based in the Ivory Coast and with affiliates in eight other African countries (Burundi, Cameroon, Ethiopia, Kenya, Rwanda, Togo, Upper Volta and Zaire). It is financed mainly by grants and foreign aid programmes.

The work of INADES-Formation does not focus on AT as such, but on the development, diffusion and application of very low-cost training methods and materials for small farmers, covering such subjects as accounting, management, marketing, crop rotation and cultivation methods. These training activities, carried out through correspondence courses and on-the-spot training, all involve a substantial AT component and have been instrumental in the diffusion of such technologies as ox-drawn ploughing, water control, low-cost crop storage and low-cost agricultural tools and implements.

Staff	- Not specified
Budget	- Not specified
Scale of activities in AT	- Not specified
Channels of technology diffusion	- Through training courses, publications and technical assistance programmes
Obstacles to technology diffusion	- Bureaucracy, attitude of political leaders, inadequate legislation, reluctance to accept innovation, lack of competitiveness relative to modern technology, lack of funds, lack of technical support and maintenance difficulties
Publications	- Training courses, booklets and quarterly journal (in French and several African languages).

SCIENTIFIC RESEARCH COUNCIL

Director: Dr. A. K. Ventura

P.O. Box 350
Kingston 6
Tel: 927 44 71

Main activities

Research and development
Information and documentation
Publications
Influencing political decisions

Main fields of concentration

Food processing industry
Solar energy
Nutrition
Building materials
Domestic wastes disposal

Climatic/Geographic focus

Tropical regions

The Scientific Research Council (SRC) is a governmental centre established in 1960 to undertake and coordinate scientific research in Jamaica and to encourage the application of this research to the development of the island.

The SRC has developed small-scale food processing industries, syruped ginger from local ginger, caramel from local sugar, floor tiles from local raw materials, a household solar water heater, and a methane generator using animal wastes. Work is in progress to develop a low-cost structural building brick based on local limestone and clay, and on the enrichment of local edible starches by preparing composite flours. In the future, research will focus on food processing techniques (starch and cellulose food additives; use of local seeds), the utilisation of industrial wastes and sugar-cane by-products, and the development of building materials.

The SRC maintains a public library on AT and its Technical Information Division is planning to seek out innovators in the villages.

Staff	-	75 people (all full-time), 14 of whom are professionals
Budget	-	$400,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through SRC's own activities
Obstacles to technology diffusion	-	Lack of funds
Publications	-	Not specified.

CARIBBEAN FOOD AND NUTRITION INSTITUTE

Director: Dr. J. Michael Gurney

P.O. Box 140
Kingston 7
Tel : 927 83 38

Main activities

Policy analysis and economic studies
Technology diffusion
Research and development
Training and education
Information and publications

Main fields of concentration

Nutrition
Public health
Food processing

Climatic/Geographic focus

Caribbean region

The Caribbean Food and Nutrition Institute (CFNI) was founded in 1967 and is affiliated with the University of Jamaica. Its staff works in co-operation with governments and university colleagues in the English-speaking Caribbean. It is funded half by the World Health Organisation and UNICEF and half by governments and foundations. Its objectives are the study of the food and nutrition status in the countries of the region, the establishment and implementation of food and nutrition policies, and education and training of personnel at all levels in nutrition and nutrition-related services.

The Institute has developed methodologies for food and nutrition policy-making, has organised institutional food services, has developed techniques for training in nutrition, nutritional surveillance and monitoring, and has developed strategies and plans of action to fight gastro-enteritis and malnutrition in infants and young children.

Staff	-	24 people (all full-time), 8 of whom are professionals
Budget	-	Not specified
Scale of activities in AT	-	288 man-months
Channels of technology diffusion	-	Through international and national agencies and through universities
Obstacles to technology diffusion	-	None as such
Publications	-	Numerous reports including food composition tables, recommended dietary allowances, food surveys in the Caribbean and nutritional standards.

OISCA TRAINING CENTER

Secretary General: Toshihiro Nakano

c/o OISCA - International
6-12, Izumi 3-chome
Suginami-ku
Tokyo 168
Tel : (03) 322 51 61

Main activities

Education and training of personnel
Technology diffusion
Testing and evaluation of new equipment
Research and development

Main fields of concentration

Agriculture
Irrigation
Small industry promotion
Village development

Climatic/Geographic focus

Asia, Pacific and Africa

The Organization for Industrial, Spiritual and Cultural Advancement (OISCA) is an international, non-governmental organisation established in Tokyo in 1961. It is funded by membership fees, governments and donations. It has set up a permanent Asian-Pacific regional committee on food and agriculture and the OISCA Industrial Development Body.

A large part of OISCA's activities are devoted to the training and education in Japan of youth from Asian countries. Four centres in Japan receive trainees from developing countries, and Japanese technicians are sent to developing countries for field diffusion.

OISCA also conducts basic surveys and research in agriculture (rice, vegetables, fruit, processing of farm products), medium-size industries (cast iron technology, textiles, printing, bamboo crafts, chinaware, welding), with particular emphasis on village development and the promotion of village initiatives. To date, three training centres have been established abroad (Philippines, Thailand and Malaysia), and OISCA plans to set up similar centres in other Asian countries in order to enable a larger number of youths to be educated into appropriate technologies for their native countries.

Staff	-	47 people (37 full-time)
Budget	-	$412,000
Scale of activities in AT	-	504 man-months
Channels of technology diffusion	-	Through training programmes in Japan, through Japanese technicians working abroad and through medium-sized industrial firms
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, reluctance to accept innovation, lack of competitiveness relative to other technologies, lack of technical support
Publications	-	OISCA Bulletin.

AFRICAN MEDICAL AND RESEARCH FOUNDATION

Director General: A. Michael Wood

Wilson Airport
P.O. Box 30125
Nairobi
Tel : 50 13 01

Main activities

Education and training (70%)
Publications (15%)
Research and development (5%)
Technical feasibility studies (5%)
Technology diffusion (5%)

Main fields of concentration

Public health

Climatic/Geographic focus

Tropical savannas
Arid and semi-arid regions

The African Medical and Research Foundation (AMREF) is an international voluntary organisation established in 1956 to promote innovative methods of delivering health care in the rural areas of developing countries. AMREF serves as a public health institute for the governments of Kenya, Tanzania and Sudan. Since 1968 its major activities have been in teaching and training. A training centre has been built, and a training department and a printing and publications department have also been established. Many training courses and teaching materials for medical auxiliaries and community health workers have been published.

AMREF operates a network of 100 radio stations which offer services to rural hospitals clinics and dispensaries, and has a fleet of 8 aircraft for its "flying doctor services". It has carried out a number of projects on the design of low-cost medical building and has prepared a book on the subject in collaboration with the University of Nairobi. AMREF plans to establish a rural workshop in Tanzania, and to establish and manage an integrated rural health scheme in Kenya. All these activities involve a substantial AT component.

Staff	-	90 people (all full-time), 34 of whom are professionals
Budget	-	$2.4 million
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies and the Foundation's own activities
Obstacles to technology diffusion	-	Lack of adequate funds
Publications	-	Several books on various aspects of health care (including medical buildings); manuals on health education, pharmacology, community health, obstetric , emergencies and diagnostic pathways.

KEN 200

KENYA

ENVIRONMENT LIAISON CENTRE

Director: Gary Gallon

P.O. Box 72461
Nairobi
Tel : 2 47 70

Main activities

Information and documentation
Influencing governmental decisions

Main fields of concentration

Environmental problems
Energy
Human settlements
Agriculture

Climatic/Geographic focus

Tropical rain forests
Arid and semi-arid regions
Cold regions

The Environment Liaison Centre (ELC) is an international non-governmental organisation concerned with the environment and human settlements. It was created after the 1972 United Nations Stockholm Conference on the Environment with the backing of the world's major international non-governmental organisations (NGO's) concerned about the environment. It was located in Nairobi to provide a focal point of communication with the United Nations Environment Programme (UNEP).

ELC acts as a liaison centre between UNEP and its member non-governmental organisations, participates in major conferences and meetings and is an active promotor of AT. Its future activities include close work with NGO's in the developing countries, and the promotion of the World Environment Day (June 5th) under the auspices of UNEP.

Staff	-	10 people
Budget	-	$220,000 ($110,000 in 1976)
Scale of activities in AT	-	90 man-months
Channels of technology diffusion	-	Newsletter, lobbying international agencies and governments, conferences and meetings
Obstacles to technology diffusion	-	Attitude of political leaders, cultural and social unacceptability, lack of funds
Publications	-	ELC report (bi-monthly) "The Potential for Environmental Action", 1976 "The Jonglei Canal - Environmental and Social Aspects", 1977 Report on NGO Activities, 1977.

HOUSING RESEARCH AND DEVELOPMENT UNIT

Director: K. B. Andersen

University of Nairobi
P.O. Box 30197
Nairobi
Tel : 2 74 41 ext. 212

Main activities

Information and documentation (20%)
Occasional publications (20%)
Research and development (20%)
Technical feasibility studies (20%)

Main fields of concentration

Housing
Building standards
Urban planning

Climatic/Geographic focus

All areas except cold regions and mountains

The Housing Research and Development Unit (HRDU) was started in 1967 after recommendation by Charles Abrams, the head of a United Nations team which assessed Kenya's housing problems. It is envisaged that the HRDU will become a research and teaching department in the Faculty of Architecture, Design and Development of the University of Nairobi. At present, it is funded by a grant from the Ministry of Housing and Social Services and is also supported by the University and overseas governments.

The HRDU has provided guidelines on space requirements for urban and rural low-cost housing in accordance with the different climatic zones of Kenya. The two sets of building by-laws it has published are now legal documents covering a large range of buildings.

The HRDU has developed and built prototypes of low-cost houses to be independent of main services, and for which the technical and economical aspects of different roof types have been studied in great detail. The Unit has also conducted work on the planning of a traditional urban squatter settlement and has conducted a sites and services schemes analysis for the Kenyan Government.

Staff	-	13 people (all full-time), 7 of whom are professionals
Budget	-	$42,000 (1976: $25,000)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the government, international agencies and the university
Obstacles to technology diffusion	-	Attitude of political leaders, inadequate legislation, cultural and social unacceptability, lack of competitiveness relative to modern technologies, lack of technical support
Publications	-	About 12 reports, case studies, manuals, policy guidelines.

UKAMBA AGRICULTURAL INSTITUTE

National Chairman: Bishop R. S. Ndingi Mwana'a Nzeki

Akamba Hall, Starehe
P.O. Box 30627
Nairobi
Tel : 2 72 28

Main activities

Education and training
Pilot production

Main fields of concentration

Agriculture and forestry
Animal husbandry
Soil and water conservation

Climatic/Geographic focus

Tropical savannas

The Ukamba Agricultural Institute (UKAI) was established in 1971 by local leaders of the Ukamba region to provide appropriate training for dry land farming. This voluntary non-profit organisation is a "Harambee" (self-help) project.

The Institute has been granted a tract of 4,500 hectares by the Kitui County Council and has begun the construction of training facilities for 240 students in dry land farming technology. A small scale goat production project has been launched, and the Institute is working on a number of other projects in the field of water conservation, soil protection, new crops and animal husbandry.

Staff	-	9 people (5 full-time), 1 of whom is a professional
Budget	-	$23,000 ($14,500 in 1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Not yet applicable
Obstacles to technology diffusion	-	Not yet relevant
Publications	-	None.

KEN 700

KENYA

UNITED NATIONS ENVIRONMENT PROGRAMME

Executive Director: Dr. Mostafa K. Tolba
AT Contact: Paolo Bifani

P.O. Box 30522
Nairobi
Tel : 33 39 30

Main activities

Technology extension and diffusion
Research and development
Pilot production
Financing AT activities of other institutions
Influencing governmental and political decision-making
Promotion of local technological traditions

Main fields of concentration

Energy
Public health
Water
Agriculture
Industry
Housing
Infrastructures and services

Climatic/Geographic focus

None in particular

The United Nations Environment Programme (UNEP) was established in 1972 in the wake of the UN Conference on the Human Environment (Stockholm). Its aim is to foster international co-operation in environmental matters, develop new values and standards in this area and promote the responsible management of life-sustaining resources. In addition to its regular budget, UNEP operates an Environment Fund, financed by voluntary contributions, to carry out special projects.

UNEP has been active in the promotion of environmentally sound and appropriate technologies (ESAT) and is currently developing a methodology for the choice and evaluation of such technologies. It is also supporting a wide number of projects and institutions dealing primarily with the environment and subsidiarily with AT. In two countries (Sri Lanka and Senegal), the UNEP has set up a major pilot project to study and test the feasibility of integrated energy supplies at the village level (windmills, solar driers and cookers, bio-gas plants and equipment using these sources of energy).

Staff	-	Not specified
Budget	-	$35 million
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through projects, international agencies and aid programmes and publications
Obstacles to technology diffusion	-	Cultural and social unacceptability, lack of funds
Publications	-	Wide range of technical reports.

KEN 800

KENYA

VILLAGE TECHNOLOGY UNIT
UNITED NATIONS CHILDREN'S FUND

Contact: Mr. Jim McDowell

Food Technology and
Nutrition Section
UNICEF
P.O. Box 44145
Nairobi
Tel : 52 06 71

Main activities

Testing and evaluation of new equipment
Technology extension and diffusion
Promotion of local technological traditions
Research and development
Education and training

Main fields of concentration

Energy
Home living technologies
Water supply
Crop processing and storage
Hygiene

Climatic/Geographic focus

Rural areas

The United Nations Children's Fund (UNICEF) was established in 1946 to carry out post-war relief in Europe and is mainly concerned today with the welfare of children in the developing countries. Its basic services approach, initiated in 1976, emphasizes primary health care, formal and non-formal education, improved nutrition, clean water supplies, sanitation and community development, both for children and their mothers.

The Village Technology Unit, established by UNICEF in 1976 in co-operation with the Kenyan Ministry of Housing and Social Services, is a research, evaluation extension and information centre devoted to the development and demonstration of village level technologies. It has a permanent exhibit of over 50 hardware items (solar cookers and dryers, food storage equipment, water supply systems, home improvement equipment, etc.), and has a small workshop as well as a testing and evaluation unit. The Unit provides practical training in the construction and use of village technology devices and assists in the establishment of similar units in other countries. Its "outreach" projects now cover 17 countries of Eastern Africa.

Staff	-	Not specified
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through demonstration and training
Obstacles to technology diffusion	-	Not specified
Publications	-	Booklet on village technology, special issue of UNICEF News, manual on low-cost solar dryers.

INTERNATIONAL CENTER FOR AGRICULTURAL RESEARCH IN THE DRY AREAS

Director: Dr. Henry S. Darling

P.O. Box 114/5055
Beirut
Tel : 30 38 60

Main activities

Research and development
Pilot production
Training of personnel

Main fields of concentration

Water resources
Irrigation
Agriculture
Husbandry

Climatic/Geographic focus

Arid and semi-arid regions
Mountainous regions

The International Center for Agricultural Research in the Dry Areas (ICARDA) was officially established at the beginning of 1977, following the recommendations of a team of experts commissioned by the Consultative Group on International Agricultural Research (CGIAR). Prior to its legal incorporation, it had absorbed the Arid Lands Agricultural Development Program (ALAD) run by the Ford Foundation.

ICARDA carries out research on integrated farming systems (with special reference to the small farmer), crop improvements in cereals (bread and durum wheats, barley, triticale) and food legumes (chick peas, broad beans, lentils), as well as on animal production (goats and sheep) and the improvement of pastures and forage. This research focuses on the specific needs of the Middle East and North Africa.

ICARDA has established a principal research station in Aleppo (Syria) to serve lower altitude regions, another in Tabriz (Iran) to serve higher altitude regions, and maintains a secondary research station in Tel Amara, Lebanon.

Staff	-	100 people (90 full-time)
Budget	-	$260,000
Scale of activities in AT	-	Not available
Channels of technology diffusion	-	Government and international agencies, international aid programmes
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, inadequate legislation, "risk factor" for the subsistence farmer
Publications	-	None as yet.

LES 500

LESOTHO

THABA KUPA FARM INSTITUTE

Director: V. K. Koali

P.O. Box 929
Maseru

Main activities

Training and education
Research and development
Technology extension services
Promotion of local technological traditions
Technology diffusion

Main fields of concentration

Agricultural tools and machinery
Cultivation techniques
Small metal-working

Climatic/Geographic focus

Mountainous regions and high altitude plateaux

The Thaba Kupa Farm Institute, founded in 1972 by a number of Christian churches active in Lesotho and financed through donations, is mainly an agricultural training centre with two-year courses in intensive farming and a two-year extension follow-up for students after they have returned to their home areas.

The Institute's Intermediate Technology Unit (Manager: Ove Kjaer) has developed several agricultural tools and implements such as a hand hoe, a hand weeder and a push hoe for use in greenhouses and interrow cultivation. It also developed horse carts for a single horse or donkey and a simplified animal-drawn cultivator which can be used for lighter jobs on the farm. The Institute is now extending its educational activities to female students, with a home economics unit consisting of crafts workshops, a demonstration kitchen and other facilities.

Staff	-	10 people (all full-time), 6 of whom are professionals
Budget	-	$15,000
Scale of activities in AT	-	12 man-months
Channels of technology diffusion	-	Through the Institute's educational activities
Obstacles to technology diffusion	-	Lack of funds and lack of technical support
Publications	-	None.

HOME ECONOMICS DIVISION

Directress: Dinah Barr

Ministry of Agriculture
P.O. Box 9010
Sinkor

Main activities

Education and training of adults (50%)
Technology extension services (20%)
Technology diffusion

Main fields of concentration

Energy savings
Handicrafts and small industry
Home economics
Community development
Vegetable gardening

Climatic/Geographic focus

None in particular

The Home Economics Division was set up in 1961 to meet the needs of women and families in the rural communities. Its aim is to improve overall living conditions through the application of appropriate knowledge in the physical, biological, social and economic sciences. It is a governmental centre affiliated with the Ministry of Agriculture, and has close links with the Ministry of Public Health and Family Planning, the University of Liberia and international agencies such as UNICEF (United Nations Children's Fund) and FAO (Food and Agriculture Organisation of the United Nations). Two thirds of its budget come from the government, the remainder from consulting fees, donations and membership fees. Over ten branches have been set up in various parts of Liberia, and are all affiliated with the rural development programme.

Its activities in the field of education, training and technology extension focus on nutrition, child care, health and sanitation, home management, family planning, sewing, literacy, handicrafts, home gardening, food preparation, animal husbandry and community development.

This centre has developed and diffused a number of appropriate technologies: improved cooking stoves made from sun-dried bricks and cement, improved wells with seal tops, toilets built from sticks and mud and covered with zinc tops, soakpits and dishstands, and garbage pits for the production of compost.

Staff	-	18 people on a full-time basis, all of them professionals
Budget	-	$8,000
Scale of activities in AT	-	60 man-months
Channels of technology diffusion	-	Through their own activities, through government agencies and through advertisement and mass media
Obstacles to technology diffusion	-	Lack of competitiveness, lack of funds and technical support
Publications	-	None.

FOFATA - RURAL FORMATION CENTRE
Foibe Fanomanana Tantsaha

Director: Robert Martel

Boîte Postale 27
Ambatolampy, TA

Main activities

Education and training
Commercial production
Promotion of local technological traditions
Information and documentation

Main fields of concentration

Agriculture
Food processing
Husbandry
Soil protection
Building materials

Climatic/Geographic focus

Tropical highlands and mountainous regions

The Rural Formation Centre (Foibe Fanomanana Tantsaha in Malagasy, or FOFATA), was founded in 1970 and is associated with the Church of Jesus-Christ in Madagascar (FJKM) and the Evangelical Community for Apostolic Action (CEVAA, Paris). It was designed as a pilot farm and school whose aime was to promote the green revolution by using high technology and relying heavily on agricultural machinery and chemical fertilizers. Its policy and purpose were completely changed between 1972 and 1975 when it had to find ways of living independently of outside funds.

The Centre owns a 60 hectare estate, the soils of which have been impoverished by erosion and intensive use. Attempts are being made to rehabilitate the soils by composting techniques. The Fofata has developed cheese production in order to absorb the local milk production (160 litres per day), but sustaining a constant temperature for the vat without any refrigeration presents a difficult problem. The use of solar energy and cow dung digesters is being studied. Local materials (bricks, earth reinforced with cement) have been used for the construction of the Centre's own buildings.

Fofata tries to promote agriculture and to help farmers with everything at its disposal, and AT is one focus among others of its activities.

Staff	-	2 people (1 full-time)
Budget	-	$38,000 (25,000 in 1976)
Scale of activities in AT	-	15 man-months
Channels of technology diffusion	-	Through educational activities and through co-operation with local administrative institutions
Obstacles to technology diffusion	-	Reluctance to accept innovation, lack of competitiveness, lack of funds, lack of reliability, lack of technical support and maintenance difficulties
Publications	-	Malagasy translation of a French brochure on composting.

VIPHYA LOGGING OXEN TRAINING CENTRE

Principal field officer: B. F. Coates

Private bag 6
Dedza
Tel : Dedza 0 30 11

Main activities

Education and training of personnel
Commercial production
Influencing governmental or political decision-making

Main fields of concentration

Forestry
Animal power
Road construction

Climatic/Geographic focus

Malawi and any other country with a forest industry, low wages and animal husbandry

The Viphya Logging Oxen Training Centre was established in 1975 under overall direction of the Department of Forestry of the Malawi Government. It is financed by government sources, of which the Department of Forestry provides about half its budget. The purpose of the Centre is to train animals and personnel in the use of head-yoked oxen for forest harvesting (as opposed to the neck-yoked draught oxen widely used in Malawi). This method has been tried since 1971 and adopted after a FAO-sponsored study tour of ox-logging in Chile.

About 100 of the initially foreseen 360 pairs of animals (and 360 handlers) have already been trained. The Centre is experimenting with and developing the most suitable logging equipment and methods for large-scale logging under Malawi conditions to supply a major new pulp industry in the near future. In the meantime it is also working on the development of equipment for the use of head-yoked oxen for making earth-filled dams and road embankments.

Staff	-	12 full-time people (all non-professional) and 48 trainees per year
Budget	-	$71,300 (1976: $51,000)
Scale of activities in AT	-	288 man-months
Channels of technology diffusion	-	Through the Forestry Department and training programme
Obstacles to technology diffusion	-	Reluctance to accept the idea of substituting sophisticated modern tractors by draught animals in a modern industrial forest enterprise
Publications	-	None.

MALAYSIAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE
Institiut Penyetidikan Dan Kemajuan Pertanian Malaysia

Director: Dato Mohamad Tamin Bin Yeop

P.O. Box 202
UPM Post Office
Serdang, Selangor
Tel : 35 66 01

Main activities

Research and development (100%)

Main fields of concentration

Agriculture and husbandry
Pest control
Aquaculture

Climatic/Geographic focus

Tropical savannas

The Malaysian Agricultural Research and Development Institute (MARDI) is a government institute established in 1969 to carry out research on all agricultural crops except rubber, on livestock and on freshwater fisheries. It is entirely financed by the Government and the main priority of its research is to develop simple technologies usable by small farmers in order to help them solve their production problems and overcome poverty.

The Institute has developed several new varieties of rice, maize, groundnuts, tapioca, cocoa, coconut, fruits, vegetables and oil palms. It has also worked on new management practices and mechanised planting techniques adapted to these crops. It has carried out a number of studies on post-harvest problems and has been studying the economic aspects of the new crops it promotes as well as problems of end use.

Staff	-	2,000 people (total includes a large number of agricultural labourers)
Budget	-	$16 million
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies
Obstacles to technology diffusion	-	Reluctance to accept innovation
Publications	-	Research bulletin and research report.

AGRICULTURAL MACHINERY DIVISION
Division du Machinisme Agricole

Director: Dramane Zerbo

Ministère du Développement Rural
Boîte Postale 155
Bamako
Tel : 2 25 59

Main activities

Research and development
Testing of new equipment
Education and training
Policy analysis and economic studies

Main fields of concentration

Agricultural tools and machinery
Muscular energy
Water pumping
Small industry promotion
Cultivation techniques

Climatic/Geographic focus

Tropical savannas
Arid and semi-arid regions

The Agricultural Machinery Division (DMA) was set up in 1967 within the National Direction of Rural Engineering of the Malian Ministry of Rural Development and is financed for the most part by development operations. Its purpose is to direct, promote and, as the case may be, to control the mechanisation of agriculture.

The Division has developed and diffused a wide range of agricultural implements and machines; among them, an ox-drawn multi-purpose cultivator (30,000 units sold), a multi-purpose donkey-drawn hoe (2,000 units), an animal-drawn seeder (15,000 units) and a hand-powered peanut thresher. It is currently developing a small cart for tractors and a hand-operated fibre-extracting machine for kénaf.

The Division is planning to establish testing and demonstration units in various parts of the country and to expand its training centre in Bamako.

Staff	-	70 people (65 full-time), 27 of whom are professionals
Budget	-	$100,000
Scale of activities in AT	-	8 man-months
Channels of technology diffusion	-	Through the Division's own activities and through government agencies
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, reluctance to accept innovation, lack of funds and maintenance difficulties
Publications	-	Several handbooks on agricultural machinery, quarterly journal, and technical notices on implements developed by the Division and quarterly magazine (all in French).

SOLAR ENERGY LABORATORY OF MALI
Laboratoire d'Energie Solaire du Mali

Director: Cheickna Traore

Boîte Postale 134
Bamako
Tel : 23 041

Main activities

Research and development

Main fields of concentration

Solar energy
Water extraction

Climatic/Geographic focus

Tropical savannas
Arid and semi-arid regions

The Solar Energy Laboratory of Mali is a governmental agency created in 1964 to conduct research in the field of solar, nuclear and wind energies. Practical applications of this research work began in 1969.

Four solar devices have been developed and tested: a solar water heater (150 units of which are presently in operation in public and private buildings), a large solar dryer for meat, fish and fruit, a solar cooker and a large distiller (1000 cubic meters) to provide water for industrial uses and for vehicles. Two flat collector and two photo-voltaic solar pumps have been installed, and the Laboratory is currently developing a 75 kW solar power plant for irrigation, water supply and the production of electricity.

Present research activities are oriented towards solar refrigeration, air-conditioning and drying, bio-gas production and the development of materials and technologies for manufacturing solar water heaters and cookers.

In the framework of the economic integration policy of the countries belonging to the West African Economic Community (CEAO), an attempt is currently made to harmonize the existing and planned solar energy research programmes in this region of Africa.

Staff	-	14 people (all full-time)
Budget	-	$64,000 ($32,000 in 1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies
Obstacles to technology diffusion	-	Bureaucracy, cultural and social unacceptability
Publications	-	Handbooks and reports on solar heating and distillation, solar cookers and dryers (in French).

SCHOOL OF INDUSTRIAL TECHNOLOGY

Director: Professor E. Lim Fat

University of Mauritius
Reduit
Tel : 54 10 41

Main activities

Research and development
Education and training

Main fields of concentration

Solar and wave energy
Building materials
Preventive medicine and nutrition
Roads

Climatic/Geographic focus

Temperate and coastal regions

The School of Industrial Technology was established in 1968 within the University of Mauritius to train engineers and technicians. Its activities in AT. which began in 1974, stem from the decision to carry out only such student projects and faculty research projects which would be of direct and immediate help to the local community.

The School's AT projects, which are all currently in progress, include the production of bio-gas from agricultural wastes, inexpensive solar equipment (heaters, stills, cookers, refrigerators and vegetable dryers), the harnessing of off-shore waves for electricity production, the use of sisal fibre for reinforcing concrete, the study of the effects of high temperatures on concrete and the improvement of concrete production, the development of a portable mechanised sugar-cane cutter, and a hydraulic ram for irrigation made from cheap local materials. In future, the Institute plans to have some full-time staff working on AT.

Staff	-	8 people (all part-time), 5 of whom are professionals
Budget	-	Not available separately (included in the University's overall budget)
Scale of activities in AT	-	96 man-months
Channels of technology diffusion	-	Through the School's own activities
Obstacles to technology diffusion	-	Inadequate legislation, lack of competitiveness relative to traditional technologies
Publications	-	Articles in the Revue Agricole et Sucrière de l'Ile Maurice (in English).

CENTRE FOR ECONOMIC AND SOCIAL STUDIES OF THE THIRD WORLD
Centro de Estudios Economicos y Sociales del Tercer Mundo

Director: Dr. B. F. Osorio Tafall

Cor. Porfirio Diaz 50
San Jeronimo Lidice
Mexico 20,DF
Tel : 595 20 88

Main activities

Research and development (35%)
Testing and evaluation of new equipment (35%)
Information and documentation (30%)

Main fields of concentration

Housing
Energy
Agricultural tools and machinery
Food technology
Small metal-working
Public health

Climatic/Geographic focus

None in particular

The Centre for Economic and Social Studies of the Third World (CEESTEM) is an independent international non-profit research centre founded in 1977. Its objectives are to study the problems of underdevelopment, offer viable solutions to specific problems and promote the exchange of useful experiences.

The Centre has a wide programme in AT which includes the construction of family dwellings using non-conventional materials and techniques; an automous (in terms of energy and food) ecological housing project; the use of solar, wind and tidal energy for water pumping; the local construction of low-cost agricultural tools and implements; the study of various plant crops of the Third World and the introduction of tunny nets and ferro-cement boats to improve artisanal fishing. The Centre has started Programme IMEPLAM (Mexican Institute for the Study of Medicinal Plants) which conducts a systematic and scientific survey of Mexican medicinal plants and plant preparations.

The Centre co-operates with the International Oceanographic Institute of Malta on an inventory of marine resources in the Third World. Seven extension centres have been established in different geo-climatic zones of Mexico.

Staff	- 6 people (all full-time)
Budget	- $200,000
Scale of activities in AT	- 46 man-months
Channels of technology diffusion	- No diffusion until now
Obstacles to technology diffusion	- Not applicable
Publications	- Monographies on medicinal plants. Contributions to "International Economic Justice", Mexico, 1976. Study on the economic rights and duties of states.

GENERAL STUDIES CENTER/LOCAL PRODUCTIVITY
Centro de Estudios Generales/Productividad Local

Director: Gabriel Cámara

Ojinaga Nueva 1421
Apartado 732
Chihuahua, Chihuahua
Tel : 5 37 62

Main activities

Research and development (40%)
Pilot production (20%)
Technology diffusion (20%)

Main fields of concentration

Housing
Solar energy
Hygiene, preventive medicine
Small industry promotion
Training of adults

Climatic/Geographic focus

Arid and semi-arid regions

The General Studies Centre began in 1970 as an experimental high school which soon became involved in community development. The need to have full-time professional workers led to the establishment of a new institution, Productividad Local (Local Productivity). This independent AT centre is financed by foundations and the Government, as well as by educational services and commercial and industrial activities.

Its first activities were the creation of a self-help shop to allow low-income families to improve their houses and the development of preventive health care. This led to the production of building components, plans for remodelling the urban environment, waste recycling and disposal, and improvements in the productivity of self-help services. Self-help technologies developed and diffused by the Centre include ferro-cement rooves, ferro-cement window frames, reinforced cement beams lightened with empty cans, soil-cement tiles for paving streets, a solar oven and an alternative technology to the chicken wire used to reinforce ferro-cement (discarded cans).

Staff	-	15 people (13 full-time), 7 of whom are professionals
Budget	-	$75,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies, advertisement and mass media
Obstacles to technology diffusion	-	Bureaucracy, attitude of political leaders, lack of funds, lack of technical support
Publications	-	Two reports (on urban settlement design and on adult education).

GROUP FOR THE DEVELOPMENT OF CHEMICAL TECHNOLOGY
Grupo de Desarrollo de Tecnologia Quimica

Director: José Giral B.

Graduate School of Chemical Engineering
National University of Mexico
Sierra Ventana 678
Mexico 10 DF
Tel : 531 35 61

Main activities

Publications (20%)
Research and development (20%)
Technical feasibility studies (20%)
Education and training (20%)
Influencing political decisions

Main fields of concentration

Scaling-down of industrial processes
Chemical industry
Small industry promotion

Climatic/Geographic focus

Countries with small markets, scarce capital and abundant unskilled labour

The Group for the Development of Chemical Technology (GDT) was founded in 1968 at the Graduate School of Chemical Engineering of the National University of Mexico. It is financed by the University and maintains close ties with the chemical industry.

Its initial work focused on the adaptation of existing chemical technologies to the particular conditions of Mexico. Its activities later expanded into the software aspects of AT in the chemical field (technological characterisation models to assess technological alternatives, methodology for the design of chemical processes for less developed countries). GDT has also done a lot of work in the development of appropriate hardware, and a number of plants now in operation are using these new processes, notably in the field of organic chemicals. In the metalworking industry, the Group has been involved in the updating of obsolete technology and making it fully competitive.

Staff	-	10 people (8 full-time) all professionals
Budget	-	$45,000
Scale of activities in AT	-	120 man-months
Channels of technology diffusion	-	Mainly through the Group's own activities
Obstacles to technology diffusion	-	Reluctance to accept innovation, lack of technical support
Publications	-	Three handbooks and over 60 technical papers (in English and Spanish).

INFOTEC-CONACYT

Director: José Quevedo Procel

San Lorenzo 153,
11º piso
Mexico 12, DF
Apartado postal 19-194
Mexico 19, DF
Tel : 559 52 11

Main activities

Technology extension services (35%)
Information analysis (30%)
Information and documentation (20%)
Publications (15%)

Main fields of concentration

Small industry promotion
Small-scale metal working
Pollution control

Climatic/Geographic focus

None in particular

The Technical Information Service of the Mexican National Council of Science and Technology (INFOTEC-CONACYT) was established in 1975 and is associated with the Ministry of Industry and the National Development Bank.

It is an industrial information, technical assistance and extension service promoting technological development and innovation in small and medium-sized firms. It organises seminars on services of information for Latin American institutions and professionals from Latin American countries. These activities involve a substantial AT component, but INFOTEC-CONACYT is also involved in other types of technology.

Staff	-	50 people (all full-time), 25 of whom are professionals
Budget	-	$544,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the Centre's own activities, and through the mass media, advertisements and government agencies
Obstacles to technology diffusion	-	Reluctance to accept innovation and lack of funds
Publications	-	Technical news bulletin and newsletter.

INTERNATIONAL CENTRE FOR MAIZE AND WHEAT IMPROVEMENT
Centro Internacional de Mejoramiento de Maíz y Trigo

Director: Haldore Hanson

Londres 40, 1° piso
Apartado postal 6-641
Mexico 6, DF
Tel : 585 43 55

Main activities

Research and development (65%)
Training of personnel
Information services

Main fields of concentration

New crops and plants
Pest control

Climatic/Geographic focus

Any regions except cold areas and tropical rain forests

The International Centre for Maize and Wheat Improvement (CIMMYT) is an international non-governmental research organisation founded in 1966 to help raise world cereal yields. It was an outgrowth of an earlier collaborative research programme between the Rockefeller Foundation and the Mexican Ministry of Agriculture. CIMMYT is now supported by nearly 20 donor agencies including governments and foundations.

Research at CIMMYT emphasizes maize and wheat, but work is also conducted on barley, sorghum and triticale. CIMMYT operates large breeding programmes; thousands of new crosses are produced each year, and are tested in various countries. Selections from these crosses emphasize such goals as high yield potential, a wide range of adaptation, disease and insect resistance and nutritional value. A 1976 survey indicated that improved wheat varieties involving wheats developed in CIMMYT's programmes are now grown on 25 million hectares in Asia, Africa and Latin America.

CIMMYT also provides specialized training to scientists and technicians.

Staff	-	576 people (all full-time), 71 of whom are professionals
Budget	-	$14 million
Scale of activities in ...	-	Not specified
Channels of technology diffusion	-	International and governmental agencies, international aid programmes
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, lack of technical support
Publications	-	Numerous bulletins, pamphlets, proceedings, etc.

MEXICAN FOUNDATION FOR RURAL DEVELOPMENT
Fundación Mexicana par el Desarrollo Rural

President: Alejandro Rocha
Director: Arturo Espinosa

Ejercito Nacional 539-12
Mexico 5, DF
Tel : 531 85 18

Main activities

Education and training (40%)
Financing AT activities of other institutions (16%)
Promotion of local development agencies (12%)

Main fields of concentration

Agriculture
Handicrafts
Community development

Climatic/Geographic focus

None in particular

The Mexican Foundation for Rural Development (FMDR) is a civil association founded in 1970 and sponsored by numerous Mexican industrial and commercial institutions. Its main objective is the training of adults in rural areas, combined with technical assistance and the financing of rural development projects. These activities all involve AT. The FMDR has promoted about a dozen regional rural development agencies in states of Mexico and helps them to find financial support.

Staff	-	Not specified
Budget	-	$1.25 million
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through local rural development agencies and through publications
Obstacles to technology diffusion	-	Not specified
Publications	-	Journal on rural development (in Spanish).

NATIONAL DOCUMENTATION AND INFORMATION CENTRE OF MOZAMBIQUE
Centro Nacional de Documentação e Informação de Moçambique (CEDIMO)

Director: Ilidio José da Rocha

Rua da Rádio Moçambique
P.O. Box 4116
Maputo
Tel : 2 14 28

Main activities

Information and documentation
Publications
Policy analysis and economic studies
Education and training
Technology diffusion

Main fields of concentration

Energy
Water resources
Agriculture, forestry and fishing
Infrastructures and services
Small industry promotion

Climatic/Geographic focus

Tropical savannas
Arid, semi arid and temperate regions

The National Documentation and Information Centre of Mozambique (CEDIMO) was formerly the information and documentation centre of the Banco Nacional Ultramarino (Overseas National Bank) which became the Banco de Moçambique (i.e. the central bank) after the country's independence.

CEDIMO is entirely financed by the Banco de Moçambique and is engaged in information and documentation activities in all fields of AT. It is currently in the process of setting up a subsidiary documentation centre specialised in agriculture, forestry, cattle breeding and fisheries.

Staff	-	81 people (all full-time), 11 of whom are professionals
Budget	-	$487,000 ($259,000 in 1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the Centre's information and documentation activities
Obstacles to technology diffusion	-	Not specified
Publications	-	Bibliographic bulletin, information documents and progress reports (all in Portuguese).

RESEARCH CENTRE FOR APPLIED SCIENCE AND TECHNOLOGY

Executive Director: Dr. Amir Bahadur Shrestha

Tribhuvan University
Kirtipur
Kathmandu
Tel : 1 43 03; 1 32 77, ext. 138

Main activities

Information and documentation
Technology extension services
Promotion of local technological traditions
Research and development

Main fields of concentration

Solar energy
Crop processing and conservation
Building materials
Small industry

Climatic/Geographic focus

Tropical rain forests
Mountainous regions

The Research Centre for Applied Science and Technology was founded in 1972 as a part of Tribhuvan University. Since 1975 it has begun to focus its activities largely on AT with two main objectives: research and development corresponding to the needs of the country and the generation of local technological capabilities.

The Centre is currently engaged in the development of village level technologies: food storage and preservation, low-cost building materials, solar energy and the utilisation of agricultural and industrial wastes. In addition to research, the Centre is making efforts to establish a documentation centre and other basic infrastructures in AT.

Staff	-	44 people (all full-time), 16 of whom are professionals
Budget	-	$440,000 ($270,000 in 1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through consulting and extension services
Obstacles to technology diffusion	-	Lack of competitiveness relative to traditional technologies, lack of technical support, lack of skilled manpower
Publications	-	Not specified.

AGROMISA

Director: Louis de Lange

General Foulkesweg 43
Postbus 41
6700 AA Wageningen
Tel : (08370) 1 22 17

Main activities

Information and documentation
Publications
Policy analysis and economic studies
Technology diffusion
Education and training

Main fields of concentration

Agriculture
Public health
Infrastructures and services
Irrigation

Climatic/Geographic focus

None in particular

Agromisa started in the 1930's as a group of students at the Agricultural University of Wageningen who undertook to answer technical questions posed to them by missionaries working in the tropical countries. In the 1960's, it evolved into the Agromisa Foundation, which is financed for the most part by church and missionary organisations and which is affiliated both with the Agricultural University and TOOL.

Agromisa, which is organised into four departments, answers over 300 requests for information a year, organises an annual one-week course for 110 people, issues a quarterly journal and has published over 30 manuals. Most of these activities in AT focus on agriculture. Agromisa does not carry out any research in AT, but acts as a centre of information and documentation.

Staff	-	80 - 100 (all part-time)
Budget	-	$16,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the group's own efforts and through voluntary foreign assistance agencies
Obstacles to technology diffusion	-	Not relevant
Publications	-	Numerous manuals, quarterly review.

APPROPRIATE TECHNOLOGY DEPARTMENT - EINDHOVEN UNIVERSITY OF TECHNOLOGY

Director: Ir. B. van Bronckhorst

Paviljoen E.4
P.O. Box 513
Eindhoven
Tel : (040) 47 24 43

Main activities

Research and development
Education and training
Information and documentation

Main fields of concentration

Industry
Basic technical education
Energy
Operational theories for AT

Climatic/Geographic focus

None in particular

The Appropriate Technology Department of the Eindhoven University of Technology started in 1970 as a co-operative Working Group on Appropriate Production Systems (WAP) between Tilburg University and Eindhoven University. In 1975 it was established as a formal department in the latter's Faculty of Industrial Engineering.

It has carried out a number of thematic studies on appropriate production systems and has been actively involved in research work in this area overseas, notably in Indonesia and Peru. It has developed a set of courses focusing on AT for graduate students of the University and has sought to improve the education of industrial engineers by familiarizing them with development problems and with the application of AT in production systems. The Department has also developed and tested a number of AT prototypes: wooden windmills, family cookers, a wheelchair, a water pump and a grain winnower.

Staff	-	20 people (18 full-time), 6 of whom are professionals
Budget	-	Not available
Scale of activities in AT	-	100 man-months
Channels of technology diffusion	-	Through the University and the Dutch foreign aid programme
Obstacles to technology diffusion	-	Bureaucracy and inadequate legislation, lack of competitiveness, lack of reliability and technical support, maintenance difficulties
Publications	-	Numerous articles, conference papers and internal reports.

CENTER FOR APPROPRIATE TECHNOLOGY

Chairman: Ir. W. Riedijk
Coordinator: Ir. G. v.Bilzen

Mijnbouwplein 11,
Delft
Tel : (015) 78 36 12

Main activities

Technical feasibility studies
Research and development
Promotion of local technical traditions
Micro-projects
Publications
Information and documentation

Main fields of concentration

Refrigeration technology
Process equipment
Biochemical reactors
Building methods and materials
Appropriate management
Civil engineering

Climatic/Geographic focus

None in particular

The Center for Appropriate Technology (C.A.T.), formerly the Appropriate Technology Group (A.T.G.) of Delft University started in 1973 with a small group of people trying to introduce the notion of AT into technical micro-projects of the University's educational programme. A steering committee was set up for this purpose and for dealing with technical questions asked by volunteers in developing countries.

C.A.T. has worked on several AT projects: water pumps, cooling processes based on solar energy, small-scale sugar manufacturing, methane production, conversion of cellulose into protein through microbial processes, cement substitutes, rural water supply, building methods, ferro-cement structures, water purification, drying granular materials (e.g. grain), metal processing training (in preparation) and safe fish landing methods. One of its most original projects is a multidisciplinary feasibility study on the small-scale extraction of pharmacologically active compounds from plants and herbs in Sri Lanka. This project is carried out in co-operation with ATG-Sri Lanka and Utrecht University.

C.A.T. is presently working on approximately 60 micro-projects per year and carries out AT research on some 17 projects. The group is a member of the TOOL foundation.

Staff/Council	-	14 people (2 full-time)
Budget	-	$15,000 ($5,000 in 1976)
Scale of activities in AT	-	130 man-months
Channels of technology diffusion	-	Through the University and aid programmes
Obstacles to technology diffusion	-	Lack of good counterpart organisations, lack of technical capabilities and resources, social cultural and economic obstacles
Publications	-	Annual report, technical studies, quarterly journal and brochure on C.A.T.

MEDICAL WORKING GROUP FOR DEVELOPMENTAL CO-OPERATION
Medische Wekgroep Ontwikkelingssamenwerking

c/o MFV
Geert Grooteplein Noord 21
Nijmegen

Main activities

Technical assistance by mail
Information and documentation
Publications

Main fields of concentration

Public health

Climatic/Geographic focus

None in particular

The Medical Working Group for Development Co-operation (MWO) is a voluntary organisation associated with the Medical Faculty-Students Organisation (MFV) of the Catholic University of Nijmegen. It attempts to solve problems in the medical field that are presented to it by people from developing countries, answers their technical questions and provides them with literature and documentation.

In some instances MWO also provides equipment and supplies to hospitals in the developing countries.

Staff	-	Approximately 10 people (all part time)
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through answers given by mail to technical requests
Obstacles to technology diffusion	-	Not relevant
Publications	-	None yet.

TECHNICAL WORKING GROUP FOR DEVELOPMENT CO-OPERATION

Director: Jan Oomen

Laan 1914 Nr. 35
P.O. Box 85
3818 E. Amersfoort
Tel : (33) 68 23 10; 68 91 11

Main activities

Occasional publications (40%)
Information and documentation (35%)
Promoting AT activities of other institutions (20%)

Main fields of concentration

Energy
Water
Preventive medicine
Roads
Housing
Soil erosion

Climatic/Geographic focus

None in particular

The Technical Working Group for Development Co-operation (TWO) is a non-profit organisation founded in 1974 by some 60 employees of DHV Consulting Engineers, who work as volunteers during their spare time. The Group is entirely financed by donations.

TWO answers technical questions from field workers in the developing countries which are channelled to it mainly through the TOOL Foundation; copies of all answers are filed into the TOOL documentation system.

The Group specialises in such AT areas as water treatment (sewage treatment, small-scale techniques of sand filtration), bio-gas production, road construction, wind energy, solar energy and public health. Several members of TWO are contributors to TOOL's publications programme.

Staff	- 2 people (both part-time; 1 of whom is a professional, and about 60 volunteers
Budget	- $6,000
Scale of activities in AT	- 15 man-months
Channels of technology diffusion	- Through answers to technical requests from field workers
Obstacles to technology diffusion	- Lack of competitiveness relative to modern technologies, lack of technical support and poor communication with field workers
Publications	- Report on small-scale sewage treatment systems (in Dutch), manual on the construction of small sand filtration plants (in English) and regular publications in TOOL's bulletin.

NET 350

NETHERLANDS

TOOL FOUNDATION
Stichting TOOL

Project Director: J. W. van der Eb
Administrative Director: Paul Osborn

Mauritskade 61 a
AD 1092 Amsterdam
Tel : (020) 92 68 92

Main activities

Information and documentation (25%)
Technology extension (15%)
Publications (18%)
Technical feasibility studies (6%)
Education and training (6%)

Main fields of concentration

Energy
Public health
Agriculture
Industry
Housing

Climatic/Geographic focus

None in particular

The TOOL Foundation (Technische Ontwikkeling Ontwikkelingslander, or Technical Development with Developing Countries) is an independent AT organisation comprising nine member groups in Dutch universities and higher education colleges as well as the staff association of an engineering consulting firm. The Foundation which was set up in 1974, is financed for the most part by the Dutch Government and universities.

It is primarily an AT coordinating centre and a documentation exchange network. It operates a technical question and answer service (around 1800 requests per year), publishes a number of booklets on AT and seeks to promote an awareness of developmental problems in higher education. It is planning to carry out a limited number of field projects. Technologies developed by its member organisations include a solar-powered ice-making machine, a windmill, a low-cost fish net weaving machine and a winnower, and over 30 other projects are currently under way. TOOL has also developed a Socially Appropriate Technology Information System (SATIS) and is working with other AT organisations on the design of a classification and information retrieval system for AT.

Staff	-	14 people (12 full-time), 12 of whom are professionals
Budget	-	$300,000 ($208,000 in 1976, $775,000 in 1978)
Scale of activities in AT	-	180 man-months
Channels of technology diffusion	-	Through universities, private voluntary assistance agencies, publications and non-governmental organisations
Obstacles to technology diffusion	-	All the obstacles listed in OECD questionnaire except reluctance to accept innovation
Publications	-	Wide range of publications on AT (in Dutch and English).

TWENTE UNIVERSITY OF TECHNOLOGY

Administrator: J. de Bruijn

CICA
Twente University of Technology
P.O. Box 217
7500 AE Enschede
Tel : (053) 89 24 04

Main activities

Research and development (45%)
Technology diffusion and consultancy (20%)
Pilot production (10%)
Testing and evaluating new equipment (10%)

Main fields of concentration

Solar and wind energy
Gasification, agricultural waste pyrolysis
Water resources
Small metal working industry

Climatic/Geographic focus

None in particular

The activities on development are carried out in the various departments of Twente University of Technology and in the volunteer organisation Working Group on Development Techniques (WOT) and are coordinated by the Committee for International Cooperation Activities (CICA). Several types of windmill, based on wood or metal and designed for water supply or for electricity generation have been built. Windmills for water supply have been tested under field conditions and introduced in India. A gas generator for agricultural waste has been developed and is being tested under field conditions in Tanzania, Nigeria and Indonesia.

Research and testing has been conducted on solar devices (flat plate collectors, boilers, distillers and cookers) and water pumps. A project for the promotion of small- and intermediate-scale metal industries has been undertaken in Java (Indonesia).

The Working Group on Development Techniques co-operates with the Dutch coordination centre TOOL.

Staff	-	40 volunteers and 15 full-time staff members
Budget	-	Not specified
Scale of activities in AT	-	230 man-months
Channels for technology diffusion	-	Through international aid programmes, educational institutes and private voluntary foreign assistance agencies
Obstacles to technology diffusion	-	Attitude of political leaders, lack of funds
Publications	-	Manuals on various AT subjects.

THE UTRECHT PILOT PLANT

Director: Mr. P. H. Pijs

Winthontlaan 28
Utrecht
Tel : (030) 88 77 51

Main activities

Pilot production
Education and training
Testing and evaluation of new equipment
Technology extension and diffusion

Main fields of concentration

Scaling-down of industrial processes
AT software

Climatic/Geographic focus

None in particular

N.V. Philips Gloeilampenfabrieken, Eindhoven (Philips) is one of the world's largest manufacturers of electrical, electronic and related products, with an annual turnover (1977) of $15 billion, and with production units in a large number of industrialised and developing countries.

Realising that large-scale fully automated industrial plants are often inappropriate in developing countries with a small internal market and an abundant supply of labour, Philips set up a self-contained autonomous pilot plant in Utrecht in 1961. Its purpose was to explore all the technical and organisational problems associated with the small-scale labour-intensive production of radios, TV sets, components and other products.

Work has focused on the development of appropriate tools and production processes (e.g. the use of a domestic iron for component assembly) as well as on administrative and managerial procedures (stock control, information flows, job specifications, etc.). The unit carries out extensive training activities and has set up, usually on a turn-key basis, a number of similar plants abroad, notably in Africa.

Staff	-	Not available
Budget	-	Not available
Scale of activities in AT	-	Not available
Channels of technology diffusion	-	Through demonstration, training, publications and the establishment of new production units
Obstacles to technology diffusion	-	Not specified
Publications	-	Technical reports and articles (in English and Dutch.

KRISTIAN INSTITUTE TECHNOLOGY OF WEASISI

Administrative Secretary: The Rev. K. C. Calvert

P.O. Box 16
Isangel
Tanna via Vila

Main activities

Pilot production (40%)
Research and development (30%)
Testing and evaluation of new equipment (10%)
Education and training (10%)
Promotion of local technologies (10%)

Main fields of concentration

Water resources
Crops and food processing and conservation
Fishing
Boat construction
Low-cost housing

Climatic/Geographic focus

Pacific islands and coral atolls

The Kristian Institute Technology of Weasisi (KITOW) was set up in 1969 by the Presbyterian Church of the New Hebrides as a rural development centre. Its aim is to develop village industries and to promote greater self-reliance among the people of the New Hebrides.

KITOW consists of a series of workshops spread around several villages and each village group is responsible for its own project. Industry is organised on a co-operative basis regrouped under the KITOW Producer Cooperative Association. As of 1977 there were two cement co-ops, one timber products co-op, one metal products co-op and a meat market.

KITOW has developed a number of technologies specific to the Pacific Islands, notably in the field of low-cost housing (hand-made concrete blockmoulds; a carbide tipped saw to cut building timber from coconut trees; a low-cost boat construction and fishing methods for offshore reef fishing; water storage (ferro-cement tanks); bio-gas and charcoal from waste wood (including a small-scale charcoal-burning iron foundry); food processing (biscuits from enriched cassava flour) and small industry (coconut oil and soap manufacturing at the village level).

Staff	-	70 people (40 full-time), 4 of whom are professionals
Budget	-	$35,000
Scale of activities in AT	-	250 man-months
Channels of technology diffusion	-	Government agencies, international agencies, private voluntary foreign assistance agencies
Obstacles to technology diffusion	-	Cultural and social unacceptability; reluctance to accept innovation; lack of funds; maintenance difficulties
Publications	-	Various papers in AT magazines.

SEED TECHNOLOGY CENTRE

Director: Dr. Murray J. Hill

Massey University
Private Bag
Palmerston North
Tel : 6 90 99

Main activities

Education and training (95%)

Main fields of concentration

Crop production and conservation
New crops and plants
Seed technology

Climatic/Geographic focus

South East Asia and Pacific

The Seed Technology Centre was established in 1976 at Massey University by the Ministry of Foreign Affairs under New Zealand's bilateral aid programme. It functions as a training and research centre for students from developing countries, and principally from the South-East Asian and Pacific regions.

The Centre has conducted research on the effects of seed storage and treatment on germination, and has organized a seed technology programme to improve seed production drying, testing and certification techniques, especially for tropical/subtropical crops.

Since 1976, the Centre has trained 41 technicians and 13 postgraduates from the South-East Asia and Pacific region and run a workshop on seed technology in Thailand (30 participants). A similar workshop (23 participants) was carried out in the Philippines in 1978. Plans for the future include the establishment of alternative centres throughout South East Asia and the Pacific.

Staff	-	7 people (6 full-time), 3 of whom are professionals
Budget	-	$95,000 (60,000 in 1976)
Scale of activities in AT	-	84 man-months
Channels of technology diffusion	-	Through international aid programmes, training programmes and universities
Obstacles to technology diffusion	-	Lack of technical expertise in developing countries
Publications	-	Various papers in agricultural journals.

EVANGELICAL COMMITTEE FOR DEVELOPMENT

Director: Benjamin Cortés

P.O. Box 3091
Managua
Tel : 2 43 30, 2 47 48

Main activities

Education and training (40%)
Technology extension services (20%)
Pilot production (20%)
Information and documentation (12%)

Main fields of concentration

Agricultural tools
Cultivation techniques
Water resources
Public health
Credit and lending system

Climatic/Geographic focus

Arid and semi-arid regions
Coastal regions

The Evangelical Committee for Development (CEPAD) is a programme of the evangelical churches of Nicaragua. It has close relations with protestant donor agencies in the USA, Canada and Europe. It was created in 1972 after the Managua earthquake to help solve that city's urban crisis. In 1973, CEPAD's activities were enlarged to include other aspects of development and it became a development agency for the urban and rural sectors of Nicaragua.

CEPAD organises seminars for the training of local agricultural promoters and local health leaders, and has developed training materials for these sessions. It has also developed some agricultural tools and implements (e.g. a sowing machine and a pump for potable water).

The CEPAD has 5 regional offices in Nicaragua which are associated with rural communities and churches.

Staff	-	50 people (48 full-time)
Budget	-	$690,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through CEPAD's own efforts
Obstacles to technology diffusion	-	Bureaucracy, cultural and social unacceptability
Publications	-	Annual report, two bulletins and a monthly newspaper.

INTERMEDIATE TECHNOLOGY

Director: I. D. Jibril

Ministry of Trade, Industry and Tourism
P.O. Box 401
Zaria, Kaduna State
Tel : 20 43

Main activities

Education and training (70%)
Promotion of local technological traditions (10%)
Research and development (10%)

Main fields of concentration

Health care equipment
Agricultural tools and machinery
Small metal-working
Energy savings

Climatic/Geographic focus

Tropical savannas
Arid and semi-arid regions

Intermediate Technology is a governmental centre opened in 1971 with the objectives of training young children leaving primary schools and rehabilitating disabled people. It has organised training activities in various fields: training of village blacksmiths in the manufacturing of agricultural equipment, production of light hospital equipment, (screens, examination beds, trolleys, bicycles for the disabled, etc.), and manufacture of electrical appliances for domestic use. It has also organised the work of leg-disabled people, so that they can use special bicycles and are able to manufacture wooden toys.

Staff	-	12 people (all full-time) 4 of whom are professionals
Budget	-	$100,000 ($75,000 in 1976)
Scale of activities in AT	-	132 man-months
Channels of technology diffusion	-	Through governmental and international agencies, international aid programmes, universities and schools
Obstacles to technology diffusion	-	Lack of competitiveness, lack of technical support
Publications	-	None.

INTERNATIONAL INSTITUTE OF TROPICAL AGRICULTURE

Director: Dr. W. K. Gamble

Private Mail Bag 5320
Ibadan
Tel : 2 37 41, ext. 209

Main activities

Research and development (60%)
Testing and evaluation of new equipment (20%)

Main fields of concentration

Farming systems
Agricultural tools
Cultivation techniques
Energy
Transportation

Climatic/Geographic focus

Tropical rain forests and savannas

The International Institute of Tropical Agriculture (IITA) is an international non-governmental research institution affiliated with the Consultative Group on International Agricultural Research (CGIAR). It was established in 1967 and is financed by foreign aid programmes, governments and foundations, as well as by donations.

Its activities in the field of AT, which started in 1975, focus on the identification of appropriate farming systems for small farmers and on the development and diffusion of very low-cost tools appropriate to the system. IITA has been working on the development of low-energy weed control systems and tools (e.g. controlled droplet application of herbicides), planters and seeders for seeding in a dessicated mulch without previous tillage of the soil, hand application of fertilizers, harvesters for rice and legumes, simple harvesting systems for maize and low-cost rural/farm transportation systems for regions which do not have draught animals.

IITA has set up branches in Tanzania, Zaire, Sierra Leone and Cameroon.

Staff	-	Not specified
Budget	-	$100,000 (AT activities only)
Scale of activities in AT	-	175 man-months
Channels of technology diffusion	-	Through international agencies and the Institute's own efforts
Obstacles to technology diffusion	-	Lack of personnel to offer the required training
Publications	-	Not specified.

PROJECTS DEVELOPMENT AGENCY

Director: Professor G. O. Ezekwe

3 Independence Layout
P.O. Box 609
Enugu
Tel : 25 60

Main activities

Research and development
Pilot production
Technical feasibility studies
Education and training

Main fields of concentration

Crop processing and conservation
Agricultural tools
Small industry promotion
Small metal-working industry

Climatic/Geographic focus

Tropical rain forests and savannas

The Projects Development Agency (PRODA) was started in 1970 by a few scientists and engineers in the East Central State Ministry of Industries. It was organised as a research and development centre in 1971 with the aim of helping to mechanize agriculture and food production, develop home-made science teaching equipment and provide technical advice to those in need of it. PRODA was taken over by the Nigerian Federal Government in 1976 and the Government now finances it entirely.

Subjects covered by PRODA include the analysis of clays, ores and sands and their development for making glassware and ceramics, the adaptation of small metal-working processes, the development of food processing equipment, agricultural tools and processes for manufacturing school chalk, electrodes, pulp from straw and bricks. Some research work has also been done on solar water heaters and smokeless fuels from local coals.

Staff	-	350 people (almost all full-time), 63 of whom are administrative personnel
Budget	-	$1,977,000
Scale of activities in AT	-	3420 man-months
Channels of technology diffusion	-	Through government agencies
Obstacles to technology diffusion	-	None to date
Publications	-	None.

KHABURA DEVELOPMENT OMAN

Director: Dr. R. W. Dutton

P.O. Box 9024
Mina Al Fahal
Tel : 63 70 13

Main activities	Main fields of concentration
Technology extension	Agriculture
Research and development	Animal husbandry
Testing and evaluation of new equipment	Textile industry
Pilot and commercial production	Wind energy
Education and training	Irrigation

Climatic/Geographic focus

Arid and semi-arid regions

Khabura Development Oman is an integrated rural development project linked with and sponsored by an oil company, Petroleum Development (Oman) Ltd. Its origins go back to a research and survey project carried out in 1973-1976 by the Middle East and Islamic Centre of the University of Durham (United Kingdom) in a rural region of Oman between Khabura on the coast and Ibri on the desert edge. It was formally established as a development project in 1976.

The project has a two hectare farm for forage crops and animal husbandry (sheep and goats). It also runs a health centre, mainly for children, a spinning and weaving project as well as a honey production project (jointly with the Oman Ministry of Agriculture) and is planning to install a wind pump for village water supply (in co-operation with the Intermediate Technology Development Group).

Staff	-	9 people (all full-time), 7 of whom are professionals
Budget	-	$150,000
Scale of activities in AT	-	108 man-months
Channels of technology diffusion	-	Through the organisation's own projects and activities
Obstacles to technology diffusion	-	As yet too early to identify
Publications	-	Not specified.

APPROPRIATE TECHNOLOGY DEVELOPMENT ORGANISATION

Director: Ghulam Kibria

House No. I-B, Street 47th, F-7/1
Islamabad
Tel : 2 15 84, 2 44 64

Main activities

Technology diffusion and extension
Promotion of local technology traditions
Testing, evaluation and pilot production
Propagating the concept of AT
Information and documentation

Main fields of concentration

Energy
Irrigation and waste water
Agriculture
Industry
Housing
Education

Climatic/Geographic focus

Arid and semi-arid regions
Coastal regions
Temperate regions
Mountains

The Appropriate Technology Development Organisation (ATDO) is an autonomous body within the Planning and Development Division of the Government of Pakistan. It was established by the Government in 1974 and its funds come mainly from the Government. It does not carry out research on AT but acts as an intermediary. Its major tasks are to promote the concept of AT, link up production with employment and mobilize people to plan and carry out projects themselves.

ATDO has started extension work on small-scale hydroelectric plants based on water-wheels. Screw-type cane-crushing machines have been tested and are fully operational. Some 25 gobar gas plants for the production of fuel and nitrogen-enriched fertilizer are under construction or planned. Windmills and sub-soil irrigation techniques have been successfully developed in association and are completely operational. Low-cost construction projects have been undertaken for rural primary schools as well as for urban and rural dwellings. Small-scale industries (hand-made matches, hand-operated spinning) have also been set up. New programmes include ferro-cement boats, assembly of transistor radios in rural areas, hand-made paper, small-scale steel production and cottage industries.

Staff	-	40 people (all full-time), 10 of whom are non-administrative professionals
Budget	-	$380,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through their own efforts, mass media and advertisement, government agencies and establishment of co-operatives
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, cultural and social unacceptability
Publications	-	Annual reports, booklets on AT.

PAK 300

PAKISTAN

IRRI-PAK AGRICULTURAL MACHINERY PROGRAM

Project Director: Dr. Amir U. Khan

P.O. Box 1237
Islamabad
Tel : 4 21 93

Main activities

Research and development (40%)
Technology extension services (20%)
Testing and evaluation of new equipment (20%)

Main fields of concentration

Agricultural machinery
Small metal-working industry

Climatic/Geographic focus

Arid and semi-arid regions

The IRRI-PAK programme was established in 1976 as an offshoot of the International Rice Research Institute (IRRI) in the Philippines. It is also affiliated with the Agricultural Research Council of the Government of Pakistan and is funded by the government, foundations and foreign aid programmes.

The IRRI-PAK Program adapts IRRI machinery to the agro-climatic conditions of Pakistan and neighbouring countries. It also develops small farm machines that can be locally manufactured in the region. Among those which have been fully developed are an axial flow thresher, a mini-thresher, a small diesel-powered tiller for wetland and upland operations, a manually operated diaphragm pump and a small four-wheel tractor which can be manufactured locally.

IRRI-PAK is planning to develop a full range of intermediate-level machines and introduce them to local manufacturers.

Staff	-	26 people (all full-time), 10 of whom are professionals
Budget	-	$180,000
Scale of activities in AT	-	312 man-months
Channels of technology diffusion	-	Through small manufacturers
Obstacles to technology diffusion	-	Lack of interest and technical support from government organisations, inadequate industrial extension in the public sector, poor industrial linkages
Publications	-	Semi-annual report, newsletters and special research reports.

PNG 100

PAPUA NEW GUINEA

APPROPRIATE TECHNOLOGY DEVELOPMENT UNIT

Manager: Allen R. Inversin

University of Technology
P.O. Box 793
Lae
Tel : 42 49 99

Main activities

Research and development
Pilot production
Technology extension services
Information, documentation and publications

Main fields of concentration

Micro-hydro units
Bio-gas generation
Construction techniques

Climatic/Geographic focus

Tropical regions/South Pacific

The Appropriate Technology Development Unit (ATDU) was founded in 1977 on the initiative of the South Pacific Appropriate Technology Foundation (SPATF, a non-profit organisation funded by the Government of Papua New Guinea) and the Community Development Committee (CDC, an activity of the University), as a national basis for research and development activities in AT.

The Unit is part of the Papua New Guinea University of Technology which is one of its main sources of funds along with the government and foreign aid programmes. It consists of a workshop, an office/library (which will also house the Liklik Buk Information Centre) and an experimentation/education area where basic technologies will be on active display and short workshops will be periodically held for interested individuals and groups. ATDU is involved in projects in the field in order to keep in touch with the needs and realities of the rural areas. The tools developed by the Unit include a hydraulic ram pump and a blacksmith's bellows. Work is also proceeding on developing micro-hydro units to be largely built in-country, with initial efforts using Pelton runners.

Staff	-	3 people (all full-time professionals)
Budget	-	Not specified
Scale of activities in AT	-	23 man-months
Channels of technology diffusion	-	Publications, workshops
Obstacles to technology diffusion	-	Not specified
Publications	-	Technical reports published by VITA (USA), and SPATF.

LIKLIK BUK INFORMATION CENTRE

Director: Mimi Arata

P.O. Box 1920
Lae
Tel : 42 39 16

Main activities

Publications (50%)
Information and documentation (25%)
Technology extension services (25%)

Main fields of concentration

All fields of AT except education and services

Climatic/Geographic focus

Tropical rain forests
Mountainous regions
Coastal regions

The Liklik Buk Information Centre grew out of the numerous requests for information generated by the publication in 1976 of Liklik Buk ('Little Book'). Liklik Buk, of which 17,000 copies have been sold in its two English editions (a Melanesian Pidgin version will appear in 1979) is a complete 'do-it-yourself' manual, reference work and source book covering all aspects of AT in Papua New Guinea, and diffused throughout the world. It was prepared by a number of development practitioners working in the field and sponsored by the Melanesian Council of Churches.

The Information Centre, which is fully financed by the Melanesian Council of Churches, provides information by mail on AT. Plans are currently under way to establish a complete AT development unit in Lae by combining the activities of the Centre with those of the South Pacific Appropriate Technology Foundation and the Appropriate Technology Development Unit of the University of Technology in Lae.

Staff	-	2 people (1 full-time), 1 of whom is a professional
Budget	-	$18,000
Scale of activities in AT	-	12 man-months
Channels of technology diffusion	-	Through the sale of Liklik Buk and the supply of information by mail
Obstacles to technology diffusion	-	None
Publications	-	Liklik Buk.

INTERNATIONAL POTATO CENTRE
Centro Internacional de la Papa

Director: Richard L. Sawyer

Apartado 5969
Lima
Tel : 35 42 83; 35 43 54

Main activities

Research and development
Technology extension
Training of personnel

Main fields of concentration

All problems related to potatoe processing and conservation
Pest control
Nutrition

Climatic/Geographic focus

All developing countries

The International Potato Center (CIP) is an international agricultural research centre whose mandate is to improve potatoes and potato-growing in the developing countries and to extend the potato's range of adaptation to new climatic regions. It was established in 1971 and its forebears include the Peruvian National Potato Program (which was funded by the U.S. Agency for International Development) and the Rockefeller Foundation's Potato Program in Mexico. CIP is now part of the Consultative Group on International Agricultural Research (CGIAR), a network of international agricultural research centres financed by governments, foundations and international organisations.

CIP works on three levels: basic research on the key problems linked with the use of potatoes in the developing countries (new disease- and pest-resistant varieties, control of fungal diseases, germ plasm collection, adaptation to environmental stress, etc.), regional research to adapt the potato to different geo-climatic conditions, and the training of personnel for national potato programmes. CIP has four research centres in Peru corresponding to the country's different climatic regions and sponsors research in a number of other countries.

Staff	-	312 people (287 full-time), 101 of whom are professionals
Budget	-	$4,656,000 ($7,265,000 in 1978)
Scale of activities in AT	-	3,540 man-months
Channels of technology diffusion	-	Through national agricultural programmes to small farmers and through national and international agencies
Obstacles to technology diffusion	-	Lack of trained extension specialists
Publications	-	Not specified.

HUAYLAS PROJECT
Proyecto Huaylas

Director: Humberto Bullon

Campamento AGEUP
Santo Toribio
Huaylas-Ancash

Main activities

Research and development
Influencing governmental decisions

Main fields of concentration

Cultivation techniques
Forestry
Alternative institutions
Urbanism

Climatic/Geographic focus

Mountainous regions

The Huaylas Project was set up in 1973 by the Association of University Evangelical Groups of Peru (AGEUP) in order to promote social and economic development in the Huaylas region of Peru. A small team was established the following year to carry out a community development project and to lay the basis of a practical co-operation with Peruvian universities as well as to train Christian community leaders.

Proyecto Huaylas' activities in the field of AT focus on farming techniques, forestry development, animal husbandry, the development of alternative administrative and social institutions, as well as on training and education.

Staff	- 4 people (all full-time), 2 of whom are professionals
Budget	- $7,800
Scale of activities in AT	- 2 man-months
Channels of technology diffusion	- No diffusion until now
Obstacles to technology diffusion	- Not relevant
Publications	- One report on development alternatives for the Huaylas region.

ASIAN DEVELOPMENT BANK

President: Taroichi Yoshida
AT contact: Kedar N. Kohli

2330 Roxas Boulevard
P.O. Box 789
Metro Manila
Tel: 80 72 51 and 80 26 31

Main activities

Loans for development projects

Main fields of concentration

Agriculture
Rural development
Water resources and irrigation
Small industry
Forestry and fishing

Climatic/Geographic focus

Developing countries of the Asia-Pacific region

The Asian Development Bank (ADB) is a major international regional development bank established in 1966. It's 42 member countries belong to the Asia-Pacific region and the OECD area. Annual lending commitments in 1978 stood at $1.1 billion and the value of its technical assistance projects at $43 million.

ADB has recently been putting substantial emphasis on AT in the design and implementation of development projects. This includes the use of labour-intensive methods in road construction and other infrastructures (e.g. railways), simple sewage treatment processes, the promotion of research on new varieties of jute, wheat and cotton, the rehabilitation of traditional irrigation systems, the introduction of animal-drawn power in agriculture, the diffusion of low-cost crop processing machinery, the encouragement of alternative landholding patterns, intermediate-level mechanisation in fisheries, small-scale rice milling, and the use of labour-intensive services (materials handling and packaging) in highly capital-intensive process industries such as fertilizers.

The Bank is also actively involved in training and technical assistance and contributes to the funding of AT-oriented international agricultural research centres (IRRI, ICRISAT, AVRDC).

Staff	-	787 people (all full-time), 294 of whom are professionals
Budget	-	$22 million
Scale of activities in AT	-	Undetermined (included in overall activities)
Channels of technology diffusion	-	Mainly through development projects
Obstacles to technology diffusion	-	Not specified
Publications	-	Statutory reports and official records, regional and sector studies, occasional papers.

CENTRE FOR THE DEVELOPMENT OF HUMAN RESOURCES IN RURAL ASIA

Director: Dr. Antonio L. Ledesma

2067 Pedro Gil
Santa Ana, Manila

P.O. Box 458
Greenhills, San Juan
Metro Manila 3113

Tel : 57 16 15 & 50 66 46

Main activities

Information, documentation and publications (50%)
Workshops (25%)
Research and development (15%)
Education and training (10%)

Main fields of concentration

Rural development
Alternative institutions
Credit and lending system
Public health

Climatic/Geographic focus

None in particular

The Centre for the Development of Human Resources in Rural Asia (CENDHRRA) started in 1975 as a service secretariat for ten partner groups. It is now an independent non-profit voluntary help organisation. Its interest in AT lies principally in the field of AT software for rural development.

CENDHRRA holds an international workshop every six months on topics related to integral rural development. Information exchanges and local network building are promoted. Future plans include comparative research on rural development and continuing support of local seminars to build-up self-reliance and participatory activities among rural populations.

Staff	-	5 people (3 full-time) all of whom are professionals
Budget	-	Not available
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the Centre's partner network system
Obstacles to technology diffusion	-	Lack of competitiveness relative to modern technologies
Publications	-	Newsletter, occasional papers and a series of papers on rural development in Asia.

ECONOMIC DEVELOPMENT FOUNDATION

President: Cesar N. Sarino

JMT Building, Ayala Avenue
Makati, Metro Manila
Tel : 88 13 01

Main activities

Information and documentation
Publications
Technology extension
Research and development

Main fields of concentration

Solar and methane energy
Waste water
Domestic waste
Small-scale industry

Climatic Geographic focus

None in particular

The Economic Development Foundation (EDF) is an independent consulting firm and foundation established in 1964 to operate in the fields of management consultancy, training and economic and engineering research. It is financed by government, industry and consulting fees. In 1970 a social development unit was created and spun-off into a separate institution supported by private industry. The Foundation began its AT activities in 1971-72 with the creation of an Engineering and Industrial Research Services Department and a Rural Development Services Department.

The Foundation has designed several small-scale plants, a solar salt plant, a crop dehydrating plant and a coconut oil refining plant. Current studies are carried out on a solar crop dryer, a used-oil refining unit and techniques for the production of fuel gas and electricity from agricultural wastes.

The EDF is a member of the Technonet Asia network (Singapore).

Staff	-	117 people (104 full-time), 65 of whom are professionals
Budget	-	$1.3 million (1976: $1 million)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through publications and the mass-media
Obstacles to technology diffusion	-	Inadequate legislation, reluctance to accept innovation, lack of funds, lack of technical support, lack of formal science and technology policies and strategies
Publications	-	3 quarterly reviews ("Trends in Technology", "Index on Business Expectations", "Consumer Confidence Survey"). EDF Notebook (bi-monthly).

INTERNATIONAL RICE RESEARCH INSTITUTE

Director: Dr. Nyle C. Brady

College, Los Banos, Laguna
P.O. Box 933, Manila
Tel : 88 48 69

Main activities

Research and development (100%)
(Including training of personnel)

Main fields of concentration

Cultivation techniques
New crops and plants
Soil protection
Pest control
Small industry promotion
Wind energy

Climatic/Geographic focus

All regions except cold regions

The International Rice Research Institute (IRRI) is an international non-profit research organisation established in 1960 by the Ford and Rockefeller Foundations with the objective of improving the quantity and quality of rice production. Three quarters of its funds come from governments; the remainder from foundations, banks and the United Nations.

IRRI scientists from nine nations work co-operatively with scientists across the rice-growing world to jointly develop improved varieties of rice and new technologies for the world's small-scale rice farmers.

The rice equipment development programme provides both design information and technical support to commercial manufacturers of rice cultivation implements and machinery. The Institute has a large research programme on field machinery, drying and processing methods and mechanisation systems. IRRI-designed machinery and equipment is now being manufactured by a large number of industrial firms in Southeast Asia. Other IRRI programmes deal with rice yields, irrigation and water management, soil management and control and management of rice pests.

Staff	-	1,533 people (1,390 full-time).
Budget	-	$11.7 million
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the private sector, international agencies and government agencies
Obstacles to technology diffusion	-	Lack of competitiveness relative to traditional technologies, lack of reliability, maintenance difficulties
Publications	-	Annual reports, booklets, numerous reports and monographs, International Bibliography of Rice Research (yearly), slide sets, books (rice genetics and rice diseases).

INSTITUTE FOR SMALL-SCALE INDUSTRIES

Director: Paterno V. Viloria

E. Virata Hall
E. Jacinto Street
University of the Philippines Campus
Diliman
Quezon City, Metro Manila
Tel : 99 70 76

Main activities

Research and development (20%)
Technology extension services (15%)
Information and documentation
Education and training (20%)

Main fields of concentration

Small industry promotion
Entrepreneurship development
Scaling down of industrial processes
Energy savings

Climatic/Geographic focus

Tropical regions

The Institute for Small-Scale Industries (ISSI) was set up in 1966 through a bilateral agreement between the Governments of the Philippines and the Netherlands and is an integral part of the University of the Philippines.

It has concentrated its activities on generating interest and support for the development of small-scale industries. It has designed and diffused numerous appropriate technologies in the field of food processing (noodle preservation, shark oil processing), agricultural tools and machinery (design of a locally-assembled farm tractor from surplus components), energy (charcoal briquetting machine), cottage industries, small metal-working, woodcrafts and textiles.

ISSI offers general services (research, consultancy, technology development and training) to small- and medium-scale industries in Asia. In the future, it plans to expand its extension offices into every region of the country.

Staff	-	126 people (all full-time), 66 of whom are professionals
Budget	-	$212,400
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through services to industry and through the Government, international agencies and international aid programmes
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, reluctance to accept innovation and lack of reliability
Publications	-	Small Industry Journal (quarterly); weekly newsbriefs, monthly newsletter; book on AT for small- and medium-scale industries by P. Viloria (Manila, 1977) and articles.

REGIONAL ADAPTIVE TECHNOLOGY CENTER

Director: Bienvenido Tabada, Jr.

Mindanao State University
Marawi City
Tel : 370

Main activities

Technical feasibility studies (25%)
Technology extension services (20%)
Information and documentation (20%)
Promotion of local technological traditions (10%)
Education and training (10%)

Main fields of concentration

Small industry promotion
Building materials

Climatic/Geographic focus

None in particular

The Regional Adaptive Technology Center (RATC) of Mindanao State University was set up in 1974 by the Technology Development Institute (TDI) of the East-West Center (Hawaii). It is now entirely financed by the University but has kept strong links with TDI and its network of RATC's in Thailand, Korea and Indonesia.

The aim of the Center is to improve local institutional skills for economic development. Initial research focused on technological adaptations in such sectors as the brassware industry, soil-cement technology and the ceramics industry (120 local artisans were trained in the latter by the end of 1978). The Center is presently working on dustless chalk, bricks and methane gas technology. Technological improvements or adaptations have been designed in such a way as to make use of the abundant labour and plentiful raw materials of a developing region with scarce capital resources.

Staff	-	13 people (11 full-time), 8 of whom are professionals
Budget	-	$22,000
Scale of activities in AT	-	130 man-months
Channels of technology diffusion	-	Mainly through the Center's own efforts
Obstacles to technology diffusion	-	Lack of funds and reluctance to accept innovation
Publications	-	Not specified.

REGIONAL NETWORK FOR AGRICULTURAL MACHINERY (UNDP-ESCAP)

Project Manager: Majid H. Khan

Regional Office:
Institute of Agricultural Engineering & Technology
University of the Philippines, Los Banos
Laguna 3720

Main activities

Organising, testing and improvement of agricultural machinery (35%)
Information, documentation and publications (25%)
Providing training facilities (20%)
Technology diffusion (10%)
Influencing governments in promotion of farm mechanisation (10%)

Main fields of concentration

Agricultural tools and machinery

Climatic/Geographic focus

National institutes of agricultural engineering in participating countries

The Regional Network for Agricultural Machinery (RNAM) is an international governmental organisation aimed at promoting greater agricultural productivity among the small farmers by encouraging the use of more appropriate machinery and implements, and carrying out systematic evaluations of different technologies, approaches to mechanisation and cropping systems. It was set up in 1977 and is financed by governments of participating countries (India, Indonesia, Iran, Korea, Pakistan, Philippines, Sri Lanka and Thailand), the United Nations Development Programme (UNDP) and co-operating countries such as Japan, Australia and Israel. Its executing agency is the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP).

RNAM's short-term objectives are to identify bottlenecks in agricultural mechanisation, strengthen national agricultural research institutions, select and evaluate appropriate machinery and implements, promote local manufacturing of such equipment and set up an information clearinghouse. Technologies selected in its subnetwork activities for testing and adaptation include rice transplanters, harvesting machines, power-weeders, seed-fertilizer drills and grain threshers.

Staff	-	4 international staff with 7 local staff; 7 experts and consultants in participating countries
Budget	-	Approximately US$1,800,000 (up to August 1980)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies, international agencies, sub-network workshops, and field demonstrations
Obstacles to technology diffusion	-	Bureaucracy, inadequate legislation, cultural and social unacceptability, lack of funds and lack of reliability
Publications	-	Newsletter, digests and technical circulars on agricultural machinery (in English).

CENTRE FOR THE STUDY AND APPLICATION OF ENERGY IN RWANDA
Centre d'Etudes et d'Applications de l'Energie au Rwanda

Director: Ferenc Kalos

Boîte Postale 117
Butare

Main activities

Testing and evaluation of new equipment (27%)
Commercial production (20%)
Pilot production (20%)
Technology extension

Main fields of concentration

Solar energy
Methane gas
Peat
Hydraulic energy

Climatic/Geographic focus

Tropical savannas
Mountainous regions

The Centre for the Study and Application of Energy in Rwanda (CEAER) is a governmental agency founded in 1974 in order to diversify the country's energy supplies and to study non-conventional energy sources. It is associated with the National University of Rwanda which provides one third of its budget. Other sources of funding are the Government of Rwanda and foreign aid programmes.

The CEAER has developed solar water heaters and distillers and is currently studying the possibility of coupling solar captors with imported absorption machines for refrigerating agricultural products. Successful experiments have been done in the fields of bio-gas production and peat utilisation (peat marshes cover a large area of the country). An investigation of possible sites for small hydroelectric power plants, well adapted to Rwanda's mountainous topography has also begun.

Staff	-	14 people (13 full-time), 4 of whom are professionals
Budget	-	$118,800 (1977/78)
Scale of activities in AT	-	166 man-months
Channels of technology diffusion	-	Through the Centre's own activities and through the university
Obstacles to technology diffusion	-	Not yet relevant
Publications	-	16 research reports and technical reports (in French).

INADES FORMATION - RWANDA

Director: Richard Erpicum

Boîte Postale 866
Kigali
Tel : 65 85

Main activities

Training and education of farmers and rural leaders (60%)
Translation of training courses (30%)
Publications

Main fields of concentration

Agriculture
Animal husbandry
Forestry
Training of personnel

Climatic/Geographic focus

All regions of Rwanda

Since 1966, a number of people from Rwanda have been attending the courses given by INADES-Formation, a church-affiliated institution based in Abidjan (Ivory Coast) which has developed among others very low cost training courses and educational materials for African farmers. A local office of INADES was set up in Rwanda in 1975 to carry out all the training and other activities of INADES in relation with that country.

INADES Formation Rwanda is financed for the most part by donations. In addition to its training and education activities for farmers, it has translated into the local language of Rwanda all the pedagogical materials of its parent organisation in the Ivory Coast, and adapted this material to the specific needs of the country. Its technological emphasis is on simple agricultural implements, low-cost erosion control methods and simple methods of association between agriculture and animal husbandry. Adaptation of existing AT to the local conditions of Rwanda has meant among others not introducing animal-drawn equipment.

Staff	-	5 full-time people
Budget	-	$25,000
Scale of activities in AT	-	60 man-months
Channels of technology diffusion	-	Through training courses, government agencies and private foreign voluntary agencies
Obstacles to technology diffusion	-	Reluctance to accept innovation
Publications	-	Large number of booklets and other materials for agricultural training courses (all in Kinyarwanda). For further details on the work of INADES-Formation, see the article by P. Dubin in the book "Appropriate Technology - Problems and Promises", by N. Jéquier (ed.), OECD, Paris 1976.

RWANDESE ASSOCIATION OF BUILDING FELLOWS
Association Rwandaise des Compagnons Bâtisseurs

Head of Centre: Staf Lenders

Projet Urbain des Compagnons Bâtisseurs
Boîte Postale 454
Kigali

Main activities

Technology extension (50%)
Commercial production (20%)
Promotion of local technological traditions (10%)

Main fields of concentration

Building materials
Housing
Small industry promotion
Peat

Climatic/Geographic focus

None in particular

The Rwandese Association of Building Fellows (ARCB) is a branch of the International Association of Building Fellows and was founded in 1968. It is also working in close co-operation with Louvain University. Foreign aid programmes provide over three quarters of its budget, with the remainder coming from donations.

The aim of the Association is the diffusion of appropriate building technologies and the development of self-help construction programmes. It has developed local building materials (tiles and bricks, adobe blocks stabilized with lime, puzzolanic cement), local paints (currently being tested), wood glue and papyrus panels for wall-coating and ceilings (a factory employing 50 people is in operation). Research is being conducted on the use of peat as a fuel in brick ovens and tile ovens.

Staff	-	10 people (all on a full-time basis), 2 of whom are professionals
Budget	-	$26,000 (1976: $18,000)
Scale of activities in AT	-	120 man-months
Channels of technology diffusion	-	Own activities
Obstacles to technology diffusion	-	Lack of competitiveness relative to imported technologies
Publications	-	Technical notes (in French).

ENDA - TECHNOLOGY RELAY
ENDA - Relais Technologique

ENDA Supervisor: Jacques Bugnicourt
Relay Supervisor: Philip Langley

Boîte Postale 3370
Dakar
Tel : 5 05 91, 5 06 87

Main activities

Information and documentation
Publications
Education and training
Promotion of local technological traditions

Main fields of concentration

Eco-development techniques
Health care equipment
Alternative institutions

Climatic/Geographic focus

Tropical rain forests and savannas
Coastal regions and river valleys
Mountainous regions
Urban and infra-urban regions

The ENDA Technology Relay, established in 1976, is a common activity of ENDA (the Training for the Environment Programme) and the Human Promotion Secretariat of the Senegalese Government. This Programme in turn is a joint activity of the African Economic Development and Planning Institute (IDEP, Dakar), the United Nations Environment Programme (UNEP), the Swedish International Development Agency (SIDA) and the member governments of the United Nations' Economic Commission for Africa.

The first objective of the Technology Relay was to establish a network for the exchange of experiences in AT in West Africa. A documentation centre has been set up, and an inventory of institutions and completed projects in the field of AT is currently under way. The Relay has also organised a number of training and education courses focusing on the environmental approach to development, and the use of eco-techniques and AT.

Staff	-	2 full-time people, 1 of whom is a professional
Budget	-	Not specified
Scale of activities in AT	-	16 man-months
Channels of technology diffusion	-	Through the Relay's information and documentation activities, government agencies and the mass media
Obstacles to technology diffusion	-	No obstacles to diffusion, but many obstacles in the collection of information on AT
Publications	-	"African Environment" (Quarterly, in English and French; "Technology Relay" supplements to African Environment).

ADVISORY SERVICES UNIT FOR TECHNOLOGY RESEARCH AND DEVELOPMENT

Director: Dr. B. Chinsman

Faculty of Engineering
Fourah Bay College
University of Sierra Leone
Mount Aureol
Freetown
Tel : 2 73 24

Main activities

Research and development
Testing and evaluation of new equipment
Technical feasibility studies
Education and training
Promotion of local technological traditions
Pilot production

Main fields of concentration

Small industry promotion
Scaling down of industrial processes
Transportation and telecommunications
Housing
Energy
Crop processing and conservation

Climatic/Geographic focus

Tropical rain forests and savannas
Coastal regions and mountainous regions

The Advisory Services Unit for Technology, Research and Development (ASTRAD) is a non-profit AT centre and consulting firm established in 1972 by the Faculty of Engineering of Fourah Bay College to provide comprehensive technical services to all sectors of Sierra Leone's economy through the Faculty's manpower and technical expertise. The Unit, which grew out of the College's former Testing and Research Section, is financed for the most part by consulting fees and commercial and industrial activities.

The Unit has developed a wide range of AT's. Among them, several types of small palm oil presses, solar water heaters for domestic and commercial uses, a vaporized kerosene water heater, a sawdust burner, a palm nut cracking machine and a low-cost solar cooker. Research on the use of local building materials has led to several important innovations such as lateritic bricks, cements and pozzolans which have reduced Sierra Leone's dependence on imported materials.

Staff	-	40 people (1 full-time), 32 of whom are professionals
Budget	-	$9,000
Scale of activities in AT	-	Not recorded
Channels of technology diffusion	-	Through government agencies, international agencies and international aid programmes
Obstacles to technology diffusion	-	Cultural and social unacceptability, reluctance to accept innovation, lack of funds, lack of technical support and maintenance difficulties
Publications	-	Technical reports and research reports.

SINGAPORE INSTITUTE OF STANDARDS AND INDUSTRIAL RESEARCH

Chairman: Dr. Kum Tatt Lee

179 River Valley Road
P.O. Box 26 11
Singapore 6
Tel : 36 09 33 and 3 15 00

Main activities

Research and development
Testing and verification
Information and dissemination
Technology diffusion and extension services
Pilot and commercial production
Publications

Main fields of concentration

Quality control
Small industry promotion
Waste waters
Building materials
Air and water pollution
Industrial design

Climatic/Geographic focus

None in particular

The Industrial Research Unit (IRU), set up in 1963 by the Singapore Economic Development Board, was reorganised into a full-scale Institute of Standards and Industrial Research (SISIR) in 1969, to provide technical consultancy services and testing facilities to Singapore industries.

The SISIR develops specialized technologies and assists Singapore industries, especially small- and medium-sized firms. SISIR has developed among others new processes for the electroplating industry, processes for the souvenir industry, and is presently working on applications of solar energy.

The Institute, which is financed by the Government, consulting fees and industrial and technical activities, is a member of the Technonet network.

Staff	-	285 people (all full-time), 113 of whom are professionals
Budget	-	$2,240,000
Scale of activities in AT	-	12 man-months
Channels of technology diffusion	-	Through international aid programmes and through a company owned by the Institute
Obstacles to technology diffusion	-	Bureaucracy and reluctance to accept innovation
Publications	-	Annual report, quarterly newsletter and industrial standards for Singapore.

TECHNONET ASIA

Administrator: Dr. Leon V. Chico

RELC International House (7th floor)
30 Orange Grove Road
Tanglin P.O. Box 160
Singapore 10
Tel : 235 13 44

Main activities

Information, documentation and publications
Technology diffusion and extension services
Education and training
Financing AT activities of other institutions
Influencing governmental and political decision-making

Main fields of concentration

Small industry promotion
Handicrafts
Small metal-working

Climatic/Geographic focus

Tropical regions

Technonet Asia, established in 1972 by the International Development Research Centre of Canada (IDRC) is an international co-operative network of 11 participating organisations in South and East Asia countries, aimed at improving the quality and efficiency of those countries' small- and medium-scale enterprises. The organisations in the network are the Bangladesh Small and Cottage Industries Corporation (Dacca), the Centre for Research and Development of Miscellaneous Industries and Handicrafts (Jakarta), the Standards and Industrial Research Institute of Malaysia (Selangor), the Institute for Small Scale Industries of the University of the Philippines (Quezon City), the Singapore Institute of Standards and Industrial Research, the Department of Industrial Promotion (Bangkok), the Hong Kong Productivity Centre, the Korea Scientific and Technological Information Centre (Seoul), the Council of Trust for Indigenous People (Kuala Lumpur), the Economic Development Foundation (Manila), and the Industrial Development Board of Sri Lanka (Moratuwa). All these organisations are involved in the promotion of AT for small industries.

The Technonet centre in Singapore serves as a referral point for information within the network, seeks to develop technical information sources outside the network and organises training programmes.

Staff	-	7 people (all full time), 4 of whom are professionals
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the network's own activities
Obstacles to technology diffusion	-	Bureaucracy, lack of funds and lack of technical support
Publications	-	Technonet bulletins (Newsletter and Digest).

APPROPRIATE TECHNOLOGY GROUP OF SRI LANKA

Chairman: J. Nihal de Mel
Honorary Secretary: Chris de Saram

c/o CIC Ltd.,
4th Floor, Hemas Building
Bristol Street
Colombo 1
Tel : 2 84 21, 2 67 38

Main activities

Research and development
Pilot production
Promotion of local technological traditions
Technology diffusion

Main fields of concentration

Unconventional energy sources
Small industry promotion
Local medical traditions
Agricultural tools and machinery
Low-cost transportation

Climatic/Geographic focus

None in particular

The Appropriate Technology Group of Sri Lanka (ATGSL) is an independent non-profit association established in 1975 by a group of government officials, engineers, academics and private businessmen. Its objective is to encourage the economic use of local raw materials, channel locally available technology to small industry and make available to the latter AT's available from abroad.

In co-operation with Dutch experts, the Group has installed a low-cost windmill for the Sarvodaya movement, and another similar project is under way in co-operation with ITDG. Solar ice production units and a programme to extract herbal drugs have been set up in co-operation with the TOOL Foundation (Netherlands) and the Appropriate Technology Group of Delft University. It has also promoted improved cultivation methods for medicinal herbs and helped to revive the traditional Ayurvedic medical system. It is currently testing a bio-gas generator imported from India and is advising a small starch production unit on the use of cassava roots for starch extraction.

Staff	-	No permanent employees
Budget	-	$1,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the Group's own efforts
Obstacles to technology diffusion	-	Bureaucracy and lack of funds
Publications	-	None at present.

MARGA INSTITUTE

Co-Directors: Godfrey Gunatilleke
Chandra H. Soysa

61 Isipathana Mawatha
P.O. Box 601
Colombo 5
Tel : 8 51 86 and 8 15 14

Main activities

Information and documentation
Research and development
Policy analysis and economic studies
Technology diffusion

Main fields of concentration

Nutrition
Water
Agriculture
Aquaculture and fishing
Housing

Climatic/Geographic focus

Tropical rain forests
Coastal regions

The Marga Institute (Sri Lanka Centre for Development Studies) is an independent non-profit institution founded in 1972 in order to study and analyse development problems in Sri Lanka and to improve the knowledge and understanding of development issues among the public. The Institute conducts analytical studies and research projects on a wide range of socio-economic issues, for instance, self-reliant development, economics of tea, coastal zone management, small-scale fisheries, irrigation projects, children's books, law and development issues. It also organises seminars and public discussions. It has a special programme of translations of books into Sinhala in order to provide a general library of reading in Sri Lanka's national language.

The Marga Institute is affiliated with the United Nations University (Tokyo, Japan), and the International Federation of Institutes for Advanced Studies (Solna, Sweden). It is the regional coordinator for Asia of the UN University project on the Sharing of Traditional Technology.

Staff	-	92 people (84 full-time) 66 of whom are professionals
Budget	-	Approximately $100,000
Scale of activities in AT	-	20 man-months
Channels of technology diffusion	-	Government and international agencies, private voluntary foreign assistance agencies
Obstacles to technology diffusion	-	Lack of competitiveness, lack of technical support, maintenance difficulties
Publications	-	Numerous books in Sinhala; English publications on housing, education, population and development issues.

PERADENIYA FACULTY OF ENGINEERING

Dean: -

University of Sri Lanka
Peradeniya
Tel : (08) 8 30 15, ext. 310

Main activities

Education and training
Research and development
Testing and evaluation of new equipment
Occasional publications
Information and documentation

Main fields of concentration

Energy
Building materials
Printing materials
Agricultural tools and machinery

Climatic/Geographic focus

Tropical savannas
Arid and semi-arid regions
Temperate regions and
Coastal regions

The Faculty of Engineering of the University of Sri Lanka was founded in 1952 and began working on AT around 1974. Most of its funds are provided by the Government of Sri Lanka.

The faculty staff has worked on optimizing the profile of vertical axis wind turbines (Savonius rotors) and devised a vertical axis windmill which can be made out of timber. Work is also in progress on solar collectors, two-wheel tractors, solar ponds, bio-gas production, and use of local building materials such as bamboo and rubber wood. The faculty also has a long experience in improving typewriters and printing devices using native scripts (Tamil and Sinhala).

Staff	-	About 300 people (100 full-time), 60 of whom are professionals
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the faculty's own work
Obstacles to technology diffusion	-	Lack of funds, lack of scientific literature and information from other parts of the world
Publications	-	20 technical reports and articles (in English).

SARVODAYA APPROPRIATE TECHNOLOGY DEVELOPMENT PROGRAMME
Sarvodaya Shramadana Sangamaya

Coordinator: C. R. Eleanayake

77 De Soyza Road
Moratuwa
Tel : (072) 71 59

Main activities

Research and development
Promotion of local technological traditions
Education and training
Testing and evaluation of new equipment
Technology extension and diffusion

Main fields of concentration

Energy
Public health
Water
Agriculture and forestry
Transportation
Small industry promotion
Housing

Climatic/Geographic focus

Tropical rain forests

The Sarvodaya movement is a large voluntary community development organisation founded in the 1950's which deals directly with rural problems at grassroots level. It has already spread its activities, training and self-help programmes to nearly 2000 villages in Sri Lanka.

Traditional, rural and appropriate technologies have been taken into consideration in all the projects it has carried out. The Appropriate Technology Development Programme was set up in 1975. It has among other things helped to improve traditional irrigation systems (renovation of tanks and channels, water conservation) and building techniques, developed wooden and metal tools for agriculture and small-scale industries and has been involved in windmill development with Dutch assistance. It has also begun to carry out training courses in AT for village youth.

Staff	-	32 people (all full-time), 5 of whom are professionals
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Own activities
Obstacles to technology diffusion	-	Cultural and social unacceptability, reluctance to accept innovation
Publications	-	Not specified.

NATIONAL INDUSTRIAL CORPORATION OF SWAZILAND - TRACTOR PROJECT

Director: Alan Catterick

P.O. Box 450
Manzini
Tel : 28 74 19

Main activities

Commercial production (83%)
Pilot production (6%)
Education and training (6%)
Research and development (4%)

Main fields of concentration

Agricultural tools and machinery
Transportation
Credit and lending systems
Irrigation

Climatic/Geographic focus

None in particular

In 1968 the Agricultural Engineering Department of the University of Swaziland decided to conduct a project to meet the requirements of small-scale farmers and to help them to mechanise their operations within their financial constraints. In 1972 the project was put under the control of the National Industrial Corporation of Swaziland (NIDCS) and its main activities were devoted to the design and manufacture of the Tinkabi tractor, which costs 60 per cent less than its nearest competitor.

After an intensive test programme in various countries, the commercial production of the Tinkabi tractor has been undertaken and it is expected that in the early 1980's the Tinkabi tractor will be manufactured under licence in nine other countries with an annual production of more than 3500 units. Simple low-cost equipment for the tractor (ploughs, planters, sprayers, etc.) have also been designed and manufactured and are currently sold throughout Africa.

Staff	-	50 people (all full-time), 2 of whom are professionals
Budget	-	$500,000 (250,000 in 1976)
Scale of activities in AT	-	600 man-months
Channels of technology diffusion	-	Through the Corporation's own activities and through government and international agencies
Obstacles to technology diffusion	-	Reluctance to accept innovation and lack of funds
Publications	-	Tinkabi News (periodical) and technical notes on Tinkabi tractor and system.

SMALL ENTERPRISES DEVELOPMENT COMPANY LTD.

Director: Gilbert F. Dhlamini

P.O. Box 451
Mbabane
Tel : 4 33 91 and 4 30 47

Main activities

Technology extension services (60%)
Financing AT activities of other institutions (10%)
Pilot production (10%)
Education and training (10%)
Research and development (5%)
Technical feasibility studies (5%)

Main fields of concentration

Small industry promotion
Handicrafts
Textile industry
Small metal-working industry

Climatic/Geographic focus

None in particular

The Small Enterprises Development Company Ltd. (SEDC) is a government-owned corporation established in 1970 and entrusted with the responsibility for developing locally-owned small-scale industries using AT in Swaziland. It is affiliated with several international aid agencies. Its main functions are to select small entrepreneurs, help them start up their own businesses and provide them with the necessary assistance in the form of training, workshops and financial help. It has a number of estates around the country, with workshops, bulk store facilities and extension staff to give on-the-job training.

Technologies promoted by the company include small-scale furniture manufacturing from local wood, leather tanning and the manufacturing of leather goods, iron foundry and the manufacturing of different types of metal products (carts, grain tanks, water tanks, etc.), textile manufacturing and the production of ceramics.

Staff	-	45 people (all full-time), 11 of whom are professionals
Budget	-	$1,639,000 ($944,370 in 1976)
Scale of activities in AT	-	540 man-months
Channels of technology diffusion	-	Through the Company's own activities and the mass media
Obstacles to technology diffusion	-	Lack of competitiveness relative to modern technologies and lack of land for industrial development
Publications	-	Project reports (not available to the public).

SWEDISH COUNCIL FOR BUILDING RESEARCH
Statens Rad för Byggnadsforskning

Director: Professor Olof Eriksson

Sankt Görangsgatan 66
S-11230 Stockholm
Tel : (08) 54 06 40

Main activities

Research and development
Information and documentation
Financing AT activities of other institutions

Main fields of concentration

Housing
Water resources and supply
Roads
Energy

Climatic/Geographic focus

Temperate and cold countries

The Swedish Council for Building Research (BFR) is a governmental agency founded in 1960 and financed by a levy on building industry wages. Its main task is to initiate, co-ordinate and finance research in building and construction, as well as on related matters such as urban and regional planning. The Council works in close co-operation with other fund granting organisations, the building industry, universities, local assemblies and national administrative bodies.

Its research and development activities are divided into four broad areas: planning and the use of the built-up environment; design and operation of technological systems; administration, construction and maintenance; special priority areas. Among its current research topics with a large AT orientation one can find energy conservation and lighting in buildings, urban hydrology, urban renewal, heat pumps, solar energy and insulation.

The BFR does not undertake research on building problems of developing countries, but co-operates closely with SAREC (Swedish Agency for Research Co-operation with Developing Countries) and SIDA (The Swedish International Development Authority).

Staff	-	Not specified
Budget	-	$15 million
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the building industries and through universities
Obstacles to technology diffusion	-	Not specified
Publications	-	Research reports (in Swedish and English); Journal (in Swedish).

ASSOCIATION FOR THE DEVELOPMENT OF AFRICAN ARCHITECTURE AND URBANISM
Association pour le Développement d'une Architecture et d'un Urbanisme Africains

Secretary General: Jacques Vautherin

10 Route de Ferney
1202 Geneva

Main activities

Research and development
Education and training
Pilot production
Technology extension
Promotion of local technological traditions
Information and documentation

Main fields of concentration

Housing
Small industry promotion
Solar and methane energy

Climatic/Geographic focus

Tropical rain forests and savannas
Arid and semi-arid regions

The Association for the Development of African Architecture and Urbanism is an independent international non-profit organisation financed for the most part by governments and foreign aid programmes. It was set up in 1974 to promote the development and diffusion of house building methods, settlement patterns and construction materials which are well adapted to the local African environment.

The Association has been involved in two low-cost housing projects (Mauritania and Upper Volta) and has developed several new construction materials and machines based on local resources. These include production units for making earth-laterite bricks, plaster and lime, the application of earth-plaster compounds, the development of manual presses, hydraulic presses and concrete mixers, and the diffusion of waste recycling technologies (glass, human and animal wastes).

Staff	-	6 people (5 full-time), all of whom are professionals
Budget	-	$200,000
Scale of activities in AT	-	65 man-months
Channels of technology diffusion	-	Mainly through the Association's own projects
Obstacles to technology diffusion	-	Inadequate legislation, lack of reliability and lack of technical support
Publications	-	Technical reports and feasibility studies, bibliography on the uses of earth in construction (in French).

HELVETAS-SWISS ASSOCIATION FOR TECHNICAL ASSISTANCE
Helvetas-Schweizer Aufbauwerk für Entwicklungsländer

Secretary General: E. W. Külling

St. Moritzstrasse 15
Postfach 181
CH-8042 Zürich
Tel : (01) 60 50 60

Main activities

Pilot production
Technology diffusion
Education and training
Influencing government decisions

Main fields of concentration

Rural water supplies
Alternative energy sources
Small industry promotion
Roads and transportation
Soil protection

Climatic/Geographic focus

None in particular
(Some emphasis on mountainous regions)

The Swiss Association for Technical Assistance (Helvetas-SATA), is an independent non-profit association for development financed for the most part by the Swiss government and by donations. It has supported various development projects (notably in rural water supply and alternative energy) in Asia, Africa and Latin America, which have involved the skills and knowledge of more than 300 experts. It was established in 1955.

One of the major concerns of SATA has always been to use simple technologies which can easily be understood and used by the people for whom they are intended. In Nepal, it has developed and diffused solar water heaters (300 units are now in operation), cross-flow water turbines (12 units are used to drive flour-mills), mini-hydraulic plants which are partly produced locally and bio-gas plants combined with solar energy to supply energy for a cheese plant. It has also sponsored various projects for potable water and has developed gravity ropeways for the exploitation of timber resources. Similar types of projects are currently being carried out in Bhutan, Sri Lanka, Cameroon, Ethiopia, Kenya, Mali, Lesotho, Guatemala and Paraguay.

Staff	-	80 people (all full-time)
Budget	-	$8 million ($3.25 million in 1978)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through international aid programmes and private voluntary foreign assistance agencies
Obstacles to technology diffusion	-	Bureaucracy, cultural and social unacceptability, maintenance difficulties.
Publications	-	Manual for rural water supply (in English). Reports on drinking water and low tension electrical installations (in English).

INTERNATIONAL FEDERATION OF ORGANIC AGRICULTURE MOVEMENTS

President: Dr. Hardy Vogtmann

Postfach 4104
Oberwil (BL)
Tel : (061) 30 42 22

Main activities

Research and development
Information and publications
Technology diffusion

Main fields of concentration

Agriculture
Nutrition
Alternative institutions
Energy savings

Climatic/Geographic focus

Arid, semi-arid and temperate regions
Mountainous regions

The International Federation of Organic Agriculture Movements (IFOAM) groups a number of individuals and over 80 associations from around the world united in their goal to foster alternatives to the current energy-intensive agricultural methods. The emphasis is on the production of foodstuffs and the preservation of the environment, and the Federation's work is directed mainly towards the small independent farmer.

IFOAM was founded in 1972 and is financed by donations and membership fees. It is not itself involved in projects, unlike most of its member organisations. Among the latter, one can find many AT centres, such as ITDG (United Kingdom), GRET (France) and the New Alchemists (U.S.). The Federation is structured in four working groups, the most important of which are communications, research and agricultural techniques for the Third World.

Staff	-	1 person
Budget	-	$14,000 ($5,000 in 1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through international agencies and the activities of member groups
Obstacles to technology diffusion	-	Attitude of political leaders, lack of competitiveness relative to modern technologies, lack of funds
Publications	-	IFOAM Bulletin (in English, French and German), and a series of reports from member organisations.

INTERNATIONAL LABOUR OFFICE
TECHNOLOGY AND EMPLOYMENT BRANCH

Chief of Branch: A. S. Bhalla

CH-1211 Geneva 22
Tel : (022) 99 61 11

Main activities

Policy analysis and economic studies
Information and documentation
Publications
Influencing governmental and political decisions
Technical assistance and advisory services

Main fields of concentration

Irrigation
Forestry
Agricultural tools
Handicrafts and small industry promotion
Manufacturing
Construction (roads, housing)

Climatic/Geographic focus

All developing countries

The International Labour Organisation (ILO) is a specialised agency of the United Nations. Its Technology and Employment Branch (EMP/TEC) is an offshoot of its World Employment Programme launched in 1969. Started in 1972, EMP/TEC's first five years were mainly devoted to techno-economic research which showed that in virtually all sectors of economic activity, there are alternative technologies which are both technically and economically viable while more appropriate than the usual capital-intensive technology to the specific conditions and socio-economic objectives of developing countries.

ILO itself does not develop specific technologies. The studies it has conducted have dealt with labour-intensive technologies in various fields (food and drink, road-building, housing, textiles, footwear, agriculture), with the effects of agricultural mechanisation and the Green Revolution on employment, and with AT and the 'basic needs' approach to development problems.

The present emphasis of its work is increasingly placed on the dissemination of information relating to AT and on the support of national and regional institutions which can promote AT applications.

Staff	-	20 people (all full-time), 13 of whom are professionals
Budget	-	$698,000 ($489,000 in 1976)
Scale of activities in AT	-	Approximately 240 man-months
Channels of technology diffusion	-	Not applicable
Obstacles to technology diffusion	-	Not applicable
Publications	-	Wide range of books, monographs, articles, reports.

LATIN AMERICAN INSTITUTE

Directors: Professor Baumer
Professor Bollinger
Professor Moser

Varnbüllstrasse 14
CH 9000 St. Gallen
Tel : (071) 23 34 81

Main activities

Information and documentation (80%)
Research and development (10%)
Publications (10%)

Main fields of concentration

Nearly all fields of AT

Climatic/Geographic focus

None in particular

The Latin American Institute of the St. Gallen Graduate School of Economics, Business and Public Administration was founded in 1961 as a business-oriented institute for research in relating to the cultures, economies and politics of Latin America. Its activities in AT started in 1975 with a project for a bibliography and a literature study on AT on behalf of the Development Aid Division of the Swiss Foreign Ministry.

The Institute has compiled information on almost all fields related to AT. It has also worked on houschold tools based on solar energy (cookers, dryers, water distillers, etc.); its aluminium parabolic sun cooker for family use is currently being tested in the rural areas of five countries. The Institute plans to establish a Swiss contact centre in the field of AT (SKAT).

Staff	-	6 people (3 full-time), 4 of whom are professionals
Budget	-	$130,000 on AT, $70,000 on Latin American studies
Scale of activities in AT	-	28 man-months
Channels of technology diffusion	-	Through the university
Obstacles to technology diffusion	-	Bureaucracy, cultural and social unacceptability, lack of funds
Publications	-	Bibliography on AT (in English), literature survey of AT and a study on solar energy tools (in German).

SWISS ASSOCIATION FOR APPROPRIATE TECHNOLOGY
Schweizerische Arbeitsgemeinschaft für Alternative Technologie

Director: Albert Aufdermauer

Postfach 2121
CH-8028 Zürich

Main activities

Information and documentation (55%)
Regular publications (25%)
Pilot production (15%)

Main fields of concentration

Energy savings
Methane digesters

Climatic/Geographic focus

None in particular

The Swiss Association for Appropriate Technology (SAGAT) started in 1975 after a workshop with the late Dr. E. F. Schumacher. It has some 40 members and is financed from membership fees. It is affiliated with the Swiss Association for Intermediate Technology (SVMT).

The members of SAGAT have set up different project groups whose aim is to apply appropriate technologies in Switzerland. One of its current projects is a methane digester. Besides its activities in work groups, SAGAT has established an information centre for appropriate technology. This will be its main activity in the future.

Staff	-	No permanent staff
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through advertisement and mass media and through educational institutions
Obstacles to technology diffusion	-	Inadequate legislation, lack of funds
Publications	-	St. Baer and W. Edelman, Alternative Technologie - Gebot der Stunde, Lichtlag Verlag, Berlin 1977.

SWISS ASSOCIATION FOR INTERMEDIATE TECHNOLOGY
Schweizerische Vereinigung für Mittlere Technologie

President: J. Nipkow

Postfach 2134
CH-8028 Zürich

Main activities

Information and documentation (40%)
Publications (30%)
Policy analysis and economic studies

Main fields of concentration

Energy savings
Solar energy
Crop processing and conservation
Architecture

Climatic/Geographic focus

None in particular

The Swiss Association for Intermediate Technology (SVMT) is an independent non-profit association financed by its members. It was founded in 1975 following the development of a small project of parabolic solar collectors for cooking uses, which were experimented with in several developing countries. SVMT also conducted a study on earthquake-resistant architecture for Guatemala and has prepared a manual on simple solar technologies for developing countries. In the future, the Association plans to conduct a series of lectures and conferences on AT.

Staff	-	Not specified
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through publications and the mass-media
Obstacles to technology diffusion	-	Lack of funds, lack of public interest
Publications	-	Reports on solar cookers, AT, earthquake-resistant architecture and a handbook on solar energy (all in German).

WORLD COUNCIL OF CHURCHES
Commission on the Churches' Participation in Development

Secretary for Technical Services: Pascal de Pury

150 Route de Ferney
P.O. Box 66
CH-1211 Geneva 20
Tel : (022) 98 94 00

Main activities

Technology diffusion, information and documentation (70%)
Technical feasibility studies (30%)

Main fields of concentration

Solar and wind energy
Public health
Crop processing and conservation
Tropical animal husbandry
Handicrafts

Climatic/Geographic focus

Tropical rain forests and savannas
Arid and semi-arid regions

The Technical Services of the Commission on the Churches' Participation in Development (CCPD), of the World Council of Churches (WCC) was set up in 1970 with technical services as one of its functions. The Service built a Sahores windmill in 1974-75 and experimented with it for water pumping. A Geneva group has built 10 prototypes and sent them to groups in Africa, Indonesia and the Caribbean. Several models of solar cookers have been brought on the market and distributed for testing. Since 1976, due to staff limitations, the Service has been working in two areas only: (1) helping groups and communities to exchange appropriate technologies (particularly among the network of the WCC's 290 member churches), and to have access to the main AT agencies; (2) Making a few evaluations and feasibility studies of WCC partner programme. Public health issues are handled by another department of WCC, the Christian Medical Commission (CMC).

Staff	-	2 people (1 of whom is a professional)
Budget (operational)	-	$15,000
Scale of activities in AT	-	12 man-months
Channels of technology diffusion	-	Through the WCC member churches and related agencies and groups. The WCC has departments to study science and help AT users find sources of financing
Obstacles to technology diffusion	-	Under study
Publications	-	16 circular letters describing AT's, dossier on AT and Directory.

WORLD HEALTH ORGANIZATION
APPROPRIATE TECHNOLOGY FOR HEALTH PROGRAMME

Director-General: Dr. H. Mahler
Programme Leader: Dr. M. E. F. Torfs

Avenue Appia
1211 Geneva
Tel : (022) 34 60 61

Main activities

Information and documentation
Research and development
Testing and evaluation of new equipment
Influencing governmental and political decision-making
Financing AT activities of other institutions
Promotion of local technological traditions

Main fields of concentration

All fields of public health
Water
Nutrition

Climatic/Geographic focus

None in particular

The World Health Organization (WHO) is a specialised agency of the United Nations, established in 1948 as the central agency directing international health work. One of its main activities is technical co-operation with national health administrations, particularly in the developing countries.

The Appropriate Technology for Health Programme (ATH) was set up in 1977 to promote AT in public health both within and outside WHO, to co-operate with and support member states in the promotion, development and adoption of effective low-cost technologies, and to develop a collaborative programme of research and information. Priority is given to the most peripheral health services and the approaches used in reaching the above objectives include research and development, information exchanges, in-depth country studies, task-forces and promotional programmes. Technologies promoted by ATH include portable refrigerators for vaccine storage, the testing of re-usable plastic and nylon syringes, simple well screens for filtering water in tube wells, and domestic pressure cookers for sterilizing syringes.

Staff	-	6 people (4 full-time) 3 of whom are professionals
Budget	-	$297,000
Scale of activities in AT	-	60 man-months
Channels of technology diffusion	-	Mainly through the programme's own activities
Obstacles to technology diffusion	-	Not specified
Publications	-	Newsletter (quarterly), ATH Directory (twice yearly), information brochure and several articles.

ASIAN VEGETABLE RESEARCH AND DEVELOPMENT CENTER

Director: Dr. James C. Moomaw

P.O. Box 42
Shanhua
Tainan 741
Tel : (064) 83 71 31

Main activities

Research and development (55%)
Technology diffusion (22%)
Pilot production (12%)
Technical feasibility studies (5%)

Main fields of concentration

Cultivation techniques
New crops and plants
Agricultural tools and equipment

Climatic/Geographic focus

Irrigated arid and semi-arid regions
Humid tropical lowlands

The Asian Vegetable Research and Development Center (AVDRC) is an international centre which was chartered in 1971 by seven member governments (Japan, Korea, the Philippines, Taiwan, Thailand, Vietnam and the United States). Funding is provided for the most part by governments, as well as by public and private donors.

AVDRC is dedicated to the improvement of vegetable crops in the tropics. Tomatoes, soybeans, white potatoes, Chinese cabbages, mungbeans and sweet potatoes have been selected for initial research on the basis of their nutritional value and their ability to help raise small farm income. AVDRC is evaluating Taiwan farming technologies which are suitable for transfer to other Asian countries (e.g. no-till rice stubble culture). It has developed low-cost tools (simple soybean planter, crop pollinator made from a battery razor and a ball point pen tip), seed storage and protection methods and a plastic net house for crop protection.

The Center has a branch in the Philippines and another in Korea, and is also involved in training programmes.

Staff	-	40 people (almost all full-time)
Budget	-	$1.6 million
Scale of activities in AT	-	3,900 man months
Channels of technology diffusion	-	Through the Center's own efforts (including the training of extension and research staff)
Obstacles to technology diffusion	-	Attitude of political leaders and lack of funds
Publications	-	Annual progress reports and annual crop reports, symposium proceedings, monographs on Asian vegetables and numerous scientific papers by staff members.

TAIWAN LIVESTOCK RESEARCH INSTITUTE

Director: T. Y. Chow

Hsinhua
Tainan, 712
Tel : Hsinhua 98 26 26

Main activities

Research and development
Pilot and commercial production
Technology extension services
Promotion of local technological traditions
Educating and training
Publications

Main fields of concentration

Agricultural machinery
Soil protection
Husbandry
Methane production

Climatic/Geographic focus

Subtropical regions

The Taiwan Livestock Research Institute (TLRI) is a governmental research centre whose origins go back to a horse breeding farm established before World War II. After the war it became a branch of the Taiwan Agricultural Research Institute (TARI) and was established as an independent institution in 1958. In 1971 all the animal production divisions of the Agricultural Improvement Stations around the island joined the Institute which now has seven propagation farms doing the local research and extension work. TLRI is financed for the most part by the Government.

The Institute's current work in AT is increasingly focusing on the use of small mobile work teams to develop slopeland, research on animal breeding, nutrition and the search for new protein sources for animals from local crops.

Staff	-	210 people, (all full-time), 54 of whom are professionals
Budget	-	$2.3 million
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies
Obstacles to technology diffusion	-	Lack of funds, lack of reliability, lack of technical support and maintenance difficulties
Publications	-	Journal of the Taiwan Livestock Research Institute.

ARUSHA APPROPRIATE TECHNOLOGY PROJECT

Directors: R. Stanley and Steve Kitutu

P.O. Box 764
Arusha
Tel : 35 94

Main activities

Technology diffusion and extension (50%)
Information and documentation (25%)
Research and development (10%)
Publications (10%)
Promotion of local technological traditions (5%)

Main fields of concentration

Energy
Water
Building materials
Project evaluation methods

Climatic/Geographic focus

Arid and semi-arid regions
Mountainous regions

The Arusha Appropriate Technology Project (AATP) originated in 1976. Its purpose is to assist villages in developing self-reliant technical skills to meet their expressed needs. It is funded by a 3-year grant from the Swedish International Development Agency (SIDA) and is associated both with the Tanzanian Small Industry Development Organisation (SIDO) and the Portola Institute in Menlo Park, California. Subsequent extension of Project is under negotiation for a further two years period after which time it will become a full SIDO research, development and training activity.

AATP has developed several technologies in the water and energy fields: among them, a low-cost methane generator, a windmill for water pumping, well drilling and grain grinding, a water pump of the reciprocating piston type powered by a windmill and a rope washer pump (a variant of the Chinese chain washer pump). AATP is also working on the software aspects of AT: it has developed a tape cassette methodology for conducting village surveys as well as a series of AT materials for the mass-media.

Staff	-	17 people (all full-time) 6 of whom are professionals
Budget	-	$145,000
Scale of activities in AT	-	187 man-months
Channels of technology diffusion	-	Through government agencies, advertisement and the mass media
Obstacles to technology diffusion	-	Motivation of the population, partly due to lack of self confidence, as well as bureaucracy, inadequate local legislation and lack of competitiveness relative to modern technology
Publications	-	Designs for windmills, water pumps and methane generators.

UNIVERSITY OF DAR-ES-SALAAM
DEPARTMENT OF AGRICULTURAL ENGINEERING AND LAND PLANNING

irector: Prof. F.M. Inns

P.O. Box 643
Morogoro
Tel : 25 11 ext. 337

Main activities

Education and training (70%)
Research and development (20%)
Testing and evaluation of new equipment (10%)

Main fields of concentration

Wind energy and muscular energy
Irrigation
Agriculture

Climatic/Geographic focus

Arid and semi-arid regions

The Department of Agricultural Engineering and Land Planning which was established ı 1967 is a part of the Faculty of Agriculture, Forestry and Veterinary Science of the ıiversity of Dar-es-Salaam. Its work on AT began in 1972 and will continue to remain significant part of the research and development efforts of the department.

The Department has developed several types of pumps (man-powered irrigation pump the piston type, river-powered hydrostatic pump), animal-powered and man-powered grain ills and grain threshers, a large Cretan sail type of windmill for grain-milling, and a ractor-driven grain thresher. It has also been working on the software aspects of AT e.g. wind-energy site evaluation using locally-produced equipment).

Staff	-	18 people (all full-time), 11 of whom are professionals
Budget	-	$88,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the university's extension department
Obstacles to technology diffusion	-	Lack of staff
Publications	-	Reports, research papers and proceedings of the annual conference of agricultural engineers (in English).

ASIAN INSTITUTE OF TECHNOLOGY

President: Robert B. Banks

P.O. Box 2754
Bangkok
Tel : 516 83 115 and 516 83 215

Main activities

Education and training (70%)
Research and development (20%)
Technical feasibility studies (4%)
Information and documentation (4%)

Main fields of concentration

Solar energy
Public health
Water
Agriculture and aquaculture
Roads, transportation and telecommunications
Housing and human settlements
Rural development

Climatic/Geographic focus

South and South-East Asia

The Asian Institute of Technology (AIT) is an autonomous, international non-profit post-graduate technological institution established in 1959, whose mission is to help serve the technological requirements of the peoples of Asia by providing advanced education in engineering, science and allied fields. Students from many Asian countries pursue practical academic studies, seeking, defining and testing alternative and/or appropriate solutions to urgent problems found in the region.

Among the main achievements of AIT students and staff in the field of AT are a manual seeder for soybean, a Rankine-cycle solar-powered water pump, a solar-powered water pump, a solar-powered refrigerator (a first step towards the development of an ice-maker for village use), a bellow pump (a modified version of an IRRI prototype) and an inertia pump incorporating a prime mover assembly consisting of a bicycle type drive and a flywheel. AIT also operates the International Ferrocement Information Centre, a world-wide information and resource centre on all aspects of ferro-cement technology.

Staff	-	490 people (all full-time), 60 of whom are professionals
Budget	-	$3.3 million
Scale of activities in AT	-	Not available
Channels of technology diffusion	-	Schools, universities, regional and international conferences
Obstacles to technology diffusion	-	Lack of technical support, lack of time to ensure the diffusion
Publications	-	AIT Review (quarterly), annual research summary, student theses and proceedings of international conferences.

SEATEC INTERNATIONAL

Director: Richard J. Frankel

87 Sukhumvit Road
Bangkok
Tel : 252 22 22, 251 26 60

Main activities

Testing and evaluation of new equipment (25%)
Research and development (25%)
Pilot production (25%)
Education and training (10%)
Promotion of local technological traditions (10%)

Main fields of concentration

Sanitation
Water supply and treatment
Waste disposal
Environmental impact studies

Climatic/Geographic focus

Tropical rain forests and savannas

South East Asia Technology (SEATEC International) is an independent consulting firm founded in 1974 by a former professor at the Asian Institute of Technology. It was originally funded half by consulting fees and half by the U.S. Agency for International Development, but in 1977 the main part of its budget was provided by the Asian Development Bank.

SEATEC International has an affiliate in Thailand and another one is being established in the Philippines. It is dedicated to solving water, sanitary and waste problems in South East Asia. Prime interests are in rural water supply, but it has also designed water and waste-water treatment systems for private industries, mostly in the agro-industrial sector. A pilot project for low-cost ferro-cement rain water storage tanks is under operation in Southern Thailand and the Philippines. A coconut/burnt rice husks water filter has been operating for several years in Thailand and the Philippines. A prototype of a bicycle pump and of a chlorinator have been built but not tested due to lack of funds.

Staff	-	8 people (5 full-time) 6 of whom are professionals
Budget	-	$40,000 ($25,000 in 1976)
Scale of activities in AT	-	8 man-months
Channels of technology diffusion	-	International agencies and universities
Obstacles to technology diffusion	-	Bureaucracy and attitude of international lending agencies, reluctance to accept innovation by international agencies and governments because of small-scale projects, lack of funds, lack of association with universities
Publications	-	Reports to international agencies and articles in professional journals.

ASSOCIATION FOR RURAL DEVELOPMENT AND ANIMATION
Association pour le Développement et l'Animation Rurale

Director: Abdelhafidh Chabbi

10, rue Eve Nohelle
Tunis
Tel : 24 55 92 and 24 82 94

Main activities

Pilot production (80%)
Promotion of local technological traditions (20%)

Main fields of concentration

Agriculture and husbandry
Cultivation techniques
Small industry promotion
Building materials
Irrigation
Credit and lending systems

Climatic/Geographic focus

Temperate regions

The Association for Rural Development and Animation (ASDEAR) was created in 1975 under the sponsorship of the Tunisian Ministries of Agriculture and Social Affairs. The mission of this independent non-profit centre is to prepare, carry out and follow up integrated development projects for poor rural families. In its activities, it deliberately tries to use AT, whether locally-designed or foreign-produced, and also seeks to promote existing traditional technologies.

ASDEAR has been involved in small-scale poultry industry (crossing of local breeds with selected foreign breeds, construction of hen houses from local materials, production of feedstock based on barley and olive leaves), the rehabilitation of the traditional weaving handicrafts, self-help housing and public health (home health assistants, survey of traditional medical practices). It has also conducted a survey on traditional agricultural tools and implements and sought to identify the social and technological obstacles to their wider use.

Staff	-	5 part-time people
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the Association's own efforts and through publications
Obstacles to technology diffusion	-	Cultural and social unacceptability, lack of competitiveness relative to modern technology and maintenance difficulties
Publications	-	Not specified.

RURAL ENGINEERING RESEARCH CENTRE
Centre de Recherches du Génie Rural

Director: El Amami

Boîte Postale 10
Ariana
Tel : 23 16 34 and 23 16 24

Main activities

Promotion of local technological traditions (75%)
Publications (10%)
Information and documentation (5%)
Testing of new equipment (5%)
Pilot production (5%)

Main fields of concentration

Water energy
Irrigation
Agricultural tools and machinery
Cultivation techniques

Climatic/Geographic focus

Arid and semi-arid regions
Coastal regions

The Rural Engineering Research Centre (CRGR) is a government agency affiliated with the Tunisian Ministry of Agriculture which finances it. It was founded in 1960 and its main activities are in the field of irrigation techniques, hydro-agricultural management and the use of saline and brackish waters for irrigation.

The Centre has been interested in AT since 1974, notably in the fields of irrigation and housing. Among its AT activities, it has established an inventory of traditional Tunisian agricultural hydraulic techniques and it has promoted the rehabilitation and improvement of local and traditional irrigation methods (e.g. irrigation systems using buried pottery jars; local collection systems for run-off waters; water tanks). The CRGR has also developed ten different types of animal-drawn implements, 500 units of which have been industrially manufactured and has revived a traditional cotton sheller developed in the 1930's (prototype stage). It has also been involved in the diffusion of the modern drip irrigation technology.

Staff	-	4 people (2 full-time), all of whom are professionals
Budget	-	$3,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies
Obstacles to technology diffusion	-	Bureaucracy and lack of funds
Publications	-	Journal and report on traditional hydraulic techniques in Tunisia (in French).

DEPARTMENT OF AGRICULTURAL ENGINEERING

Head of Department:

Faculty of Agriculture
Makerere University
P.O. Box 7062
Kampala
Tel : 5 69 31

Main activities

Education and training
Research and development

Main fields of concentration

Solar and water energy
Irrigation
Agricultural tools and machinery
Crop processing and conservation
Soil protection

Climatic/Geographic focus

Tropical savannas
Arid and semi-arid regions

The Department of Agricultural Engineering is one of the six departments of Makarere University's Faculty of Agriculture and Forestry. Makarere University, Uganda's only national university was established in 1922.

Since 1974, the Department has been working on various aspects of AT for agriculture. It has developed among others small-scale threshers and winnowers, hole diggers, brick moulds and various types of ox-drawn ploughs. It is currently working on the development of small-scale tractors and on various applications of solar energy, notably for drying agricultural products.

Staff	-	15 people (all full-time), 5 of whom are professionals
Budget	-	$7,500 in 1976 (9,000 in 1975)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies
Obstacles to technology diffusion	-	Lack of competitiveness relative to modern technology, lack of funds and maintenance difficulties
Publications	-	Not specified.

THE ACTON SOCIETY TRUST

Chairman: Mr. Edward Goodman
AT contact: Mrs. Gaenor Amory

9 Poland Street
London W1V 3DG
Tel : (01) 437 89 54

Main activities

Revival of traditional technologies and promotion of local technological traditions
Research and development
Technology diffusion
Education

Main fields of concentration

Scale models of AT hardware
Water raising systems
Energy
Small-scale agriculture
Fish farming

Climatic/Geographic focus

Rural areas of developing countries

The Acton Society Trust is a charitable foundation involved in the promotion of liberal economic ideas and the encouragement of small enterprises and other appropriate types of small-scale organisations. It is funded from various sources, including the Rowntree Trust.

Following an international conference it organised in Siena (Italy) in September 1977 on the political, economic and social implications of smallness in industry and other organisations, it started to support a project on scale models of appropriate technologies initiated by Jean Gimpel, the historian of mediaeval technology. The idea is that scale models are potentially one of the most effective ways of diffusing AT's to craftsmen and small entrepreneurs who cannot read blueprints, but who can easily scale up a model they can touch and understand. A wide range of scale models have been developed for this purpose: water lifting devices (Archimedes' screw, chain pump, water wheels, etc.), small-scale power generators, floating fish farms and water wheels, a press for making paper pulp and a vertical axis windmill with aerofoil blades are some of the most notable.

Staff	-	Approximately 25 people
Budget	-	Not available
Scale of activities in AT	-	Approximately 25 man-months
Channels of technology diffusion	-	Through publications, lobbying and the demonstration of scale models
Obstacles to technology diffusion	-	Lack of contact with established channels of technology diffusion and lack of funds
Publications	-	Books, articles, TV shows.

APPROPRIATE HEALTH RESOURCES AND TECHNOLOGIES ACTION GROUP

Director: Dr. Katherine Elliott

85 Marylebone High Street
London W1M 3DE
Tel : (01) 486 41 75

Main activities

Information and documentation (60%)
Education and training of personnel (15%)
Occasional publications (10%)
Technology diffusion (10%)

Main fields of concentration

All fields related to public health
Alternative health care systems
Hospital design
Pharmaceutical industry

Climatic/Geographic focus

None in particular

The Appropriate Health Resources and Technologies Action Group Ltd., (AHRTAG) evolved from the Rural Health panel of the Intermediate Technology Development Group (ITDG), and was established as an independent non-profit organisation in mid-1977. The Group has a major role in the World Health Organisation (WHO) programme of AT for health (ATH), and has recently been designated as a WHO collaborating centre.

AHRTAG collects and disseminates information on the training and utilisation of health auxiliaries. It is concerned both with the "software" or "liveware" aspects (organisation, support systems, collaboration with indigenous medicine and healers), and the related hardware (simple village technologies). It has assisted the WHO expanded programme on immunisation and can provide information and training for technical officers in cold chain systems and technologies. Its programme on AT for rehabilitation provides information on locally produced low-cost aids for the handicapped. AHRTAG is also in contact with bio-engineers who can design and build appropriate laboratory equipment (a colorimeter has been tested in the Andes, Nepal and Gambia). AHRTAG maintains a specialised collection related to primary health care and appropriate technology for health.

Staff	-	5 people (3 full-time), 4 of whom are professionals
Budget	-	$100,000
Scale of activities in AT	-	40 man-months
Channels of technology diffusion	-	Through international agencies (WHO), schools and universities (postgraduate and polytechnic courses for overseas students)
Obstacles to technology diffusion	-	Lack of channels and networks for collecting and distributing information to potential users
Publications	-	K. Elliott, The Training of Auxiliaries in Health Care: An Annotated Bibliography, ITDG Publications, London 1975.
		Several papers on health auxiliaries.

BP RESEARCH CENTRE

Director: R. Turner

Chertsey Road
Sunbury-on-Thames, Middlesex
Tel : Sunbury 8 55 33

Main activities

Research and development
Technical feasibility studies
Testing and evaluation of new equipment
Information and documentation

Main fields of concentration

Energy savings
Pollution control

Climatic/Geographic focus

None in particular

The BP Research Centre was established in the late 1920's to support the technical operations of the British Petroleum Company throughout the world. While not previously concerned with AT as such, several of its current research activities in the fields of energy conservation, environmental matters and pollution control have a direct impact in the fields covered by AT. Furthermore staff members of the Centre regularly attend meetings and symposia dealing with AT and have direct contacts with specialists interested in alternative energy sources.

Staff	-	1400 people (all full-time), one-third of whom are professionals
Budget	-	$56 million
Scale of activities in AT	-	Approximately 1% of the above budget and staff time
Channels of technology diffusion	-	Subsidiary and associate companies
Obstacles to technology diffusion	-	Not applicable
Publications	-	Not specified.

CONSUMERS' ASSOCIATION TESTING DEPARTMENT

Director: Dr. John Cuthbert

Harpenden Rise Laboratory
Harpenden, Middlesex AL5 3BJ
Tel : (05827) 6 44 11

Main activities

Research, development, testing and evaluation of new equipment (100%)

Main fields of concentration

Energy
Health care equipment
Roads
Housing
Industrial products

Climatic/Geographic focus

Temperate and coastal regions
Tropical rain forests and savannas
Arid and semi-arid regions

The Harpenden Rise Laboratory was set up in 1970 as a private laboratory and research centre of the Consumers' Association to investigate, test and evaluate products and services available to the public in the United Kingdom. It later expanded its services to European consumer unions. Since 1975 it has been undertaking independent contract research for government, public bodies and international institutions, while continuing to be totally independent of commercial and industrial interests.

Its involvement in AT started in 1976 with the testing and evaluation (as to appropriateness of design, performance, etc.), of a growing range of AT products at the request of several sponsors. Products thus investigated include 12 brands of deep well pumps, a prototype all-plastic hand pump, electric-, gas- and kerosene-operated refrigerators, cold boxes and vaccine carriers. The Laboratory has also designed a freezer with low energy requirements and hand tools for labour-intensive road construction and plans to expand its activities in AT.

Staff	-	63 people (55 full-time), 25 of whom are professionals
Budget	-	$1 million
Scale of activities in AT	-	Approximately 24 man-months
Channels of technology diffusion	-	Reports to clients
Obstacles to technology diffusion	-	Lack of funds
Publications	-	Confidential reports to clients; 2 reports released for general publication (on guidelines for testing and on testing of hand and foot water pumps).

DAVID LIVINGSTONE INSTITUTE OF OVERSEAS DEVELOPMENT STUDIES

Director: James Pickett

McCance Building
16 Richmond Street
Glasgow G1 1XQ
Tel : (041) 552 44 00 ext. 22 00

Main activities

Research and development (35%)
Policy analysis and economic studies (35%)

Main fields of concentration

Problems of technology choice
Scaling-down of industrial processes
Small industries
Energy savings
Environmental issues

Climatic/Geographic focus

None in particular

The David Livingstone Institute of Overseas Development Studies (DLIODS) is a part of Strathclyde University. It originated in 1971 with a pilot project on AT in what was then the Overseas Development Unit of the university.

The Institute has carried out a lot of research on the choice of techniques in the agricultural and industrial sectors, and on the environmental impacts of alternative technologies. It has also trained developing country nationals in these fields. Its studies on technology choices for developing countries have focused on the footwear industry, sugar production, textiles (cotton cloth), brewing, maize milling, leather tanning, brick making, iron foundries, machine tools and the production of corrugated board.

Plans for the future include further research on various aspects of industrialisation in the developing countries.

Staff	-	15 people (14 full-time), 12 of whom are professionals
Budget	-	$220,000
Scale of activities in AT	-	100 man-months
Channels of technology diffusion	-	Through government and international agencies and through publications
Obstacles to technology diffusion	-	Not specified
Publications	-	Pilot project reports 50 reports, articles and occasional papers and one book on AT, choice of technology and industrialisation problems.

FOUNDATION FOR TEACHING AIDS AT LOW COST

Director: Dr. David C. Morley

Institute of Child Health
30 Guilford Street
London WC1N 1EH
Tel : (01) 242 97 89

Main activities

Dispatching of teaching aids for the training of health personnel

Main fields of concentration

Hygiene and preventive medicine
Birth control
Nutrition and child health

Climatic/Geographic focus

None in particular

The Foundation for Teaching Aids at Low Cost (TALC) is a self-supporting non-profit organisation affiliated with the Institute of Child Health of the University of London. It is also associated with the Graves Medical Audiovisual Library, in Chelmsford, Essex. It was set up in 1964 in response to the need of postgraduate students for teaching slides.

TALC is now one of the world's largest distributors of teaching transparencies in the health field. It has developed a low-cost distribution system for such transparencies, and it is now developing new and more appropriate transparencies. Other innovations include low-cost slide tape tutors and slide tape projectors, a plastic hand slide viewer costing only a few cents, the Shakir strip made from old X-ray film (the most simple and appropriate way of detecting malnutrition) and sets of plastic spoons for measuring rehydration salts.

All the activities of TALC are carried out by ten housewives working from their own homes. Voluntary Health Association of India is a similar organisation. The establishment of others is being contemplated.

Staff	-	10 people, all on a part-time basis
Budget	-	$100,000
Scale of activities in AT	-	120 man-months
Channels of technology diffusion	-	Through medical journals
Obstacles to technology diffusion	-	None
Publication	-	Over 40 slide sets with scripts and tapes. Distributes many publications from developing countries and information on the Child-to-Child Programme for International Year of the Child 1979.

HYDROPONIC ADVISORY AND INFORMATION UNIT

Head of centre: James Sholto Douglas

119 Glebe Avenue
Ickenham
Middlesex UB10 8PF
Tel : Ruislip 3 88 77

Main activities

Information and documentation (50%)
Technology extension (20%)
Testing and evaluation of new equipment (20%)
Publications (10%)

Main fields of concentration

Hydroponics
Forest farming
New crops and plants
Ecological models of production

Climatic/Geographic focus

Arid and semi-arid regions
Arctic and cold regions

The Hydroponic Advisory and Information Unit is an independent non-profit centre the purpose of which is to provide advice and information on hydroponics. It also carries out some research. Its origins go back to the Hydroponic Research Centre set up in 1946 near Darjeeling, India, under the auspices of the West Bengal Government. In 1967, the Centre was transferred to the United Kingdom because of other commitments and activities of its leader, and its name was changed to the present one.

The Unit has developed various hydroponic systems which have been tested all over the world and cultivation techniques for arid zones. It has also worked on different species of new crops for economic use, and on forest-farming.

The Unit is affiliated with the International Working Group on Soilless Culture (IWOSC, P.O. Box 52, Wageningen, Netherlands) and the Hydroponic Information Centre, (P.O. Box 31, Bombay, India).

Staff	-	2 part time, 1 professional
Budget	-	$10,000 (1976 - $5,000)
Scale of activities in AT	-	6 man-months
Channels of technology diffusion	-	Publications; direct advice to inquirers
Obstacles to technology diffusion	-	Bureaucracy, lack of funds
Publications	-	Several books and manuals on hydroponics, forest farming, alternative food crops and applied ecology.

INTERMEDIATE TECHNOLOGY DEVELOPMENT GROUP

Chairman: George McRobie
Chief Executive: Dennis Frost

9 King Street
London WC2E 8HN
Tel : 836 94 34

Main activities

Testing and evaluation of new equipment (30%)
Publications (15%)
Information and documentation (10%)
Assisting and supporting other AT centres AT centres (10%)
Influencing government and political decision making (10%)
Technical feasibility studies (10%)

Main fields of concentration

All fields of AT except education

Climatic/Geographic focus

None in particular

The Intermediate Technology Development Group (ITDG), which was founded in 1966 by the late Dr. E. F. Schumacher, G. McRobie and J. K. Porter and pioneered the concept of intermediate technology, has now grown into the largest specialised AT organisation in the world. It is a non-profit institution, financed for the most part by foundations and donations.

Technical officers in the field prepare specifications for new AT products and processes, training manuals, catalogues and bibliographies. They and the London office provide technical advice and carry out original research and development work in co-operation with other institutions. ITDG also assists in the creation of national AT centres.

ITDG's activities have focused among others on small-scale pulp moulding, low-cost building materials, agricultural implements, water supply, printing, cement production, glass production, spinning and weaving, and transportation. It is planning to expand its activities with the Intermediate Technology Industrial Services (an outgrowth of its Industrial Liaison Unit).

Staff	-	55 people, 35 of whom are professionals, and over 200 experts and advisers
Budget	-	$849,000
Scale of activities in AT	-	660 man-months
Channels of technology diffusion	-	Through publications, projects, consulting services and international agencies (private and public)
Obstacles to technology diffusion	-	Bureaucracy, inadequate legislation and lack of technical support
Publications	-	Large number of reports, books, articles, bibliographies, pamphlets and quarterly journal.

INTERNATIONAL FOREST SCIENCE CONSULTANCY

Director: Dr. A. I. Fraser

21 Biggar Road, Silverburn
Penicuik EH26 9LQ, Midlothian
Tel : Penicuik (0968) 7 51 12

Main activities

Technical feasibility studies (50%)
Policy analysis and economic studies (20%)
Technology diffusion (10%)

Main fields of concentration

Forestry
Solar and wood energy
Building materials
Wood-based industries

Climatic/Geographic focus

Tropical, arid, semi-arid and temperate regions

The International Forest Science Consultancy (IFSC) is an independent profit-oriented AI centre/consulting firm which was formed in 1973 by a group of professional foresters with many years of practical experience in tropical countries. The group has devoted considerable effort to the development and promotion of appropriate technologies in forestry.

One of the major achievements of IFSC has been a manual on the management of plantation forests which has been sold in 45 countries. The partners of the company are also shareholders in a small charcoal manufacturing firm which is also developing technologies in this field suitable for transfer to developing countries. It has recently developed a solar-powered kiln for drying timber, as well as a portable steel charcoal kiln and plans to extend the range of commercially available equipment which is particularly appropriate to the forestry industry of the developing countries. IFSC also undertakes consultancy work and advises in appropriate forestry technologies. Partners in the company have chaired ITDG's Forestry Panel since 1973.

Staff	-	7 people (6 full-time), 6 of whom are professionals
Budget	-	$180,000 (1976: $120,000)
Scale of activities in AT	-	12 man-months
Channels of technology diffusion	-	Through government, international agencies, international aid programmes and private voluntary assistance agencies
Obstacles to technology diffusion	-	Not specified
Publications	-	A manual on the management of plantation forests.

NATIONAL CENTRE FOR ALTERNATIVE TECHNOLOGY

Director: James Roderick

Llwyngwern Quarry
Machynlleth
Powys, Wales
Tel : Machynlleth 2400

Main activities

Demonstration of AT applications
Information and documentation
Research and development
Pilot production

Main fields of concentration

Energy
Agriculture, forestry
Aquaculture

Climatic/Geographic focus

Temperate regions

The National Centre for Alternative Technology is a charitable non-profit AT centre founded in 1974 and initially financed by donations. It is sponsored by the Society for Environmental Improvement. It was set up to provide a public demonstration of AT ideas and applications, carry out research and development, monitor the performance of AT equipment, and to produce blueprints and educational materials.

The Centre is located in an old quarry in Wales. It comprises a conservation house (with appropriate insulation, heat pumps, quadruple glazing etc.), a dozen varieties of high and low speed windmills for electricity generation and pumping, a small-scale blacksmith forge, a water turbine for electricity generation, a small-holding, a fish-*culture, an organic vegetable garden, a cottage relying on wind-energy and a large solar*-heated exhibition hall.

Staff	-	20 people (all full-time)
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the Centre's exhibition centre, mass media, publications, and conferences
Obstacles to technology diffusion	-	Bureaucracy, inadequate legislation, reluctance to accept innovation, lack of competitiveness relative to modern technologies, lack of funds
Publications	-	Periodic newsletter and technical notes, as well as comprehensive bookshop. Mail order service.

NATURAL ENERGY ASSOCIATION

Director: Dr. Kuno Tichatschek

161 Clarence Street
Kingston-upon-Thames, Surrey
Tel : (01) 549 58 88

Main activities

Publications (80%)
Technology diffusion (5%)
Education and training (5%)
Financing AT activities of other organisations

Main fields of concentration

Energy
Waste water
Hydroponics
Transportation

Climatic/Geographic focus

None in particular

The Natural Energy Association is a non-profit AT centre established in 1974 by the director of the Natural Energy Centre (same address), to act in an educational role through publications and seminars on all aspects of AT. Its seminars held throughout the United Kingdom involve a wide range of AT experts and practitioners.

Staff	-	3 people (all full-time), 2 of whom are professionals. Number of members of the association not specified.
Budget	-	$24,000 ($12,000 in 1976)
Scale of activities in AT	-	36 man-months
Channels of technology diffusion	-	Through seminars, advertisements and the mass media
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, inadequate legislation, reluctance to accept innovation and lack of competitiveness relative to modern cechnologies
Publications	-	Quarterly magazine.

NATURAL ENERGY CENTRE

Director: Dr. Kuno Tichatschek

161 Clarence Street
Kingston-upon-Thames, Surrey
Tel : (01) 549 58 88

Main activities

Marketing of AT equipment and products (80%)
Information and documentation (10%)
Publications (5%)
Technical feasibility studies (5%)

Main fields of concentration

Energy
Cultivation techniques
Hydroponics

Climatic/Geographic focus

None in particular

The Natural Energy Centre is an independent consulting firm and profit-oriented AT centre founded in 1973. Its purpose is to identify, develop and market high standard appropriate technologies in the energy and food producing areas. The main part of the centre's budget comes from commercial and industrial activities. It has designed and installed solar heating systems which are among the biggest in the United Kingdom as well as a large number of wind generators. It also manufactures heat pumps, heat pipes and wood stoves.

Staff	-	6 people (all full-time), 4 of whom are professionals
Budget	-	$45,000 ($25,000 in 1976)
Scale of activities in AT	-	72 man-months
Channels of technology diffusion	-	Through the sale of AT products and through advertisements and the mass-media
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy and inadequate legislation
Publications	-	Handbook on natural energy (annual edition).

OVERSEAS DEPARTMENT OF THE NATIONAL INSTITUTE OF AGRICULTURAL ENGINEERING

Head of Department: R. D. Bell

Wrest Park
Silsoe
Bedford MK45 4HS
Tel : (0525) 6 00 00

Main activities

Research and development (70%)
Information and documentation (6%)
Policy analysis (6%)

Main fields of concentration

Agriculture and forestry
Agricultural tools and machinery
Transportation
Hydraulic energy

Climatic/Geographic focus

Tropical savannas
Arid and semi-arid regions
Coastal regions

The Overseas Department of the National Institute of Agricultural Engineering (NIAE) started in 1952 when a Colonial Liaison Officer was appointed to give advice on agricultural engineering to the British Commonwealth countries and has now grown into a fully-fledged department of the Institute. It provides technical information to the developing countries, acts as an adviser and technical support unit in agricultural engineering for projects run by the Ministry of Overseas Development and carries out a wide range of research and development activities.

Appropriate technologies developed by the Department often fall outside the usual range of commercial manufacturers. They include a simple hand-operated winnower for separating grain from chaff and groundnut kernels from their shells, a banana conveyor for carrying bananas from fields to boxing plants over difficult terrain in the Windward Islands, a simple fungicide applicator for banana fruit, a petrol-driven mini-thresher for various types of cereals which has been copied in many developing countries, a cotton stalk puller which is now being commercially introduced in Sudan and an animal tool bar which is now commercially manufactured by a British firm. Research has also been conducted on animal draught cultivation systems in the Gambia.

Staff	-	16 people (all full-time), 12 of whom are professionals
Budget	-	$69,000
Scale of activities in AT	-	5 man-months
Channels of technology diffusion	-	Through government agencies
Obstacles to technology diffusion	-	Problems of communication with potential manufacturers, extension services and farmers. Reluctance of farmers to accept risks of innovation
Publications	-	Overseas Department Bulletin, technical notes and reports on cultivation trials with oxdrawn implements in the Gambia.

OVERSEAS UNIT
TRANSPORT AND ROAD RESEARCH LABORATORY

Head of Unit: J. N. Bulman, DLC CEng MICE FInstHE

Old Wokingham Road
Crowthorne, Berkshire RG11 6AU
Tel : (03446) 31 31

Main activities

Research and development (70%)
Testing and evaluation of new equipment (10%)
Policy analysis and economic studies (5%)
Information and documentation (5%)

Main fields of concentration

Transportation
Road construction

Climatic/Geographic focus

Tropical rain forests and savannas
Arid and semi-arid regions
Mountainous regions

The Transport and Road Research Laboratory, a governmental research centre founded in 1933, set up in 1955 an Overseas Unit to carry out research on transportation problems in the developing countries and provide technical assistance. The Unit, which is linked with the Overseas Development Ministry has five affiliates abroad (Barbados, Ethiopia, Ghana, India and Kenya).

Its research programme focuses on rural transport planning, traffic and safety, road user economics, engineering geology, highway engineering and low-cost roads. This research, which is increasingly oriented towards the development of rural areas, is aimed at improving the decision-making process in the transportation field and helping in the design and execution of highway projects.

The Unit has developed an economic appraisal method for feeder roads, has studied the distribution and engineering properties of hitherto neglected natural road building materials, has carried out surveys of materials availability and developed land systems mapping and air photo interpretation techniques. It has also developed low-cost pavements and studied the road requirements of rural populations, traffic safety measures and road building in mountainous terrain.

Staff	-	50 people (all full-time) 47 of whom are professionals
Budget	-	$950,000
Scale of activities in AT	-	250 man-months
Channels of technology diffusion	-	Through the execution of projects and through advisory services, publications and training (activities sponsored by governmental and international agents)
Obstacles to technology diffusion	-	Not specified
Publications	-	Full list available upon request.

OXFAM

Director: Brian Walker

274 Banbury Road
Oxford OX2 7D 7
Tel : (0865) 5 67 77

Main activities

Financing relief and development projects
Educational programmes

Main fields of concentration

Public health
Agriculture
Infrastructures and services
Handicrafts and small industries
Housing
Sanitation

Climatic/Geographic focus

None in particular

Oxfam, founded in 1942, is a large private voluntary agency which funds relief and development projects (920 projects in 80 countries in the May 1976 - April 1977 period). It maintains field offices throughout the developing world and has sister organisations in the US, Canada and Australia. The main part of its budget comes from donations, and many of the people working for Oxfam are volunteers.

Its funding emphasis is placed upon high priority projects which require socially and technically appropriate solutions. Oxfam supports the application of AT in four ways: through the support of community development teams in rural areas and poor communities; through loans or grants to AT centres in developing countries; through its liaison and information activities for AT organisations in developed countries; and through its technical unit at Oxfam's headquarters which provides back-up services to the field operations.

Oxfam has undertaken a project with ITDG London to publish and promote manuals on various subjects for development workers overseas. Its Disasters Technology Unit in Oxford studies alternative methods for the building of low-cost emergency shelters and sanitation units, especially for areas where local materials are in short supply or unsuitable.

Staff	-	425 people (330 full time)
Budget	-	$10.3 million
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Mainly through projects and centres financed by Oxfam and through publications
Obstacles to technology diffusion	-	Cultural and social unacceptability, maintenance difficulties
Publications	-	Handbooks on hand pump maintenance and gradening for better nutrition. Other handbooks in preparation.

SIMPLE TECHNOLOGY DEVELOPMENT UNIT

Head of Unit: S. S. Wilson

Department of Engineering Science
Parks Road
University of Oxford
Oxford, Oxfordshire OX1 3PJ
Tel : (0865) 5 99 88

Main activities

Research and development
Testing and evaluation of new equipment
Technical feasibility studies

Main fields of concentration

Transportation
Muscular energy

Climatic/Geographic focus

None in particular

The Simple Technology Development Unit (STDU), a non-profit AT centre which is still in its formative stage, grew out of a number of projects in intermediate technology carried out by members of the University of Oxford's Departments of Engineering Science, Forestry and Medicine as well as its Institute of Commonwealth Studies.

The most advanced project is the Oxtrike, a two-passenger (or 150 kg. load) tricycle, which is a greatly improved version of the Asian rickshaw. The project was partly financed by Oxfam, and manufacturing of the Oxtrike is now beginning in India.

Several other types of pedal-powered equipment are currently at the design or prototype stage. One is a lightweight portable sawmill which can be operated by two men. Another is the 'Dynapod', a stationary pedal power unit which can be used for a wide variety of applications (winch, water pumping, etc.). Members of the Unit have also been working on improved Chinese wheelbarrows, bicycle trailers, and light animal-drawn carts.

Staff	-	Not yet applicable
Budget	-	Not yet applicable
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through publications and pilot projects
Obstacles to technology diffusion	-	Lack of financial support and imperfect state of the technology
Publications	-	Articles and technical reports.

THE SOIL ASSOCIATION

General Secretary: -

Walnut Tree Manor
Haughley
Stowmarket, Suffolk IP14 3RS
Tel : (044) 97 02 35

Main activities

Publications
Education and training

Main fields of concentration

Organic agriculture and husbandry
Energy savings
Biological pest control

Climatic/Geographic focus

None in particular

The Soil Association is an independent charity founded in 1956 whose aim is to encourage an ecological approach to the relationship between soil, plants, animals and man, and to promote organic husbandry as a viable alternative to modern energy-intensive agricultural methods. It has 40 affiliated local groups in the United Kingdom as well as in Canada, Australia and New Zealand. It is financed by membership fees as well as by donations and the sale of publications.

Staff	-	10 people (4 full-time)
Budget	-	$80,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the Association's own activities
Obstacles to technology diffusion	-	Attitude of political leaders, lack of funds, lack of channels for the diffusion of AT
Publications	-	Quarterly Review Occasional publications.

TROPICAL PRODUCTS INSTITUTE

Director: P. C. Spensley

56-62 Gray's Inn Road
London WC1X 8LU
Tel : 405 79 43

Main activities		Main fields of concentration
Research and development Testing and evaluation of new equipment Economic and technical feasibility studies	(80%)	Post harvest technologies Crop processing, storage, handling and marketing Agro-industries

Climatic/Geographic focus

Tropical and subtropical countries

The Tropical Products Institute (TPI) was established in 1894 and has been a part of the British Ministry of Overseas Development since 1964. Its function is to help the less developed countries derive greater benefits from their plant and animal resources. TPI specializes in the various scientific, technological and economic problems arising after harvest. Whil it does not concentrate exclusively on the types and levels of technology described as AT, it carries out a wide range of AT activities and is one of the world's largest contributors to AT.

TPI has developed among others small-scale methods for processing fish (drying, production of animal feed from fish waste), cereals (e.g. threshing and milling equipment), oilseeds, starchy roots and animal products (rural slaughterhouses, tanning of hides, etc.). It has also developed improved methods for distilling essential oil crops, for producing charcoal and for dyeing vegetable fibres, as well as low-cost techniques for producing building materials from waste celulosic products.

Staff	-	382 people (full-time equivalent), 238 of whom are professionals
Budget	-	$5.4 million
Scale of activities in AT	-	*240 man-months by professional staff*
Channels of technology diffusion	-	Own publications and scientific and technical press
Obstacles to technology diffusion	-	Limitations on availability of staff and funds
Publications	-	7 periodicals including the quarterly "Tropical Science"; *conference proceedings, rural technology* guides, crop and products digests, films and about one hundred reports.

ACCION INTERNATIONAL / AITEC

Executive Director: Dr. John C. Hammock

10 C Mount Auburn Street,
Cambridge, Massachusetts 02138
Tel : (617) 492 49 30

Main activities	Main fields of concentration
Design and implementation of AT transfers at the micro-level (30%)	AT software
Education and training (25%)	Small industry promotion
Research and development (10%)	Community goods
Influencing governmental and political decision-making (10%)	Credit and lending systems
	Alternative institutions
	Crop processing and conservation

Climatic/Geographic focus

Latin America

Accion International / AITEC is an independent non-profit centre which began from work undertaken in the slums of Venezuela in the early 1960's. It is funded by consulting fees, industry, foreign aid programmes and foundations. Its work carried out in several Latin American countries, focuses on community development, micro-business development, integrated rural development and municipal development.

It has developed mechanisms to provide credit and management assistance to micro-entrepreneurs in urban slums and rural areas, methodologies to assess rural needs, mechanisms to strengthen small farmers through intensified agricultural production, business training and venture capital for micro-entrepreneurs. It has also helped small-scale tree nurseries, as well as forestry and irrigation projects.

Accion International has set up branches in Costa Rica, Colombia and Brazil and is a member of PACT (Private Agencies Collaborating Together).

Staff	-	21 people (all full-time), 15 of whom are professionals
Budget	-	$560,000
Scale of activities in AT	-	204 man-months
Channels of technology diffusion	-	Through the group's own efforts and through international agencies, aid programmes and private voluntary assistance agencies
Obstacles to technology diffusion	-	Bureaucracy and lack of funds
Publications	-	Three reports on small business development in Brazil and Costa Rica.

ACORN COMMUNICATIONS

Co-directors: Dr. Elizabeth Hagens
Mr. Jim Laukes .

Governors State University
Park Forest South, Illinois 60466
Tel : (312) 534 50 00 ext. 2455

Main activities

Regular publications (40%)
Technology extension services (20%)
Information and documentation (20%)
Promotion of local technological traditions (10%)
Influencing governmental and political decision-making (10%)

Main fields of concentration

Nearly all fields of AT

Climatic/Geographic focus

Temperate regions
Arctic and cold regions
Suburban areas

Acorn is a communication network which started in 1976 as a project within the human environment planning programme of Governors State University. It is financed mostly by the University and by donations, and receives contributions in kind from a large number of volunteers and students.

Acorn has begun to collect a large library of regional information, organise a personnal referral system and produce media materials. It is moving into project consultation, notably in the field of greenhouse design and the development of local economic incentives. It is planning to make a major contribution to AT through 16 mm films, the commercialisation of research results in solar energy and assistance in the organisation of suburban AT demonstration projects.

Staff	-	Not specified
Budget	-	$100,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through universities, advertisements and the mass media
Obstacles to technology diffusion	-	Bureaucracy, inadequate legislation, and lack of competitiveness relative to modern technologies
Publications	-	"Acorn" newspaper.

AGRICULTURAL COOPERATIVE DEVELOPMENT INTERNATIONAL

President: Donald H. Thomas

1012 14th Street, N.W.
Washington D.C. 20005
Tel : (202) 638 46 61

Main activities

Technology extension services
Education and training

Main fields of concentration

AT software
Alternative institutions
Credit and lending systems

Climatic/Geographic focus

All less developed countries

The Agricultural Cooperative Development International (ACDI) was founded in 1962 by several major US agricultural cooperatives to work with the U.S. Agency for International Development (AID) in the establishment and improvement of farm supply, credit and marketing organisations, especially for farmer cooperatives in the developing countries.

ACDI has carried out long-term institution-building projects, training workshops, feasibility studies and consultations in many countries of Africa, Latin America (particularly in Guatemala) and Asia, nearly all under AID financing. While only indirectly involved with problems of on-farm production and only infrequently with processing, ACDI is constantly concerned with AT software, namely organisation, procedures, financial control, credit collection, decentralisation, training and other aspects of management.

It plans to continue on these lines with primary focus on co-operative organisations for small farmers, although larger farmers in the area may also be involved.

Staff	-	26 people (all full-time), 23 of whom are professionals
Budget	-	$1,500,000
Scale of activities in AT	-	Not relevant
Channels of technology diffusion	-	Through international aid programmes
Obstacles to technology diffusion	-	Operational cost of adequate management, lack of trust across class or tribal lines
Publications	-	Bi-monthly newsletter, annual report and occasional reports on projects, studies and workshops.

ALTERNATIVE SOURCES OF ENERGY

Director: Donald Marier

Route 2
P.O. Box 90A
Milaca, Minnesota 56353
Tel : (612) 983 68 92

Main activities

Regular publications

Main fields of concentration

Energy
Hydroponics
Aquaculture
Small industry promotion

Climatic/Geographic focus

None in particular

Alternative Sources of Energy (ASE), which was founded in 1971, is a non-profit educational and scientific organisation concerned with the development of AT. Particular emphasis is placed on technologies for energy, agriculture, transportation and communications which meet people's needs, are relatively simple to construct, operate and maintain, low in cost and environmentally appropriate. The major thrust of the organisation is to publicise and share practical applications of AT in order to promote some degree of energy independence.

Through the publication of Alternative Sources of Energy Magazine, which has a world-wide circulation, ASE endeavours to provide a communications network for the open exchange of ideas and information, to foster mutual aid in the development of skills and to encourage experiments in the development of AT.

Special issues of the magazine have been devoted among others to wind and water power, decentralised energy systems, the hydrogen economy and passive solar heating.

Staff	-	10 people (all full-time)
Budget	-	$100,000 ($50,000 in 1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Advertisement, mass media
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, lack of competitiveness relative to modern technologies, lack of funds
Publications	-	"Alternative Sources of Energy Magazine" (quarterly).

APPROPRIATE TECHNOLOGY GROUP

Director: Steve Blake

Route 1
Box 93-A
Oskaloosa, Kansas 66066
Tel : (913) 597 56 03, 364 24 43

Main activities

Research and development (80%)
Technology diffusion (20%)

Main fields of concentration

Wind energy
Water resources and energy
Small industry promotion

Climatic/Geographic focus

Windy areas

The Appropriate Technology Group (ATG) is an independent non-profit AT centre and consulting firm devoted to the development of wind energy resources. It was organised in 1972 by a group of engineers, designers and manufacturers from the wind energy industry in North America, and its mission is to develop hardware which can be made at the village level with labour-intensive methods and to devise methods for transferring these technologies to the less developed parts of the world.

ATG has participated in the development of a broad range of devices: simple sail windmills, Savonius rotors for pumping water, a wind turbine generator, and a synchronous inverter which allows a wind turbine to interface directly with the electrical grid. It has also been working on the software aspects of wind energy (e.g. site selection and evaluation for wind energy systems) and on the testing and evaluation of various types of equipment adaptable to village level construction. ATG's day-to-day activities are also directly concerned with the promotion of other types of AT (wood energy, organic gardening and low-energy living).

Staff	-	Not available
Budget	-	Not available
Scale of activities in AT	-	Not available
Channels of technology diffusion	-	Through direct communication with individuals working in the field
Obstacles to technology diffusion	-	Absence of established diffusion channels
Publications	-	Reports, bibliographies, construction manuals and technical notes dealing with wind energy.

APPROPRIATE TECHNOLOGY INTERNATIONAL

Director: Jordan D. Lewis

1709 N Street N.W.
Washington D.C. 20036
Tel : (202) 293 92 70

Main activities

Assistance to other AT institutions

Main fields of concentration

Nearly all fields related to AT

Climatic/Geographic focus

None in particular

Appropriate Technology International (AT International)was set up in 1977 in accordance with an Act of the U.S. Congress as a private, non-profit organisation funded primarily but not exclusively with public money. It is affiliated with the U.S. Agency for International Development. Its principal goal is to assist developing countries in strengthening their capacity to develop, adapt and use technologies appropriate to their economic and social circumstances. AT International will build on what already exists, and will seek to strengthen existing competent organisations (private and public), in order to meet the needs of the poor.

Staff	-	Not specified
Budget	-	Not specified
Scale of activities in AT	-	Too early to answer
Channels of technology diffusion	-	Support to other AT institutions
Obstacles to technology diffusion	-	Too early to answer
Publications	-	None as yet.

APPROPRIATE TECHNOLOGY RESEARCH

Directors: Dr. Derrick P. Grimmer
Mr. Charles D. Kolstad

1938 Hano Road
Santa Fe, New Mexico 87501
Tel : (505) 988 33 74

Main activities

Promotion of local technological traditions
Research and development
Policy analysis and economic studies
Technical feasibility studies
Technology diffusion

Main fields of concentration

Energy
Preventive medicine
Agricultural machinery
Domestic waste disposal

Climatic/Geographic focus

Temperate regions

Appropriate Technology Research (ATR) is a non-profit AT group of professional scientists established in 1976 by a scientist and an economist working at the Los Alamos Scientific Laboratory.

Its expertise and interests lie in the field of decentralised technologies applicable at the household and community level, and in particular in energy technology. Staff members have carried out a number of projects in different socio-cultural environments (Ghana, American Indian reservations) and technologies developed or studied by the group include vertical axis windmills, low-cost rural compost privies, solar greenhouses and home heating methods.

Staff	-	4 people (all part-time professionals)
Budget	-	$500
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the group's own efforts and through publications and the mass media
Obstacles to technology diffusion	-	Cultural and social unacceptability, reluctance to accept innovation, lack of competitiveness relative to modern technology
Publications	-	9 scientific and technical papers.

CALIFORNIA STATE OFFICE OF APPROPRIATE TECHNOLOGY

Director: Robert Judd

1530 10th Street
Sacramento, California 95814
Tel : (916) 445 18 03

Main activities

Information and publications (50%)
Pilot production (25%)
Influencing political decision-making (15%)
Research and development (10%)

Main fields of concentration

Energy savings
Solar energy
Waste waters
Housing
School system organisation

Climatic Geographic focus

None in particular

The California State Office of Appropriate Technology is a state agency created in 1976 by an executive order of Governor Edmund Brown Jr., with the encouragement of Sim van der Rym, the State Architect of California. Its aim is to assist and advise the Governor and to encourage state agencies to develop and implement less costly and less energy-intensive technologies and programmes in the areas of waste recycling and conversion, food supply, land use, building design, and energy and water conservation. Up to now the Office has focused on public information and education, institutional reforms and demonstration projects.

It has sponsored among others a solar technician training project, the Atlas project (a catalogue of resources supporting and encouraging local and regional self-reliance in the California Central Valley), alternative waste water treatment, and a drought-tolerant demonstration garden in urban Sacrament .

The Office plans to continue working with other state agencies and legislature to demonstrate AT applications and to make alternatives available to the public.

Staff	-	20 people (16 full-time), 18 of whom are professionals
Budget	-	$332,000
Scale of activities in AT	-	240 man-months
Channels of technology diffusion	-	Through government agencies and the Office's own efforts (exhibitions, demonstration units)
Obstacles to technology diffusion	-	Inadequate legislation, cultural and social unacceptability, lack of technical support
Publications	-	Technical reports, project information notes, bibliographies on AT.

CENTER FOR COMMUNITY ECONOMIC DEVELOPMENT

Executive Director: Deforest Brown

639 Massachusetts Ave., Suite 316
Cambridge, Massachusetts 02139
Tel : (617) 547 96 95

Main activities

Policy analysis and economic studies (90%)

Main fields of concentration

Credit and lending system
Investment decision-making tools for low-income community groups
Energy savings

Climatic/Geographic focus

Economically depressed urban and rural areas

The Center for Community Economic Development (CCED) is a private non-profit research and policy development organisation working to promote the concept of community-based economic development. Founded in 1969, it is affiliated with the Community Services Administration, a US federal agency concerned with the fight against poverty, and is directly funded by the Federal Government.

CCED's primary function is to conduct public policy research by examining the ongoing activities of institutions created and controlled by local residents (community development corporations, cooperatives, land trusts, etc.) to improve the socio-economic conditions in their community.

CCED has drafted a brief review of solar grain dryers and compost toilets used in the US, but is more involved in economic analyses and the software side of AT: type of legal structures for community development co-operations, housing development in low-income areas, proposals for new types of enterprises, energy audits, etc.

Staff	-	37 people (30 full-time), 27 of whom are professionals
Budget	-	$930,000 (1976: $551,000)
Scale of activities in AT	-	12 man-months
Channels of technology diffusion	-	Through publications and conferences
Obstacles to technology diffusion	-	Inadequate legislation, lack of competitiveness relative to traditional technologies, lack of funds, lack of technical support
Publications	-	Bimonthly newsletter More than 50 monographs and working papers.

CENTER FOR DEVELOPMENT TECHNOLOGY

Director: Robert P. Morgan

Washington University
P.O. Box 1106
St. Louis, Missouri 63130
Tel : (314) 889 54 91

Main activities

Research and development (30%)
Policy analysis and economic studies (20%)
Education (20%)
Information and documentation (10%)
Publications (10%)
Technical feasibility studies (10%)

Main fields of concentration

Energy
Scaling-down of industrial processes
Crop processing and conservation
Telecommunications, remote sensing
Modeling and simulation
Environmental impact analyses
Housing
Technology assessment

Climatic/Geographic focus

None in particular

The Center for Development Technology was set up in 1968 and is a part of the Department of Technology and Human Affairs of Washington University's School of Engineering and Applied Sciences. It grew out of its director's involvement with Volunteers in Technical Assistance (VITA) and is financed half by the U.S. Government and half by the University.

A lot of its work focuses on problems of science and technology for developing countries, but domestic problems are also heavily stressed. The Centre works closely with degree-granting programmes. Its involvement in AT has taken the form, among others, of technical reports and feasibility studies on such subjects as indigenous materials for construction, the use of tropical timber for housing, bamboo-reinforced foam composite roofing, the scaling-down of chemical processes and the utilisation of rice bran It is carrying out studies as part of the US preparations for UNCSTD (United Nations Conference on Science and Technology for Development) on AT for renewable resources utilisation and on the role of US universities in science and technology for development.

Staff	- 15 people (9 full-time) 12 of whom are professionals
Budget	- $250,000
Scale of activities in AT	- Not specified
Channels of technology diffusion	- Through technical reports
Obstacles to technology diffusion	- Lack of funds
Publications	- Over 100 technical reports and articles.

CENTER FOR THE INTEGRATION OF THE APPLIED SCIENCES

Co-Directors: William Olkowski
Helga Olkowski

1307 Acton Street
Berkeley, California 94706
Tel : (415) 524 84 04

Main activities

Information and documentation (20%)
Technology extension services (20%)
Research and development (20%)
Publications (10%)
Influencing governmental and political decision-making (10%)

Main fields of concentration

Bio-solar energy applications
Biological pest control
Cultivation techniques

Climatic/Geographic focus

Temperate and coastal regions
Arid and semi-arid regions

Dr. William Olkowski and Helga Olkowski helped to found a number of AT organisations in the San Francisco area since 1969. These organisations deal with (among others) urban food production, waste management and energy conservation. The best known is the Farallones Institute within which they conceived and developed the Integral Urban House, a public demonstration project. In 1977, they became co-directors of their own Center, for the Integration of the Applied Sciences, which is an independent non-profit institution affiliated with the John Muir Institute (743 Wilson Street, Napa, California 94558). The Center's activities focus on bio-solar energy applications, composting, raising insects for biological control and urban integrated pest management, a field in which the Olkowski's have been pioneers.

Staff	-	20 people (7 full-time) 7 of whom are professionals
Budget	-	$150,000 ($100,000 in 1976)
Scale of activities in AT	-	250 man-months
Channels of technology diffusion	-	Through publications
Obstacles to technology diffusion	-	Bureaucracy, inadequate legislation, reluctance to accept innovation
Publications	-	Numerous papers and reports, mostly on urban pest management.

CENTER FOR INTEGRATIVE STUDIES

Director: John McHale

Library Building
University of Houston
Houston, Texas 77004
Tel : (713) 749 11 21

Main activities

Information and documentation (33%)
Occasional publications (33%)
Policy analysis and economic studies (33%)

Main fields of concentration

Energy analysis
Global ecology
Basic human needs
Future studies

Climatic/Geographic focus

Global perspective

The Center for Integrative Studies was established in 1968 within the School of Advanced Technology at the State University of New York in Binghampton under the directorship of John McHale, to carry forward the work initiated at World Resources Inventory of Southern Illinois University. It later moved with Dr. McHale to the University of Houston.

The Center's activities and studies focus on world resources and technologies, the impacts of specific developments on different social sectors; emerging human needs and how they might be defined at the global, regional and local levels. The Center is not directly involved in developing AT as such, but its general analysis studies are directly concerned with the implications and possibilities of AT within the context of overall development.

Staff	-	8 people (½ full-time), 7 of whom are professionals
Budget	-	$70,000 ($50,000 in 1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Not applicable
Obstacles to technology diffusion	-	Not applicable
Publications	-	Numerous papers, articles and book chapters.

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

Executive Secretary: Michael J. Lejeune

The World Bank
1818 H Street, N.W.
Washington, D.C. 20433
Tel : (202) 477 35 92

Main activities

Financing research and training activities of other institutions

Main fields of concentration

Agriculture

Climatic/Geographic focus

Rural areas of developing countries

The Consultative Group on International Agricultural Research (CGIAR) is an international consortium established in 1971 and sponsored by the Food and Agriculture Organisation of the United Nations (FAO), the World Bank and the United Nations Development Programme (UNDP). Its aim is to help increase food production in developing countries through research programmes and the training of scientists. In addition to its three sponsors, the Group has 18 donor countries, 3 foundations, 3 regional development banks, the Commission of the European Communities (CEC) and the International Development Research Centre (IDRC).

Research programmes supported and coordinated by the Group through the financial contributions of its members now cover the major crops and food animals of the developing world. These programmes are carried out by 11 international research centres, several of which are represented in the present Directory (International Rice Research Institute, International Maize and Wheat Improvement Centre, International Institute of Tropical Agriculture, International Potato Center, International Crops Research Institute for the Semi-Arid Tropics, International Livestock Center for Africa and the International Centre for Agricultural Research in the Dry Areas). Most of these research programmes have a strong AT focus, and many of them are oriented specifically to the small farmers.

Staff	-	Not specified
Budget	-	$64 million in 1976
Scale of activities in AT	-	Not applicable
Channels of technology diffusion	-	Not applicable
Obstacles to technology diffusion	-	Not applicable
Publications	-	Technical reports, feasibility studies.

CONTROL DATA CORPORATION
AGRICULTURAL DEVELOPMENT CENTER

General Manager: P. J. Gorman

8100 34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440
Tel : (612) 853 44 12

Head of European liaison office: B. C. Imbert,
Vice President

Control Data Worldtech, Inc.
125 *Avenue des Champs Elysées*
75008 Paris, France
Tel : (01) 720 23 72

Main activities

Funding of research and development
Collection and dissemination of technologies
Packaging of technologies
Training and consulting services

Main fields of concentration

Small-scale farming
Food processing
AT data bank (energy, industry and agriculture)

Climatic/Geographic focus

Temperate, arid and semi-arid regions
Tropical regions

Control Data Corporation (CDC) is one of the world's largest computer manufacturers, with an annual turnover in 1977 of over $2.3 billion. Its Agricultural Development Center was established in 1978 as an extension of its service activities in the field of technology transfer, namely Technotec (a world-wide accessible technology data base) and Worldtech (a network of partners and affiliates co-operating in technology collection, dissemination, education and consulting services).

The mission of the Agricultural Development Center is to encourage research and development in appropriate technologies, and promote the implementation and diffusion of these and other AT's. It collects and distributes knowledge relating to small-scale farming, and organises it in packages for the optimum use of land, equipment, labour and capital in each specific environment. It also develops training materials around specific technology packages and will perform training services around the world through the Technotech data base and the *PLATO* computer-based educational technology.

Staff	-	25 full-time professionals and consultants
Budget	-	Not available
Scale of activities in AT	-	Approximately 100 man-months
Channels of technology diffusion	-	CDC's Technotec and Worldtech computer and telex networks
Obstacles to technology diffusion	-	Lack of interest from private industry, and relative underdevelopment of computer technology used for training and information purposes
Publications	-	Several in preparation.

CORNELL UNIVERSITY ENERGY PROGRAMS

Director: Dr. Donald R. Price

Riley-Robb Hall
Cornell University
Ithaca, N.Y. 14853
Tel : (607) 256 77 33

Main activities

Research and development (40%)
Information and documentation (20%)
Policy analysis and economic studies (10%)
Education and training (10%)
Technology extension (10%)
Publications (10%)

Main fields of concentration

Energy
Housing
Environmental problems

Climatic/Geographic focus

Coastal regions
Cold and arctic regions
Northeastern region of the United States

Cornell University Energy Programme was set up in 1977 within Cornell University to coordinate research, teaching and extension activities related to energy. Technologies developed in the framework of these activities include a solar greenhouse system (the greenhouse itself is as a collector, and excess heat is stored in gravel beds), the direct conversion of wind energy to hot water for a dairy centre, the production of methane from animal wastes and crop residues, equipment for energy conservation in a dairy centre which reduces hot water requirement by 75% and detergent use by 85%, and a producer gas generator for heavy-duty vehicles. A five-year project is currently under way to promote energy self-sufficiency on individual farms, and work is being done on insulation requirements for homes and on the design of heating systems.

Staff	-	150 people (30 full-time), 120 of whom are professionals
Budget	-	$750,000 (not including salaries)
Scale of activities in AT	-	400 man-months
Channels of technology diffusion	-	Mainly through the university
Obstacles to technology diffusion	-	Cultural and social unacceptability, reluctance to accept innovation, lack of competitiveness relative to modern technology
Publications	-	Over 80 articles, technical reports and working papers.

DEPARTMENT OF FISHERIES AND ALLIED AQUACULTURES AND INTERNATIONAL CENTER FOR AQUACULTURE

Director: Dr. E. W. Shell

Auburn University
Auburn, Alabama 36830
Tel : (205) 826 47 86

Main activities

Technology extension services
Publications
Research and development
Technology diffusion
Pilot production
Education and training

Main fields of concentration

Fisheries
Aquaculture
Water resources

Climatic/Geographic focus

Tropical rain forests and savannas
Temperate regions

A formal programme in fisheries research and management started in 1933 at Auburn University and became the Department of Fisheries and Allied Aquacultures (FAA) in 1970. At the same time, the International Center for Aquaculture (ICA) was established as an associated institution. Research at FAA is directed to fish spawning and reproduction, polyculture (two or more species growing together), fish breeding, the study of parasites and diseases, fish nutrition, intensive fish cultures and the relationship between water chemistry and aquatic plants. Related research is conducted on aquatic ecology, rivers and reservoirs, fish systematics and ecology. Recent research on minimum input aquaculture and exotic fish species for food have given promising results.

ICA assists developing countries in increasing their capabilities to produce adequate amounts of high quality protein from fish, shrimps and other aquatic organisms. It has participated in the design and development of several aquaculture research stations (Colombia, Honduras, El Salvador, Philippines) and of a commercial fish production facility with a model fish farm in Nigeria. FAA and ICA are one of the largest pond research stations in the world (80 hectares) and train students from many developing countries.

Staff	-	90 people (60 full-time), 70 of whom are professionals
Budget	-	$2,300,000
Scale of activities in AT	-	840 man-months
Channels of technology diffusion	-	Through the Centre's own activities and international aid programmes
Obstacles to technology diffusion	-	Lack of funds
Publications	-	Numerous papers, articles and reports.

EARTH METABOLIC DESIGN INC.

Directors: Howard Brown
Medard Gabel

P.O. Box 2016
Yale Station
New Haven, Connecticut 06520
Tel : (203) 776 49 21

Main activities

Information and documentation
Research and development
Education and training
Publications
Commercial production

Main fields of concentration

Energy
Water
Agriculture and forestry
Aquaculture
Housing
AT software

Climatic/Geographic focus

None in particular

Earth Metabolic Design Inc. (EMD) is an independent non-profit AT centre and consulting firm founded in 1970 in co-operation with R. Buckminster Fuller's World Resources Inventory, in order to identify problems related to the world resource shortages and the environment. It is funded through various sources, including government, foundations, and tuition fees from its seminars.

EMD has developed planning methods for deploying environmentally appropriate technologies on a larger scale, as well as policy and planning programmes for decentralised renewable energy systems. It holds an annual World Game Workshop and provides regional services for the public, professionals and decision makers on appropriate and renewable technologies.

Staff	-	6 people (2 full-time)
Budget	-	$60,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through publications, advisory work, workshops and international and governmental agencies
Obstacles to technology diffusion	-	Bureaucracy, cultural and social unacceptability and lack of information
Publications	-	Books, reports and other materials on AT software.

ECOLOGY ACTION OF THE MIDPENINSULA

Director of Agricultural Research: John Jeavons

2225 El Camino Real
Palo Alto, California 94306
Tel : (415) 328 67 52

Main activities

Agricultural research
Publications
Educational activities

Main fields of concentration

Manual agricultural tools
Bio-intensive cultivation techniques
Small-scale farming systems

Climatic/Geographic focus

None in particular

Ecology Action of the Midpeninsula began in 1971 by recycling glass and metal wastes. This highly successful programme was turned over to the city of Palo Alto to be run as a city service. In 1972 Ecology Action began a research and community garden to test the yields of the biodynamic/French intensive method of horticulture.

This method can significantly increase the yields of vegetables, soybeans and wheat as compared with the present mechanised agricultural techniques used in the United States. Current research indicates that it may be possible soon to grow an entire balanced diet on 1/4 to 1/20th of the area required by present commercial agricultural techniques. The method has a low start-up cost, does not require complicated machinery or expensive chemical fertilizers, uses much less water and nitrogen fertilizer and may provide a self-sufficient livelihood in areas of high unemployment.

Ecology Action would like to conduct testing programmes in other areas of the world and has already received requests for information and consultation from several countries.

It has also developed a few novel gardening tools, runs a garden supply store and offers classes on mini-agriculture.

Staff	-	Varies from 4 to 15 depending on the season and the level of funding
Budget	-	$75,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the Centre's own activities, correspondence, etc.
Obstacles to technology diffusion	-	Existing biases against mini-agriculture and biological agriculture in favour of large-scale chemical food production
Publications	-	Primer on the biodynamic/French method, research reports, summaries, workshop proceedings.

ECOTOPE GROUP

Director: -

2332 East Madison
Seattle, Washington 98112
Tel : (206) 322 37 53

Main activities

Research and development (70%)
Information and documentation
Technical feasibility studies

Main fields of concentration

Energy (solar, energy savings, methane)
Solar greenhouses
Building materials
Aquaculture
Domestic waste disposal

Climatic/Geographic focus

Coastal regions

The Ecotope Group is an independent non-profit AT centre active since 1974 in the demonstration and development of renewable energy and conservation technologies. Its activities are funded mainly by the US Government and state governments through various agencies. Its activities focus on the needs and constraints of the Pacific Northwest where passive solar heating is much more suitable than active solar systems.

Its current research emphasis is on solar greenhouses. Several demonstration greenhouses are either operational or in the development phase. It has designed a unique solar greenhouse, integrating a parabolic north reflector wall with a fish/thermal storage tank and space for plants. The first harvest of this aquaculture system began early in 1978.

Ecotope also has a full-scale anaerobic fermentation project which is producing fuel gas from cow manure. A 100,000 gallon anaerobic digester has been constructed and began operation in 1977. The Ecotope Group also has educational activities, including training sessions and workshops in which solar domestic water heaters (thermosyphon flat plate type) are built by the participants.

Staff	- 15 people (14 on a full-time basis), all of whom are professionals
Budget	- $200,000
Scale of activities in AT	- 75 man-months
Channels of technology diffusion	- Own efforts (workshops, seminars, reports)
Obstacles to technology diffusion	- All those listed in OECD questionnaire (Question No. 20)
Publications	- Not specified.

ENVIRONMENTAL STUDIES SECTION OF THE INTERNATIONAL STUDIES ASSOCIATION

Director: Kenneth A. Dahlberg

Department of Political Science
Western Michigan University
Kalamazoo, Michigan, 49008
Tel : (616) 383 18 86

Main activities

Publications (50%)
Policy analysis and economic studies (25%)
Influencing political decision-making (15%)

Main fields of concentration

Energy and water policy
Alternative institutions
Global resource problems

Climatic/Geographic focus

None in particular

The Environmental Studies Section (ESS) is a branch of the International Studies Association (ISA) based in Pittsburgh University, Pennsylvania, and is affiliated with the Department of Political Science of Western Michigan University. It was created in 1974 to deal with global environmental problems. It encourages research on the interactions between natural and human systems, and seeks to trace how these interactions are modified by political, institutional and cultural differences.

The ESS holds panels on a variety of environmentally-related topics at ISA meetings, including several on AT. In the future it hopes to establish a task force to explore how AT may link with and reinforce attempts to build "conserver societies".

Staff	-	1 part-time professional
Budget	-	$250
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through a newsletter and the exchange of scholarly papers
Obstacles to technology diffusion	-	Structure of institutional systems
Publications	-	Newsletter (3 times a year) and descriptive directory of R&D centres working on AT in agriculture.

THE FARALLONES INSTITUTE

Director: Sim van der Ryn

Rural centre:
15290 Coleman Valley Road
Occidental, California 95465
Tel : (707) 874 30 60

Integrated urban house:
1516 5th Street
Berkeley, California 94710
Tel : (415) 525 11 50

Main activities

Research and development
Technology extension and consulting
Testing and evaluation of new equipment
Technical feasibility studies
Education and training
Information and documentation
Promotion of local technological traditions

Main fields of concentration

Energy
Water
Agriculture
Housing

Climatic/Geographic focus

Temperate regions

The Farallones Institute is an independent non-profit community of scientists, engineers, designers, biologists and craftspeople dedicated to evolving a society more in balance with natural systems. It was set up in 1969 and is financed by various sources, including consulting fees, membership fees and donations.

It operates two centres for research, education and demonstration of energy-conserving technologies appropriate to urban and rural settings. Each centre is a model of holistic design where human needs and the natural environment are integrated with ecological integrity. They demonstrate the use of AT for intensive food production, on-site waste recycling, grey water recovery and the application of solar energy for heating and cooking.

The Institute sponsors research programmes on solar home heating systems, solar greenhouse applications, urban aquaculture, biological pest management and the small-scale manufacturing of architectural clay products. Its integrated urban house in Berkeley is an attempt to design and live in a model 'self-sustaining' house in a mixed industrial/residential area.

Staff	-	12 people
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through demonstration units, educational activities and publications
Obstacles to technology diffusion	-	Reluctance to accept innovation and lack of reliability
Publications	-	Annual report and several technical papers and reports.

THE FARM

Spiritual Leader: Stephen Gaskin

156 Drakes Lane
Summertown, Tennessee 38483

Main activities

Publications
Commercial production
Technology extension and diffusion
Education and training

Main fields of concentration

Alternative institutions and life styles
Primary health care
Solar energy
Cottage industries
Organic agriculture

Climatic/Geographic focus

None in particular

The Farm is a community of 1200 people living on a 1750 acre farm in Tennessee. It was set up in 1971, and its origins go back to Stephen Gaskin's teaching in the hippie community of San Francisco's Haight Ashbury district. Its members share a common spiritual vision of the world and a commitment to feed the hungry, shelter the homeless, heal the sick and share their knowledge with others.

The Farm has 17 sister Farms and City Centres in the United States and around the world. It has developed a low-cost primary health care delivery system which grew out of its experience in midwifery (cost of one childbirth: $15), operates a soybean-oriented cottage food industry (soy-flour, texturized vegetable protein, etc.), runs a construction company (log houses incorporating solar energy, use of recycled construction materials), has a book publishing company and a printshop, operates its own state-approved school system and created PLENTY, a non-profit charitable relief organisation. PLENTY volunteers have been working in primary health care in Bangladesh and in reconstruction in Guatemala after the 1976 earthquake.

Staff	-	No 'staff' in the conventional sense, but over 1200 members
Budget	-	$1 million
Scale of activities in AT	-	Undetermined
Channels of technology diffusion	-	Through demonstration of alternative life styles and institutions, publications and volunteer work
Obstacles to technology diffusion	-	Not specified
Publications	-	6 books (over 1 million copies sold) on midwifery, birth control, vegetarian cooking, citizen-band radio and philosophy.

FLORIDA SOLAR ENERGY CENTER

Director: Dr. David L. Block

300 State Road 401
Cape Canaveral, Florida 32920
Tel : (305) 783 03 00

Main activities

Testing and evaluation of new equipment (35%)
Research and development (25%)
Promotion of local technological traditions (8%)
Occasional publications (8%)

Main fields of concentration

Solar energy

Climatic/Geographic focus

None in particular

The Florida Solar Energy Center (FSEC) is a governmental centre established in 1974 by an Act of the Florida State legislature. It is affiliated with the Florida Technological University and is entirely financed by the Florida State Government. Its objectives are to advance research and development in solar energy, to carry out demonstration projects, to provide educational services in solar energy, to offer technical assistance to state agencies in the development of solar energy information and standards, and to develop and disseminate information.

In 1976 the Center was given specific responsibility by the legislature to develop standards for solar energy components and systems and to carry out such tests upon request. Along with this activity, the Center also provides technical advice to industry.

Staff	-	45 people (42 full-time), 25 of whom are professionals
Budget	-	$1,200,000
Scale of activities in AT	-	540 man-months
Channels of technology diffusion	-	Through state government agencies
Obstacles to technology diffusion	-	Not specified
Publications	-	Not specified.

THE FRIENDS OF APPROPRIATE TECHNOLOGY

Contact: Mary Ann Mackenzie

c/o Community Services Administration
1200, 19th Street N.W., Room 300
Washington, D.C. 20506
Tel : (202) 254 50 47

Main activities

Seminars and discussion groups

Main fields of concentration

All fields of AT

Climatic/Geographic focus

None in particular

The Friends of Appropriate Technology (FAT) is an informal non-profit group of over 200 people working in the Washington, D.C. area who share a common interest in various aspects of AT both for industrialised and developing countries.

FAT's main mode of operation is through informal luncheon meetings which bring together FAT members and AT specialists or generalists from all parts of the world for panel discussions, audio-visual presentations and general exchange of experience.

Staff	-	No permanent staff
Budget	-	No budget
Scale of activities in AT	-	*A few hours per month*
Channels of technology diffusion	-	Through exchange of experiences (seminars, panels conferences, etc.).
Obstacles to technology diffusion	-	None
Publications	-	*None.*

GARDEN WAY LABORATORIES

Contact: Sally Nesbitt

P.O. Box 66
Charlotte, Vermont 05445
Tel : (802) 425 21 47

Main activities

Publications
Mail orders

Main fields of concentration

Wood stoves
Solar greenhouses

Climatic/Geographic focus

Temperate regions

Garden Way is a mail order marketing company which has designed a solar heated greenhouse. It no longer manufactures or distributes components of alternative energy systems, but offers assistance through publications from Garden Way Publishing. Its mail order catalogue carries a complete line of woodstoves, wood combination furnaces and related products and it publishes a number of do-it-yourself manuals on low-cost energy sources for the home (solar energy, wind energy) and greenhouse construction.

Staff	-	Not specified
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Catalogue
Obstacles to technology diffusion	-	Not specified
Publications	-	Reports, manuals and blueprints on alternative energy sources and housing.

GENESIS HOUSING AND COMMUNITY DEVELOPMENT CORPORATION

Director: Beth Christmas

P.O. Box 715
Metter, Georgia 30439
Tel : (912) 685 57 67

Main activities

Technical assistance and counseling
Education and training
Research and development

Main fields of concentration

Low-cost housing
Community development
Alternative institutions
Credit and lending systems
Public services
Energy savings

Climatic/Geographic focus

None in particular

Genesis is a private non-profit corporation founded in 1973 whose mission is to provide housing opportunities for low-income families and promote community development. It was initially funded by Mr. Jimmy Carter, the former Governor of Georgia, and is currently also supported by U.S. federal agencies (e.g. Department of Housing and Urban Development), church organisations and the Community Services Administration with which it is affiliated.

It operates in eight rural countries of Georgia and its work focuses on six types of activities: counseling services, self-help housing, experimentation with alternative house building methods, non-profit real estate brokerage and management, technical assistance for community development, and the advocacy of better services for low-income groups.

Staff	-	8 people (6 full-time), 6 of whom are professionals
Budget	-	$100,000 ($50,000 in 1976)
Scale of activities in AT	-	96 man-months
Channels of technology diffusion	-	Through government agencies and the organisation's day-to-day activities
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, inadequate legislation, reluctance to accept innovation, lack of competitiveness relative to modern technology
Publications	-	Not available.

INSTITUTE FOR LOCAL SELF-RELIANCE

Director: Neil Seldman

1717, 18th Street N.W.
Washington, D.C. 20009
Tel : (202) 232 41 08

Main activities

Policy analysis and economic studies
Technical feasibility studies
Influencing governmental and political decision-making
Publications
Information and documentation

Main fields of concentration

Energy savings and solar energy
Hydroponics
Community goods
Urbanism
Credit and lending systems
Alternative institutions

Climatic/Geographic focus

Urban areas

The Institute for Local Self-Reliance (ILSR) is an independent non-profit centre established in 1974 to investigate the technical feasibility of community self-reliance in high density urban areas and to examine the implications of such decentralisation. Its work is financed by foundation grants, the sale of literature and the provision of technical consultancy services.

Self-reliance is approached from many directions: basic research, demonstration models of new institutions, new technologies and small-scale production systems, development of educational materials and the dissemination of information. ILSR provides technical assistance to municipalities and community organisations in its areas of expertise which include waste management, municipal finance, urban energy, urban food production and community housing. Among its recent achievements are a roof-top greenhouse for low-income apartment houses, an analysis of urban energy consumption patterns in a large city (Newark, N.J.), a study of alternative financial systems and assistance in the creation of a centre for energy conservation and solar energy development (Washington, D.C.).

Staff	-	10 people (all full-time), 7 of whom are professionals
Budget	-	$320,000 ($180,000 in 1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the Institute's own activities, advertisements and the mass media
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, lack of funds
Publications	-	Bi-monthly newsletter, a book on neighbourhood power and working papers on urban agriculture, solar energy, neighbourhood development, finance and waste utilisation.

INTER-AMERICAN DEVELOPMENT BANK
COMMITTEE FOR THE APPLICATION OF INTERMEDIATE TECHNOLOGY

President of the IDB: Antonio Ortiz Mena
Committee Chairman: Guillermo Moore

808 17th Street N.W.
Washington, D.C. 20057
Tel : (202) 634 85 28

Main activities

Publications
Policy analysis and economic studies
Promotion of local technologies

Main fields of concentration

Irrigation
Agriculture
Roads
Small industry promotion

Climatic/Geographic focus

None in particular

The Committee for the Application of Intermediate Technology was established in 1976 in order to provide information and guidance to the various divisions and departments (project analysis, operations, economic and social development) of the Inter-American Development Bank (IDB) on the utilisation of labour-intensive and light capital technologies in projects considered by the Bank for financing.

The Committee advises the appropriate Bank divisions on the prospects for the use of intermediate technologies and establishes for that purpose the criteria to be considered in analysing loans and/or technical co-operation projects. It also disseminates information on the availability of AT in the various sectors of IDB's activities to all IDB units working on project evaluation.

The Committee acts as a liaison and coordination unit with other international agencies on the application of AT for developing countries.

Staff	-	3 permanent committee members
Budget	-	Included in IDB's overall budget
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through IDB's loans and technical co-operation projects
Obstacles to technology diffusion	-	Not applicable
Publications	-	Progress reports on the application of intermediate and light capital technologies in IDB.

INTERMEDIATE TECHNOLOGY

Director: Peter Gillingham

556 Santa Cruz Avenue
Menlo Park, California 94025
Tel : (415) 328 17 30

Main activities

Regular publications (30%)
Information and documentation (25%)
Research and development (10%)
Occasional publications (10%)
Advice to individuals

Main fields of concentration

Small industry promotion
Textiles and fabrics

Climatic/Geographic focus

None in particular

Intermediate Technology (IT) is an independent non-profit appropriate technology centre founded in 1976 by Peter Gillingham. It has been working closely with the late E. F. Schumacher, founder of the Intermediate Technology Development Group in London and sponsored his lecture tours in the United States. Its main sources of finance are membership fees and sales of publications.

It acts as a resource centre, information catalyst and clearing house for appropriate technology. It has responded to some 10 000 requests for information from readers of Schumacher's book Small is Beautiful. It has not yet developed any new technologies, but is currently contemplating the development, redesign and resurrection of small-scale technologies for the production of textiles, with a specific focus on natural fibres such as wool.

Staff	-	4 people (all full-time), 3 of whom are professionals
Budget	-	$50,000
Scale of activities in AT	-	45 man-months
Channels of technology diffusion	-	No diffusion until now
Obstacles to technology diffusion	-	Inadequate legislation, cultural and social unacceptability and lack of competitiveness relative to modern technologies
Publications	-	Intermediate Technology Report (quarterly), Appropriate Agriculture.

INTERMEDIATE TECHNOLOGY - PURDUE

Director: Ronald G. Barile

c/o Ronald Barile
School of Chemical Engineering
Purdue University
West Lafayette, Indiana 47907
Tel : (317) 749 26 02

Main activities

Research and development (50%)
Technical feasibility studies (40%)
Technology extension services (10%)

Main fields of concentration

Solar and alcohol energy
Alcohol and ammonia production
Scaling-down of industrial chemical process

Climatic/Geographic focus

None in particular

Intermediate Technology Purdue started in 1975 as a discussion group on technology and society at Purdue University. It evolved into a student-faculty club which serves as a forum for the interchange of ideas on AT, and several faculty members from different disciplines have joined together to seek funds and undertake development projects in AT.

Two projects are currently being conducted. One is the development of alcohol production through the fermentation of grains and agricultural wastes and the study of practical applications for this new fuel (engines, stoves, etc.). The other is the production of ammonia from agricultural and forest wastes.

Staff	-	14 people (all part-time), 9 of whom are professionals
Budget	-	Around $20,000 (indicative figure)
Scale of activities in AT	-	15 man-months
Channels of technology diffusion	-	Through national and international agencies and through the university
Obstacles to technology diffusion	-	Lack of funds; lack of encouragement to do such work in the university
Publications	-	None.

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

President: Robert S. McNamara
AT contact: Charles Weiss

1818 H Street, N.W.
Washington, D.C. 20433
Tel : (202) 477 12 34

Main activities

Loans for development projects

Main fields of concentration

Agricultural and rural development
Water and sanitation
Housing
Forestry and rural energy
Industry
Infrastructures and services

Climatic/Geographic focus

None in particular

The International Bank for Reconstruction and Development (IBRD, more generally known as The World Bank) is the world's largest development bank. It was set up in 1945 within the United Nations system and currently has 132 member countries. Annual lending (including investments by the International Finance Corporation and soft-term loans by the International Development Association, its two subsidiaries) currently amounts to $8.75 billion. Most of the money for these projects is raised on the international capital market.

In recent years, an increasing proportion of its projects have focused on the poorest income groups both in rural and urban areas. Most of these 'new style' projects involve a substantial AT component: labour-intensive methods in road construction, alternative low-cost sewerage systems, self-help housing and community development, intermediate agricultural *mechanisation, non-formal education, small-scale urban and rural industry* or low-cost water pumping. The Bank has also been heavily involved in the promotion of appropriate agricultural research through its participation in the Consultative Group on International Agricultural Research (CGIAR). In fact if not in name, the World Bank has become the biggest promoter of AT in the world, while being at the same time a major agent in the transfer of modern capital-intensive technologies to the developing countries.

Professional Staff	-	2290 people (1978 fiscal year)
Administrative Budget	-	$240 million in 1978 fiscal year (activities of IBRD and IDA)
Scale of activities in AT	-	Undetermined (included in overall activities)
Channels of technology diffusion	-	Mainly through development projects and research seminars
Obstacles to technology diffusion	-	Experimental nature of AT and organisational problems
Publications	-	Several general reports, technical reports, research reports, sector studies and working papers.

LIVING SYSTEMS

Director: Jon Hammond

P.O. Box 170
Route 1
Winters, California 95694
Tel : (916) 753 30 33

Main activities

Research and development (60%)
Building design (40%)

Main fields of concentration

Energy savings
Solar energy
Architecture and urbanism

Climatic/Geographic focus

Temperate and coastal regions

Living Systems started in 1974 as a group of graduate students and instructors working on an energy conservation building code for the city of Davis in California. It grew into an independent research and design firm financed by the state government and consulting fees.

It specialises in the practical applications of passive solar energy systems and the utilisation of energy conserving techniques, making use of the skills and experience of its staff in architecture, landscape architecture, planning, engineering and computer programming. It has designed natural heating, cooling and lighting systems for commercial buildings (Bank of America in Palo Alto, Office of the State Architect in Sacramento, Community Center of the City of Winters) and residential structures in the Davis area. Research is currently under way on thermal storage, energy use patterns, the testing of solar components and the development of portable solar water heaters.

Staff	-	8 - 10 people (6 full-time), 8 of whom are professionals
Budget	-	Not specified
Scale of activities in AT	-	100 man-months
Channels of technology diffusion	-	Through publications
Obstacles to technology diffusion	-	Cultural and social unacceptability (sometimes); lack of competitiveness due to the cheapness of fossil fuels in the U.S.
Publications	-	Building code for the city of Davis and technical reports.

MEALS FOR MILLIONS FOUNDATION

Director: Kenneth Shewmon

1800 Olympic Boulevard
P.O. Box 680
Santa Monica, California 90406
Tel : (213) 829 53 37

Main activities

Technology extension and diffusion (35%)
Pilot production (25%)
Education and training (25%)
Research and development (5%)
Testing and evaluation of new equipment (5%)
Publications (5%)

Main fields of concentration

Nutrition
Crop processing and conservation
Food processing and preservation

Climatic/Geographic focus

None in particular

The Meals for Millions Foundation (MFM), established in 1946, is an independent operating foundation dedicated to the improvement of nutrition in the developing countries. It is funded by donations, churches, other foundations and governments.

Its activities in AT, which started in 1973, have focused both on the hardware and software aspects of nutrition. It has developed a low-cost extrusion cooking machine which can be manufactured in the developing countries for less than $10,000 and and inexpensive ($50) village-level texturizer to make cooked foods from cereals, legumes or seed flour. It has also developed simple nutrition education techniques, and more recently, a complete training programme in low-cost food processing and preservation. The Foundation is running two nutrition projects, one in Korea, the other in Ecuador.

Staff	-	25 people (23 full-time), 8 of whom are professionals
Budget	-	$900,000
Scale of activities in AT	-	20 man-months
Channels of technology diffusion	-	Through international agencies and aid programmes, as well as voluntary agencies
Obstacles to technology diffusion	-	Attitude of political leaders, lack of technical support and questionable economic feasibility
Publications	-	Book on nutrition education and technical manual on village texturizer.

META PUBLICATIONS

Directors: Daniel A. Huntington
Sarah J. Huntington

Old Cascade Road
P.O. Box 128
Marblemount, Washington 98267
Tel : (206) 873 43 03

Main activities

Sale of publications (80%)
Research and development (20%)

Main fields of concentration

All fields related to AT

Climatic/Geographic focus

None in particular

META Publications is an independent non-profit AT mail-order supply house founded in 1975. It is entirely funded by the sale of publications which cover nearly all areas falling under the heading of AT.

It now mails publications to individuals, working groups, institutions and libraries in all parts of the world. A significant amount of its work is spent on digging out new and relatively unknown publications and making them available for purchase. Future plans call for reprinting out-of-print technical works that have been discovered to be excellent sources for current AT activities. A fully annotated descriptive catalogue is now in process. META Publications is in contact with virtually all the publishing AT groups in the United States and other countries.

Staff	-	2 people (full-time)
Budget	-	Not specified
Scale of activities in AT	-	24 man-months
Channels of technology diffusion	-	Through the sale of AT publications
Obstacles to technology diffusion	-	Lack of funds and lack of time
Publications	-	Descriptive catalogue to be issued in early 1979.

NATIONAL ACADEMY OF SCIENCES
BOARD ON SCIENCE AND TECHNOLOGY FOR INTERNATIONAL DEVELOPMENT

Director: Dr. Victor Rabinowitch

National Academy of Sciences
2101 Constitution Avenue
Washington, D.C. 20014
Tel : (202) 389 65 21

Main activities

Publications

Main fields of concentration

Energy
Nutrition
Waste waters
New crops and plants
Forestry

Climatic/Geographic focus

None in particular, but not usually temperate regions

The Board on Science and Technology for International Development (BOSTID) of the National Academy of Sciences (NAS) has been involved since 1965 in examining the relationships between science and technology and economic and social development. It has addressed itself to issues such as the kinds of science and technology appropriate to specific developing countries, the demand for scientific and technical manpower, the types of organisations, institutions and policies which are needed in the development process, and the possible contribution of U.S. scientific and technological resources.

Although much of its work is not strictly speaking directly related to AT, many of BOSTID's reports and state-of-the-art reviews aimed at influencing technical decision-making in developing countries and in technical assistance agencies have a direct bearing upon the concerns of the AT community. Studies have been conducted among others on the application of ferro-cement technology, the promises of under-exploited tropical plants, post-harvest problems, alternative sources of energy, remote-sensing, water resources, pest control and more general problems relating to science policy and technology policy.

Staff	-	30 people (all full-time), 13 of whom are professionals
Budget	-	Not specified
Channels of technology diffusion	-	Through U.S. Agency for International Development and through publications and the universities
Obstacles to technology diffusion	-	Lack of funds, lack of technical support, maintenance difficulties and lack of trained manpower to assist government technical decision-making process
Publications	-	Wide range of technical reports, advisory studies and country studies (some also available in French).

NATIONAL CENTER FOR APPROPRIATE TECHNOLOGY

Director: Edward Kepler

P.O. Box 3838
Butte, Montana 59701
Tel : (406) 723 54 74

Main activities

Technology extension services (26%)
Research and development (25%)
Financing AT activities of other institutions (14%)
Information and documentation (11%)
Publications (11%)
Influencing political and governmental decision making (9%)

Main fields of concentration

Energy (solar and energy savings)
Agriculture and husbandry
Community goods
Housing
Environmental problems

Climatic/Geographic focus

None in particular

The National Center for Appropriate Technology (NCAT) is a private non-profit corporation founded in 1976. It is principally funded by the U.S. Government through grants from the Community Services Administration. The organisation is designed to focus AT on the specific problems of low income people, and notably on energy-related problems. The organisation consists of a grant-making programme for AT research and demonstration by community groups and community action agencies; 10 regional representatives who link low-income community groups with AT specialists; an information, dissemination and publications programme; and a technical research staff working on solar energy, community development, building technology, agriculture and waste recycling. NCAT is in contact with most of the AT centres in the U.S.

Staff	-	53 people
Budget	-	$1,695,000 ($20,000 in 1976)
Scale of activities in AT	-	624 man-months
Channels of technology diffusion	-	Through government agencies
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, inadequate legislation, cultural and social unacceptability, lack of technical support
Publications	-	Not specified.

NAVAJO COMMUNITY COLLEGE CENTER ON USEFUL TECHNOLOGY

Director: James M. Tutt

P.O. Box 580
Shiprock, New Mexico 87420
Tel : (505) 368 51 31

Main activities

Education
Technology extension services
Technology diffusion

Main fields of concentration

Solar energy
Household water resources
Crop processing and conservation

Climatic/Geographic focus

Arid and semi-arid regions

The Navajo Community College Center on Useful Technology is made up of college staff who give what time they can to the Center's development in addition to their regular teaching duties. Several are members of the Navajo Science Committee, a group of Navajo Indian scientists.

The Center has applied to the U.S. Department of Energy (formerly ERDA), and a private foundation for funds to develop community organisation work based on AT in fields such as wool processing and household water systems. A passive solar greenhouse has been built, in which vegetables are grown for distribution to small garden plot owners in the area. A passive solar heating unit has also been built for demonstration purposes.

The Center, which presently lacks funds to undertake other projects, is currently working with a developing center at the Cameron Chapter of the Navajo tribe.

Staff	-	Not specified
Budget	-	Not available separately (included in the College's budget)
Channels of technology diffusion	-	Through teachers in community classes and through demonstration projects
Obstacles to technology diffusion	-	Lack of funds
Publications	-	Report on AT and Navajo economic development.

THE NEW ALCHEMY INSTITUTE

Co-directors: Nancy and John Todd

New Alchemy Institute East
P.O. Box 432
Woods Hole, Massachusetts 02543

New Alchemy Institute West
P.O. Box 376
Pescadero, California 94060

Main activities

Research and development
Pilot production
Publications

Main fields of concentration

Energy
Agriculture and pest control
Aquaculture
Housing

Climatic/Geographic focus

Temperate and coastal regions
Sub-tropical regions

The New Alchemy Institute (NAI) is an independent non-profit centre established in 1969 to explore in a scientific way the survival strategies that might prove adaptable for humanity in the future. Its major focus is the development of ecologically appropriate innovations in the fields of energy, agriculture, aquaculture, housing and land use, so as to facilitate a revitalisation and repopulation of the countryside. Its work is conducted on a microlevel but maintains a planetary perspective and a concern for linkages between different levels of ecological organisation.

The Institute has developed and experimented with sailwing windmills for water pumping, a "hydrowind" (an advanced wind-driven power plant using hydraulics for power transfer), solar water heaters and several aquaculture systems, smong which a backyard fish farm-greenhouse (for semi-tropical aquatic and terrestrial environments), a miniature ark (a solar-heated, wind-powered food growing complex), and the Cape Cod Ark (the first attempt to design and build a commercial-size structure). In order to explore bio-regional approaches to the future, NAI has established centres or projects in other areas (Maritime Canada and the lowlands of Costa Rica).

Staff	-	Approximately 20 people
Budget	-	$225,000 (1976)
Scale of activities in AT	-	Not available
Channels of technology diffusion	-	Through the Institute's own activities and publications
Obstacles to technology diffusion	-	Lack of funds and staff
Publications	-	Journal of the New Alchemists (3 issues published)

OFFICE OF INTERNATIONAL PROGRAMS - ENGINEERING EXPERIMENT STATION

Director: Ross W. Hammond

Georgia Institute of Technology
Atlanta, Georgia 30332
Tel : (404) 894 38 00

Main activities

Research and development
Technology extension and diffusion
Education and training
Financing AT activities of other institutions
Testing and evaluation of new equipment
Technical feasibility studies
Publications

Main fields of concentration

Energy
Water resources
Crop processing and conservation
Agricultural tools and machinery
Small industry promotion
Building materials
Public health
Telecommunications

Climatic/Geographic focus

None in particular

The Engineering Experiment Station (EES) of Georgia Institute of Technology, which was set up in 1919, established in 1956 an Economic Development Laboratory (EDL) to promote research and provide guidance in the more effective utilisation of Georgia's resources. Its activities in research, technical support and management information have since been extended to 31 counterpart organisations in the developing world through its Office of International Programs.

EDL's work in AT has focused among others on low-temperature solar energy applications (solar stills, crop dryers, kilns, residential heating), bio-mass conversion processes (pyrolytic conversion of agricultural and wood wastes), various types of hand-operated deep and shallow well pumps for use in rural areas, the manufacturing of different types of rice machinery (in co-operation with the International Rice Research Institute), low-cost instruments for small industries, and the adaptation of existing traditional technologies (e.g. mounting the traditional Korean back pack on wheels). It is also concerned with the software aspects of innovation in AT.

Staff	-	743 people (475 full-time), 356 of whom are professionals
Budget	-	$16 million ($11 million in 1976)
Scale of activities in AT	-	Not available
Channels of technology diffusion	-	Through international agencies
Obstacles to technology diffusion	-	Bureaucracy and time delays in funding
Publications	-	Three periodicals on small industry, AT and science and technology for development, as well as a wide range of articles and technical reports.

OUROBOROS SOUTH PROJECT

Director: R. Scott Getty

320 Wesbrook Hall
University of Minnesota
77 Pleasant St. SE
Minneapolis, Minnesota 55455
Tel : (612) 373 51 70

Main activities

Information and documentation (50%)
Technology diffusion (35%)

Main fields of concentration

Architecture
Energy savings
Solar and hydraulic energy

Climatic/Geographic focus

Temperate and cold regions
Mountainous regions

Ouroboros South Project began as a design project in a first year Environment Design class at the University of Minnesota in 1973. Dennis Holloway and a class of 150 students researched, designed and built one of the earliest full-scale working experimental dwellings combining energy conserving experiments with sensitive architectural design.

Energy conserving experiments at Ouroboros include the use of active and passive solar energy collectors for space heating and hot water, special design and construction considerations to reduce heat loss in winter and increase cooling in summer (including a trapezoid house design), a sod roof, semi-underground construction, extra insulation, and teepee-like ventilation. An aerogenerator was designed to supply electricity for cooking and lighting and a dry composting system breaks down human and food wastes, minimizing water use and producing fertilizer for the greenhouse.

Staff	-	Not specified
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through universities and publications
Obstacles to technology diffusion	-	Lack of funds
Publications	-	Reports, technical notes, books and bibliography on environmental design, architecture, energy savings and non-conventional energy sources.

PEACE CORPS

Director: R. Celeste

806 Connecticut Avenue N.W.
Washington, D.C. 20525
Tel : (202) 655 40 00

Main activities

Technology diffusion
Education and training
Promotion of local technological traditions

Main fields of concentration

Agriculture and rural development
Crop processing and storage
Energy
Small industry promotion
Public health

Climatic/Geographic focus

All developing countries

The Peace Corps was established in 1961 by President John F. Kennedy. Originally a permanent agency under the Department of State, it was transferred to ACTION, an independent agency created to coordinate several federal volunteer services. Its purpose is to send American volunteers overseas to help foreign countries meet their urgent needs for skilled manpower.

Developing and applying AT has been one of the hallmarks of the Peace Corps since its beginnings. Volunteers working at the local level, usually for two years, have learnt how to meet traditional development problems with inventive low-cost solutions based on a combination of local skills with their own expertise. A major effort has been under way at the Peace Corps to assemble and make available to development workers throughout the world technologies developed by the volunteers. This is done through its Information Collection and Exchange system (ICE). Some of this material has already been collected in the form of manuals on such subjects as small farm grain storage, freshwater fisheries, forestry and conservation in arid areas, construction and health education.

Staff	-	Approximately 250 permanent staff members, and 6,500 volunteers in 64 countries
Budget	-	Approximately $95 million (fiscal year 1979)
Scale of activities in AT	-	Not available
Channels of technology diffusion	-	Through volunteers and publications
Obstacles to technology diffusion	-	Not available
Publication	-	Various manuals on special AT subjects.

RAIN - JOURNAL OF APPROPRIATE TECHNOLOGY

Contacts: Lane deMoll
Lee Johnson
Tom Bender

2270 N.W. Irving
Portland, Oregon 97210
Tel : (503) 227 51 10

Main activities

Publications (80%)
Research and development (10%)
Policy analysis and economic studies (10%)

Main fields of concentration

Most fields of AT, and in particular:
Energy
Housing
Water
Alternative institutions

Climatic/Geographic focus

None in particular

RAIN is an independent non-profit AT centre which originated in a grant-supported environmental education newsletter founded in 1974. It has evolved into one of the major exchange, research, information centres on AT developments in the United States. Its main activity is the publication of "RAIN - Journal of Appropriate Technology" which lists and collects resources, books, people and centres involved in all fields of AT.

Staff	-	5 people (all full-time)
Budget	-	$50,000
Scale of activities in AT	-	35 man-months
Channels of technology diffusion	-	Publications
Obstacles to technology diffusion	-	Lack of technical support and lack of good products, processes and producers
Publications	-	RAIN Journal of Appropriate Technology (monthly); "Rainbook : Resources for AT" (a compilation of the best of RAIN magazine up to Spring 1977, incorporating AT sourcelists, book reviews, etc.); books on environmental design; and AT Sourcelists for the California Office of Appropriate Technology.

RODALE PRESS INC.
RESEARCH AND DEVELOPMENT DIVISION

Director: John Haberern

33 E Minor Street
Emmaus, Pennsylvania 18049
Tel : (215) 967 51 71

Main activities

Research and development

Main fields of concentration

Energy
Nutrition
Water resources
Aquaculture
Cultivation techniques and new crops
Agricultural tools
Small-scale farming and organic gardening

Climatic/Geographic focus

Temperate regions

Rodale Press Inc., is a publishing house which encourages self-sufficiency through the publication of a full range of books and magazines on such subjects as organic farming and gardening, composting and environmental problems.

In 1974, a Research and Development Division was set up to explore ideas and technologies related to organic living. The main focus of this profit-oriented centre's work in AT has been on pedal-powered devices for conserving energy, increasing fitness and doing productive work at home. These devices are being manufactured and have been on sale since the middle of 1978. Its research workshop has also been working on a self-rinsing sprinkler, a one-gallon flush toilet, cold and hot boxes, and solar greenhouses.

Staff	-	About 30 people
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technolgoy diffusion	-	Through the Division's own activities
Obstacles to technology diffusion	-	Not specified
Publications	-	Books and magazines; "The Solar Greenhouse Book", Rodale, 1978; "Tools for Small-Scale Farming: An International Catalog of Hard to Find Tools and Implements", 1978.

SANE

Executive Director: David Cortright

318 Massachusetts Avenue N.E.
Washington, D.C. 20002
Tel : (202) 546 48 68

Main activities

Influencing political and governmental decision-making

Main fields of concentration

Industry
Economic conversion
Employment creation

Climatic/Geographic focus

United States/Highly industrialised countries

SANE is a non-profit citizens' organisation sponsored (among others) by several trade-unions, which is devoted to the orderly shift of defense-related industries to civilian activities and to minimizing the social and industrial impact of such a transition. In the view of SANE, high military spending creates few jobs, accelerates inflation and hinders the development of civilian technology. The shutdown of defence facilities cannot in itself solve the problem, since it creates high unemployment. The answer is Planned Economic Conversion, i.e. the preparation of alternative use plans for military facilities, community participation in such plans, the redirection of military technology to civilian purposes and the re-training of workers. This goal can be achieved by the use of AT, and more generally by the development of technologies oriented specifically towards real human needs.

Staff	-	Not available
Budget	-	Not available
Scale of activities in AT	-	Not relevant
Channels of technology diffusion	-	Political lobbying, organisation of citizens' groups
Obstacles to technology diffusion	-	Not relevant
Publications	-	Conversion Reading Packet.

SUNPOWER INC.

Director: William T. Beale

48 West Union Street
Athens, Ohio 45701
Tel : (614) 594 22 21

Main activities

Research and development (97%)

Main fields of concentration

Heat engines
Solar energy
Energy savings

Climatic/Geographic focus

Tropical rain forests and savannas
Arid and semi-arid regions
Temperate and coastal regions

Sunpower Inc., is an independent engineering research and development firm founded in 1975 and specialising in applications of the free piston Stirling engine. The free piston Stirling system is capable of running on any source of heat, from solar to campfires, and has been applied and tested to engines with power outputs from 5W to 3.5kW. Details of many of the engines developed by Sunpower are proprietary to their requesting sponsors.

The firm's most recent work includes a 1kW free piston Stirling engine generator for producing electricity on a decentralised basis, a 250 W solar-powered water pump for small-scale agricultural applications in deserts and tropical areas, and a 1 hp Stirling engine running on a wide range of solid fuels (coal, wood, rice chaff) for pumping and milling. Sunpower Inc., is currently looking for sponsors for a small-power output generator operating on a woodburning stove or in conjunction with existing furnaces to supply power for emergencies, and for a solar powered water pump to use in conjunction with active solar hot water heating systems. Sunpower is particularly interested in Stirling engine applications for use in developing countries and as decentralised power sources.

Staff	-	18 people (all full-time), 15 of whom are professionals
Budget	-	$450,000
Scale of activities in AT	-	12 man-months
Channels of technology diffusion	-	Through government agencies and industrial firms
Obstacles to technology diffusion	-	Inadequate legislation, lack of competitiveness relative to traditional technologies, lack of funds and lack of reliability
Publications	-	Technical notes, reports and reading materials on Stirling engines.

SUNTEK RESEARCH ASSOCIATES

President: Mel Hodge

506, Tamal Vista Boulevard
Corte Madera, California 94925
Tel : (415) 924 68 87

Main activities

Research and development (100%)

Main fields of concentration

Solar energy
Energy savings
Building materials

Climatic/Geographic focus

Temperate and cold regions

Suntek Research Associates is a private solar energy-oriented research and development organisation established in 1975 by a group of scientists which includes a biochemist from Harvard University and a faculty member of the Massachusetts Institute of Technology. It is currently funded by contracts from the Energy Research and Development Administration (ERDA, now the Energy Department).

The group has developed three new materials for harnessing solar energy. The first is a 'heat mirror', i.e. an ultra-thin (1000 atoms) transparent coating material which reflects thermal (infrared) radiation and whose insulating properties are equivalent to those of an inch of glass or foam plastic. The second is a 'cloud gel', a transparent plastic film which turns an opaque white, and therefore starts reflecting light, once a certain temperature level (which can be tuned to any value) is reached. The third is 'thermocrete', a fine-pore foam concrete which can store 20 times more heat than ordinary concrete but which has the same compressive strength, and which can be used both for heating and cooling purposes. Work is also being done on combining these three materials into energy systems (e.g. energy self-sufficient 'Biosphere' house and 'climatic envelopes'').

Staff	-	12 people (all full-time) 6 of whom are professionals
Budget	-	$300,000
Scale of activities in AT	-	144 man-months
Channels of technology diffusion	-	Little diffusion at present
Obstacles to technology diffusion	-	Experimental nature of these technologies and their high cost
Publications	-	Not specified.

TECHNICAL ASSISTANCE INFORMATION CLEARING HOUSE

Executive Secretary: Mary Ellen Burgess

200 Park Avenue South
New York, N.Y. 10003
Tel : (212) 777 82 10

Main activities

Information and documentation
Publications
Technical information sources diffusion

Main fields of concentration

Nearly all fields of AT

Climatic/Geographic focus

None in particular

The Technical Assistance Information Clearing House (TAICH) has been operated by the American Council of Voluntary Agencies for Foreign Service, Inc., since 1955, with financial support of the U.S. Agency for International Development. It is an information centre specialising in the socio-economic development programmes carried out abroad by U.S. voluntary agencies, missions, foundations and other non-profit organisations.

TAICH information collection and dissemination is geared to the whole spectrum of overseas development activities of the U.S. non-profit sector; it has been interested in collecting and providing data on sources of AT information since about 1970.

TAICH provides information through directories containing profile descriptions of U.S. organisations and their development programmes, country reports, profile reports and special category reports stressing the programmes of these agencies in specific areas of development assistance, such as agriculture, water resources, housing assistance, medicine and public health, nutrition and food delivery.

Staff	-	11 people (all full-time), 6 of whom are professionals
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through direct answers to enquiries, information sources on AT and through publications
Obstacles to technology diffusion	-	Not specified
Publications	-	Quarterly newsletter, directories, bibliographies and reports.

TECHNOLOGY APPLICATION CENTER

Director: Dr. Stanley A. Morain

University of New Mexico
Albuquerque, New Mexico 87131
Tel : (505) 277 36 22

Main activities

Information and documentation
Publications
Technology extension and diffusion
Education and training

Main fields of concentration

Energy
Water
Soil protection
Resource inventories and remote sensing

Climatic/Geographic focus

None in particular

The Technology Application Center (TAC) at the University of New Mexico, is a non-profit technology transfer organisation founded in 1965. It is sponsored by the National Aeronautics and Space Administration (NASA), as one of its six regional technology dissemination centres in universities.

It has developed into one of the major information facilities in the United States offering a wide range of services and products (literature searches and document retrieval with access to more than 100 computer files), and has a large team of qualified researchers.

Though TAC deals mostly with sophisticated technologies, it considers that some of these are particularly appropriate to developing countries, insofar as certain criteria of appropriateness are met. Its Natural Resources Programme is involved in the survey of earth resources (remote sensing technology) as well as in resource mapping and inventories. Its quarterly energy series focuses mainly on solar thermal energy utilisation, hydrogen energy and heat pipe technology.

Staff	-	Not specified
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through advertisements, the mass-media, government agencies, universities and industrial firms
Obstacles to technology diffusion	-	Bureaucracy, reluctance to accept innovation, lack of competitiveness relative to traditional technologies and lack of reliability
Publications	-	Quarterly energy series.

TECHNOSERVE

President: Edward P. Bullard

36 Old King's Highway South
Darien, Connecticut 06820
Tel : (203) 655 79 81

Main activities

Management assistance (80%)
Technical feasibility studies (10%)
Research and development (5%)
Technology diffusion (5%)

Main fields of concentration

Crop processing and conservation
Promotion and development of small rural agricultural processing enterprises

Climatic/Geographic focus

None in particular

Technoserve Inc. is an international non-profit technical and managerial organisation founded in 1968. Its funding comes from consulting fees, governments, banks, churches and missionary organisations. It maintains overseas offices in Ghana, Kenya, El Salvador, Nicaragua and the Honduras.

It was initially established to assist and strengthen profit-making ventures started by poor people in developing countries. Its small-scale sugar syrup process developed in Ghana is now used by two local companies, and will hopefully be diffused to other sugar-growing countries. In the Honduras, it has developed a small-scale plant to extract the oil-bearing kernel of the cohune nut. The kernel is used by local processors to extract the oil, and the meal is used as animal feed.

Staff	-	63 people (61 full-time)
Budget	-	$1.3 million
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through the group's own activities
Obstacles to technology diffusion	-	Lack of funds and lack of reliability
Publications	-	"Promoting Rural Development: The Technoserve Experience"; "The Meaning and Application of Appropriate Technology".

USA 840

UNITED STATES

TRANET

Director: William N. Ellis

P.O. Box 567
Rangeley, Maine 04970
Tel : (207 864 22 52

Main activities

Regular publications (40%)
Influencing governmental and political decision-making (30%)
Information and documentation (20%)

Main fields of concentration

All fields of AT

Climatic/Geographic focus

None in particular

The Transnational Network for Appropriate/Alternative Technologies (TRANET) was developed from needs expressed at the 1976 United Nations Habitat Conference in Vancouver. AT groups meeting there urged the establishment of mechanisms to help AT centres get in touch with one another and to stimulate a dialogue on AT concepts among world leaders. Up to now TRANET has been essentially a passive clearing-house collecting information from AT centres in all parts of the world and abstracting papers, books, and programme descriptions and publishing an on-going directory of AT centres.

With the growth in membership and the increase in the number of AT centres with which it is in contact (more than 300) a separate non-profit organisation has been established to expand the services offered by TRANET. Further decentralisation in five geographic areas (Africa, Asia and Pacific, Europe, North America and Latin America) will follow.

Staff	-	3 people
Budget	-	$10,000 ($5,000 in 1976)
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through publications, international agencies and aid programmes, and through information networks with other centres
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy and reluctance to accept innovation
Publications	-	TRANET Newsletter (quarterly), AT Directory and papers in various magazines

UNITED NATIONS DEVELOPMENT PROGRAMME

Administrator: Bradford Morse

One United Nations Plaza
New York, N.Y. 10017
Tel : (212) 754 12 34

Main activities

Technical assistance to developing countries

Main fields of concentration

Agriculture, sylvicylture and fishing
Industry
Transport and communications
Economic and social planning
Education

Climatic/Geographic focus

All developing countries

The United Nations Development Programme (UNDP) is the world's largest agency for technical co-operation. It was created in 1965 as a result of the merger of the UN's Expanded Programme of Technical Assistance and the UN Special Fund. UNDP's current (1977) project expenditures amount to approximately $330 million with some 10,000 experts serving in the field.

Most UNDP projects involve an important technology transfer to the receiving countries and the policy of the organisation is to strengthen national development capabilities by making greater use of local technical resources. A substantial number of UNDP projects involve the promotion and use of AT's: for instance, the small-scale manufacturing of appropriate agricultural tools in Upper Volta, improvement of the traditional rain-fed irrigation system in Sudan, the training of "all-purpose" doctors in Cameroon, geothermal energy in El Salvador or small-scale industries in Tunisia. UNDP also supports a number of international agricultural research institutions which have been active in developing AT's for small farmers (e.g. CGIAR, CIMMYT).

Staff	-	Approximately 4,500 people plus 10,000 experts
Budget	-	Approximately $105 million (Agency overhead costs and administrative/support costs)
Scale of activities in AT	-	Not available
Channels of technology diffusion	-	Through projects
Obstacles to technology diffusion	-	Not available
Publications	-	Booklets, leaflets and periodicals.

VOLUNTEERS IN ASIA

Director of AT Project: Ken Darrow

P.O. Box 4543
Stanford California 94305
Tel : (415) 497 32 28

Main activities

Information and documentation
Publications

Main fields of concentration

All fields of AT

Climatic/Geographic focus

None in particular

The Volunteers in Asia (VIA) programme began at Stanford University in 1963 when a group of undergraduate students found they shared an interest in a kind of experimental education which would give them a live-in knowledge of the non-Western world The AT project was started in 1975 by two returning volunteers who felt that one of the few roles that foreigners could legitimately perform to help Asian developing countries was to gather information on information.

The main output of the AT project has been the "Appropriate Technology Sourcebook" which contains a vast amount of information on all aspects of AT, and notably on energy, farm implements, shop tools, agriculture, low-cost housing, health care, water supply, pedal power and the philosophy of AT. The AT Project is funded half by foundations and half by subscriptions to its publications. It is an independent centre but has some involvement with Stanford University's Engineering Department and the Stanford workshop on political and social issues. It also assists VIA volunteers involved directly in AT activities in South East Asia, and maintains a regional office in Jakarta, Indonesia.

Staff	-	Variable
Budget	-	Not available
Scale of activities in AT	-	Not available
Channels of technology diffusion	-	Through publications
Obstacles to technology diffusion	-	Lack of horizontal communication channels among small groups worldwide to publicize the availability of AT Sourcebook
Publications	-	AT Sourcebook (2 editions, more than 10,000 copies sold) and a documentation catalogue on traditional technology (in preparation).

VOLUNTEERS IN TECHNICAL ASSISTANCE, INC.

Executive Director: Henry Norman

3706 Rhode Island Avenue
Mt. Rainier, Maryland 20822
Tel : (301) 277 70 00

Main activities

Information and documentation
Publications
Technology diffusion and extension
Technology consulting services

Main fields of concentration

Almost all fields of AT (but with less emphasis on public health and education)

Climatic/Geographic Focus

None in particular

Volunteers in Technical Assistance (VITA) is a voluntary non-profit independent AT centre founded in 1959 by a group of scientists who felt it could serve as a vehicle for channelling the expertise of the American scientific and technological community to work on the problems faced by the developing countries. VITA now has a roster of some 5000 volunteer experts who provide technical services and advice by mail to requests from developing countries.

VITA has developed a comprehensive information/documentation system (including a classification system and a thesaurus of AT terms) and published a wide range of books, reports and technical manuals on all aspects of AT. It is working closely with emerging AT groups in Honduras (where a VITA branch has been set up), Upper Volta, Nigeria, Papua-New Guinea, Botswana and Tanzania. Technologies developed, tested and/or diffused by VITA include agricultural implements for no-till agriculture, low-cost transportation vehicles, a hydraulic ram, a small-scale hydro-electric generator, a simple bellows, a hand-operated corn sheller, a charcoal oven, a pit silo and a solar cooker.

VITA seeks to promote all forms of international co-operation in the field of AT and is in contact with all known AT centres in the world.

Staff	-	20 people (all full-time), 7 of whom are professionals, + 5000 volunteers on an occasional basis
Budget	-	$512,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through publications, answers by mail to requests for technical assistance and international agencies
Obstacles to technology diffusion	-	The major obstacles are not in the diffusion of technology through the written word, but in the implementation of innovation
Publications	-	Over 50, both regular and occasional (Newsletter, handbooks, technical reports, etc.).

WORLD EDUCATION

Director: Thomas B. Keehn

1414 Sixth Avenue
New York, N.Y. 10019
Tel : (212) 838 52 55

Main activities

Information and documentation
Education and training of adults

Main fields of concentration

Training materials
Family and community development

Climatic/Geographic focus

None in particular

World Education is an international non-governmental organisation founded in 1951 and financed by governments and donations. It is involved in the development of appropriate educational technologies, in helping local agencies design programmes for under-educated men and women and in providing documentation and training materials. World Education has developed its own materials to be used in specific field situations, for instance puppet plays, audio-visual materials, etc.

Staff	-	Not specified
Budget	-	$1.2 million
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through national and international agencies, and private voluntary foreign assistance agencies
Obstacles to technology diffusion	-	Not specified
Publications	-	Periodic papers, monographs, slides, booklets and cassettes available directly through: Films for Educators, P.O. Box 9991, Forest Hills, NY 11375 USA.

WORLD NEIGHBORS
OVERSEAS DEVELOPMENT MATERIALS DEPARTMENT

Director of Department: Ken Tull

5116 North Portland Avenue
Oklahoma City, Oklahoma 73112
Tel : (405) 946 33 33

Main activities

Information and documentation
Publications
Technology extension and diffusion
Education and training
Testing and evaluation of new equipment
Financing AT activities of other institutions

Main fields of concentration

Almost all fields of AT
Educational materials

Climatic/Geographic focus

None in particular

World Neighbors is an international non-governmental and non-profit organisation which has been working since the early 1950's throughout the developing world on integrated projects to increase food production, control population growth, improve sanitation and encourage self-sufficiency at the community level through leadership training and revolving loan funds. World Neighbors as such is not generally involved directly in the promotion of AT, though it has contributed to diffusing such innovations as motors for shallow-water light canoes in Honduras and Peru, a simple tool for making chain-link fencing, and an A-frame for making contour levels, which is now widely used in Guatemala.

Work on AT is carried out more specifically by its Overseas Development Materials Department (OSDM) which has developed a wide range of low-cost audio-visual materials (e.g. film strips produced by local people in the concerned areas), as well as educational tools and materials which are used in community training and the development of extension workers in the rural areas.

Staff	-	5 people (all full-time)
Budget	-	$105,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through World Neighbors' own activities
Obstacles to technology diffusion	-	Lack of adequately trained and highly motivated local leadership
Publications	-	Two quarterly newsletters, handbook on audio-visual communication, manuals on family planning.

AFRICAN COMPANY FOR DEVELOPMENT STUDIES
Société Africaine d'Etudes et de Développement

Director: Soumana **Traore**

Boîte Postale 593
Ouagadogou
Tel : 3 30 52, 3 30 53

Main activities

Technology extension
Pilot production
Technical feasibility studies
Information, documentation and publications

Main fields of concentration

Energy
Agricultural tools and machinery
Small industry promotion
Transportation

Climatic/Geographic focus

Tropical savannas

The African Company for Development Studies (SAED) is an independent profit-oriented corporation established in 1972 by a group of African engineers and technologists. Its aim is to promote rural development in the framework of associations grouping rural producers and local technologists. The need for new technologies better adapted to Upper Volta's scarce capital resources and abundant labour led to the establishment in 1976 of a Research and Technological Applications Service (Service de Recherche et d'Applications Techniques - SRAT) within the company.

The technologies developed by SRAT, and which are now at the testing stage include a trailer for small motorbikes, a manual spinning wheel, a manual centrifugal pump, an urban tricycle for the transportation of mail and small goods, and a manual maize sheller. The manual groundnut sheller developed by SAED has been selling in the last three years at the annual rate of 100 machines.

Staff	-	11 people (7 full-time), 3 of whom are professionals
Budget	-	$41,000
Scale of activities in AT	-	83 man-months
Channels of technology diffusion	-	Through advertisements, the mass media and international aid agencies
Obstacles to technology diffusion	-	Maintenance difficulties
Publications	-	Not specified.

INTERAFRICAN COMMITTEE FOR HYDRAULIC STUDIES
Comité Interafricain d'Etudes Hydrauliques

Director: M. G. Gagara

Boîte Postale 369
Ouagadougou
Tel : 3 35 18; 3 34 76

Main activities

Publications (30%)
Testing of new equipment (19%)
Information and documentation (18%)

Main fields of concentration

Water resources development
Irrigation
Water and wind energy
Methane
Pollution control
Water legislation

Climatic/Geographic focus

Tropical regions
Arid and semi-arid regions
Coastal regions

The Interafrican Committee for Hydraulic Studies (ICHS, or CIEH in French) is an international governmental organisation originally established in Niamey (Niger) in 1960. It presently has 12 member states (Benin, Cameroon, Chad, Congo, Gabon, Ivory Coast, Mali, Mauretania, Niger, Senegal, Togo and Upper Volta) and 4 observer states (Central African Empire, Ghana, Liberia and Nigeria). Its operating budget is financed by member states, while its much larger budget for studies is financed essentially by foreign aid programmes, with some support from banks.

The Committee has three functions: exchange of information, general studies of common interest and technical support in all fields related to water resources development. Its activities in the field of AT have focused on the experimentation of seven different types of water pumps, the development of bio-gas technology and the installation of windmills.

Staff	-	32 people (all full-time), 28 of whom are professionals
Operating budget	-	$210,000 ($168,000 in 1976)
Scale of activities in AT	-	405 man-months
Channels of technology diffusion	-	Through the Committee's own work
Obstacles to technology diffusion	-	Lack of funds and maintenance difficulties
Publications	-	Wide range of technical reports on climatology, hydrology, ground-water, water technology, agricultural engineering and legislation (in French and English).

INTER-AMERICAN CENTRE FOR RESEARCH AND DOCUMENTATION ON VOCATIONAL TRAINING
Centro Interamericano de Investigacion y Documentacion Sobre Formacion Profesional

Director: Eduardo Ribeiro de Carvalho

San José 1092
P.O. Box 1761
Montevideo
Tel : 98 60 23 and 98 17 44

Main activities

Education and training
Information and documentation
Publications
Technology extension and diffusion
Research and development

Main fields of concentration

Agriculture
Small industry
Roads and telecommunications
Construction industry

Climatic/Geographic focus

None in particular

The Inter-American Centre for Research and Documentation on Vocational Training (CINTERFOR) is a specialised agency of the International Labour Organisation (ILO) established in 1964 to coordinate and encourage the efforts of Latin American and Caribbean institutions involved in vocational training and education. It is financed for the most part by ILO, the United Nations Development Programme (UNDP) and membership fees.

CINTERFOR works closely with governments, employers and workers in the formulation of vocational training policies, the implementation of programmes and the development of teaching materials. Its activities in AT, which are software-oriented, include the establishment on a co-operative regional basis of a 'bank' of eligible teaching materials to prepare vocational training manuals; the description, analysis, diffusion and experimentation of teaching methods and aids which have proved to be particularly efficient; and a methodology and system for certifying and testing workers' occupational skills.

Staff	-	30 people (all full-time), 10 of whom are professionals (1976)
Budget	-	$860,000
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Through government agencies, international agencies and aid programmes
Obstacles to technology diffusion	-	Reluctance to accept innovation
Publications	-	Wide range of reports on all aspects of vocational training (mostly in Spanish, some in English).

CENTRE OF STUDIES FOR SOCIAL ACTION
Centre d'Etudes pour l'Action Sociale

Director: Joseph Segers

Avenue P. Boka 9
Boîte Postale 3096
Kinshasa-Gombe
Tel : 3 06 66

Main activities

Technology diffusion (40%)
Field experiments (30%)
Publications (20%)
Information and documentation (10%)

Main fields of concentration

Cultivation techniques
Husbandry
AT software

Climatic/Geographic focus

Tropical rain forests and savannas

The Centre of Studies for Social Action (CEPAS) is a church-affiliated organisation established in 1965 in order to represent INADES Formation (Abidjan, Ivory Coast) in Zaire. It began working on AT in 1969. Its purpose is to deliver results of economic and social studies to those who are the most directly involved in field activities and who work concretely for development at the basic levels.

CEPAS adapts and diffuses the low-cost pedagogical materials provided by INADES-Formation. A part of these mail order courses has been translated into several of the languages spoken in Zaire; the remaining is under preparation. Specific agricultural calendars have been established or are in preparation for each region of the country, giving all the necessary information on a wide range of agricultural crops, month after month. The CEPAS also organises field training sessions and follows up the work undertaken by its subscribers.

Staff	-	10 people (all full-time), 7 of whom are professionals
Budget	-	$78,000
Scale of activities in AT	-	120 man-months
Channels of technology diffusion	-	Through training courses
Obstacles to technology diffusion	-	Bureaucracy, social or cultural unacceptibility and reluctance to accept innovation
Publications	-	Translations of INADES-Formation publications (in Lingala, Kibonzo, Tshiluba and Swahili); INADES-Formation Zaire (periodical bulletin, in French).

INTEGRAL DEVELOPMENT ASSOCIATION
Association pour le Développement Intégral

Director: Will de Wolf

Compagnons Bâtisseurs
Boîte Postale 49
Lisala, Equateur

Main activities

Research and development
Technology extension and demonstration
Testing and evaluation of new equipment
Training and education

Main fields of concentration

Agriculture
Pest control
Water resources
Alternative institutions, land reform
Building materials
Public health

Climatic/Geographic focus

Tropical rain forests

The Integral Development Association (ADI - Bondaba) was founded in 1970 as a rural project of the International Association of Building Fellows (Coopibo, Naamsesteenweg 573, B-3030 Heverlee, Belgium), in collaboration with the Diocese of Lisala. It assists farmers in the different aspects of development in the agricultural, commercial, mechanical, technical, social and medical fields, through training and sensitization actions, and in the frame of a decentralized self-help institution co-operating with local organisations.

ADI has developed technologies adapted to local needs in the fields of housing (adobe brick houses, palm-leaf rooves), water well boring and management, the manufacturing of agricultural tools (hand-carts, wheelbarrows, etc.), and crop processing (rice threshers, coffee huskers, etc.).

Besides being a training and testing center, ADI also has a pilot plantation in Bondala where coffee, soya and vegetables are grown for experimental and demonstration purposes. The Association supports 8 missions in the Diocese of Lisala to which it supplies equipment and training facilities.

Staff	-	9 people (all full-time), 6 of whom are professionals
Budget	-	Not specified
Scale of activities in AT	-	108 man-months
Channels of technology diffusion	-	Through the International Association of Building Fellows and their own efforts (training, demonstration and extension work)
Obstacles to technology diffusion	-	Reluctance to accept innovation, lack of simple tools
Publications	-	Several reports and notes (all available through Coopibo).

NKATA PROJECT
Projet Nkata

Head of project: Th. Huisman

M. C. Masuika
Boîte Postale 70
Kananga

Main activities

Promotion of local technological
Technology diffusion
Information and documentation

Main fields of concentration

Agriculture

Climatic/Geographic focus

Tropical savannas

The Nkata Project is a church-affiliated and church-funded rural development project carried out since 1973 by two missionaries, a Belgian volunteer and two local agronomists in the Kananga region of Zaire. Its purpose is to introduce new and more appropriate technologies to the small farmer. Work has focused on the introduction of ox-drawn power and the full range of supporting technologies. The Project is manufacturing on a do-it-yourself basis and with local materials such items as ox-carts, ploughs, seeders, harrows and hoes. It is also working on iron smelting and on the introduction of new agricultural crops.

Staff	-	5 people
Budget	-	Not specified
Scale of activities in AT	-	Not specified
Channels of technology diffusion	-	Not specified
Obstacles to technology diffusion	-	Attitude of political leaders, bureaucracy, reluctance to accept innovation and lack of competitiveness relative to modern technology
Publications	-	Not specified.

NORTHERN TECHNICAL COLLEGE

Course Supervisor: John B. Gunasegaram

Chela Road
P.O. Box 1563
Ndola
Tel : 62 10

Main activities

Research and development (50%)
Pilot production (50%)

Main fields of concentration

Energy
Agricultural tools
Small hand-operated machinery
Building materials

Climatic/Geographic focus

Tropical rain forests and savannas

The Northern Technical College of Ndola was founded in 1964 and began its activities in AT in 1972 . It forms a part of the Department of Technical Education and Vocational Training in Lusaka. It offers a course in "Design Projects" as part of the curriculum for students seeking a degree in mechanical technology. This course encourages students to apply their technical knowledge to the development of AT.

Technologies which have been developed by the students include a manually operated maize shelling machine, a seed sowing machine for any size of grain, a thermosyphon solar water heater, a metal bending machine, an incendiary bomb dropping device (to start early forest fires as a conservation measure), a sand-cement block-making machine, a maize grinder, a groundnut sheller, an injection moulding machine, a winch and a charcoal-fired water heater. The College also designs and manufactures prototypes of equipment at the request of local farmers, rural development groups or government agencies and institutions.

Staff	-	20 people (15 students and 2 lecturers)
Budget	-	Not specified
Scale of activities in AT	-	Approximately 20 man-months
Channels of technology diffusion	-	Through graduates of the College, the Ndola Trade Fair and exhibitions
Obstacles to technology diffusion	-	Lack of funds
Publications	-	Technical reports.

TECHNOLOGY DEVELOPMENT AND ADVISORY UNIT

Deputy Manager: A. M. C. Visser

School of Engineering
University of Zambia
P.O. Box 2379
Lusaka
Tel : 5 45 77 ext. 499

Main activities

Research and development
Testing and evaluation of new equipment
Pilot production
Occasional publications

Main fields of concentration

Water and methane energy
Agricultural tools and machinery
School equipment

Climatic/Geographic focus

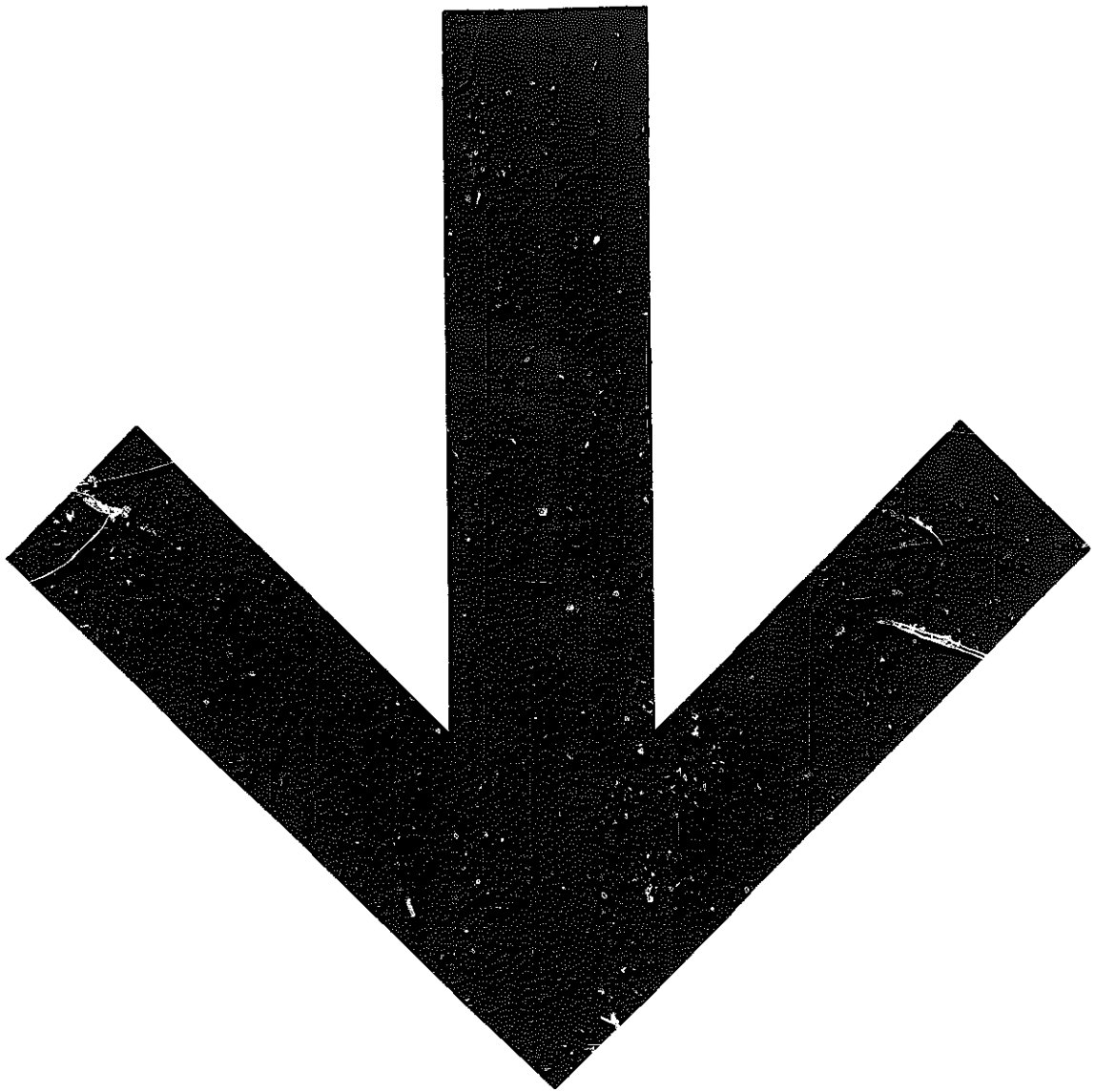
Arid and semi-arid regions

The Technology Development and Advisory Unit (TDAU) was set up in 1975. It was initially attached to the School of Engineering of the University of Zambia, but gradually developed into an independent unit linking all schools and departments of the University. It is financed by the University (60%) and foreign aid programmes.

The objectives of the TDAU are to help and advise on the local design and production of agricultural and household equipment; to serve as a development centre for new equipment and processes aimed at replacing imported models; and to serve as an advisory centre to various local industries.

Up to now the activities of the Unit have been mainly concerned with rural development and small industry by designing and developing farming equipment, cultivation and harvest processing techniques up to prototype manufacture and testing. The technologies which have been fully developed and tested include a soil-cement brick making machine, a cashew nut processing plant, an inter-row cultivator adapted from an ITDG design, a beef marker, a cattle cake production unit, a hydraulic ram, solar water heating units, a cyclone ground shelter and a minimum tillage technology. In the future more emphasis will be put on alternative energy sources publications.

Staff	-	14 people (all full-time), 5 of whom are professionals
Budget	-	$70,000
Scale of activities in AT	-	14 man-months
Channels of technology diffusion	-	Not relevant (technologies not diffused beyond the Unit)
Obstacles to technology diffusion	-	Lack of funds, lack of technical support
Publications	-	4 technical reports.



I N D E X

Introductory note

The organisations figuring in the Directory are indexed here by their code which consists of three letters and three digits (e.g. BGD 110 or USA 940). The complete list of organisations with their codes and page number can be found on pages 29 to 35 at the beginning of the Directory, but in most cases the reader should be able to find each organisation indexed here without having to refer to this list.

The index includes the name (English and foreign) of each organisation, its abbreviation, the town in which its headquarters are located, and the name of its director. Under each country name, one can find the organisations based in that country as well as the foreign organisations which have some activities there. Some large countries have been indexed by state, province or major region (e.g. California in the US, Scotland in the United Kingdom).

Each organisation has been indexed according to its main fields of activities as they figure at the top right of each page of presentation, as well as by all their secondary fields of activities mentioned in the replies to the OECD questionnaire, and by any other relevant information figuring in the text (e.g. institutional affiliation, historical origins, future plans, etc.). The main activities have also been indexed in more detail than could be done in the text of presentation. In some respects, the index is thus more complete than the text.

In most cases, the main activities of each organisation (e.g. research and development, information, technology diffusion, etc.), have not been indexed, since the number of entries would be far too great to be useful. In the same way, the climatic and geographic focus of each organisation's innovative efforts in appropriate technology has been left out.

Finally, it should be noted that this index, like any other one, is indicative rather than comprehensive, even though every effort has been made to index each organisation in as detailed a way as possible.

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