This chapter contains a select list of literature drawn from nearly 500 references in the area of rural development which has the bearing on the research topic under study. The reviews highlights the experiments and suggestions of the work projects undertaken both in India and abroad.

The promotion of appropriate technology in rural industry has changed the economic and social relations in the Oil Crushing Industry at Kumaraswamy Palayam village in the Periyar District of Tamil Nadu. The market orientation has improved the status and the occupational structure of the women workers. It is also seen the promotion by way of loans offered to the prospective adopters have helped; but this benefit has not percolated to poor artisans through community enterprises (1).

The analysis of rural technology development covering about twenty centres in Indonesia, India, Sri Lanka, Fiji, Liberia, Nigeria, Ghana and Sudan have made an rationale for the establishment of Small Scale Industry Service Centre for the development of rural technology. This study also indicate that there were problems relating to concept of their establishment and their operations. These problems were analysed and solutions are recommended (2).
Despite the contribution of the rural industry to the development process, available institution facilities in about eighteen institutions in Africa, Asia, Latin America indicate the limit of their effectiveness in meeting their needs of rural industry. In many situations, rural industry institutions are a non-entity. A structural performance model of rural industry institutions outlines the implications to enhance the effectiveness of these institutions (3).

Agricultural development, particularly its extension work in the developing countries, have never been active. The role of rural industry to work as a stimulus in this direction has been outlined within the social backdrop taking the situations in India, Kenya, and Indonesia. The three aspects that have been examined are, (a) the influence of technology institute for developing and promoting small scale rural industry in India, (b) the government programme for the promotion and organisation of Tea Industry in Kenya, (c) the role of agriculture as a developing small scale rural industry nucleus in Indonesia (4).

A special report by the International Development Centre on the activities by its Information Sciences Division (ISD) traces the broad concept of information needs for rural development. The report identifies and examines the difficulty in providing rural population with the greater access to information, the absence of consideration of users' needs being critical. There is need for focus generated by demand, grassroots-level and it should be a reflective condition based on indigenous knowledge. This study is multi-disciplinary and encompasses social, economic and scientific issues (5).

Rural Library Development in the state of Karnataka is studied in the light of Karnataka Public Libraries Act of 1965. It outlines the services organised by the
state central library for rural library and the role of rural people in the development of rural libraries. The study also highlights the relevance and utility of mobile libraries services in rural areas. It also points out the need for financial resources for the development of rural libraries to act as the catalysts in the process of technology transfer. It also indicates the problems of implementation of appropriate technology and suggests a co-ordinating medium to overcome the problems using public library system as a focal point of communication to channels of information process and dissemination, the dominant role of government and other voluntary organisations in this process is also highlighted (6).

Issues relating to information transfer and infrastructure development from a third world view point, and its social needs of rural development planning is the subject. The National Development plans should incorporate the important factor of information sector just as there is an agriculture sector. It is also important to consider information from the point of view of developing countries to improve their database capabilities from the grassroots-level in addition to their access to external information sources (7).

The beneficiaries of the rural development process needs to be educated for their upliftment. This important aspect of rural development has been the topic of study. The study compares Indian Rural library system with those of the former Soviet Union and United States. The study suggest the importance of development of the Indian rural scenario in education, political, economic and social areas with a focus on the importance of rural library services in this direction (8).

The STI project report presents the evaluation of a project proposal on "delivery of Scientific and Technical Information" through rural public libraries which provide a
specialised reference service to farmers, local entrepreneurs, technicians, artisans, and the like. Thus the special target group can rise to the situation to improve their living conditions (9)

Successful transfer of Science and Technology Information to rural people has been one of the bottlenecks limiting its agricultural development. This requires the organisation of productive national information system to suit the particular need and organisational structure of individual developing countries, the role of education institution, the need for proper training, the relevance of new technology, maintenance of existing information system and their limitations, the packaging of information, the planning and finance. The two successful examples of specialised agricultural information centres are Philippine's Root Crops Information service and the CIAT Cassava Information Centre (10)

Information for Rural Development is the main plank on which general problems of Third World rural society are concerned as it relates in education, health, agriculture, environment, housing, communication. The most fundamental problem from which all other problem spring up is the inadequacy of the awareness or the lack of information in these sectors. The plight of the developing countries lies particularly in not having properly surveyed even the present day information needs let alone the future requirements (11)

The problems of increasing of Agricultural productivity per acre and maximising employment in agriculture in Bullandshahr District in Western Utter Pradesh is a subject of study to analyse the appropriate technology and the labour supply in rural India. To identify the mechanised methods on the agricultural productivity per acre and on the institutions which landless labourers have traditionally remunerated
Mechanisation of implements for the three main activities like, water management, cultivation and harvesting, water management and land preparation are undertaken by the farm family. Harvesting however, is a period of maximum labour demand. Hired labour has an opportunity to work and earn the supply of food during this active harvest period. Mechanisation so far has been rational and appropriate in terms of the existing farming systems, within the social and economic circumstances in western Uttar Pradesh (12).

The use of more labour-intensive methods implies a change in most of the factors determining the planning and implementation of construction projects. Engineers and planners must receive appropriate training so that they are able to identify and utilise alternative technologies. Existing organisational structures have to be modified and suitable administrative procedures and systems formulated and tested to provide a basis for the adoption of large-scale labour-intensive methods. The solution to problems associated with a labour-intensive technology should be an essential part of any technical, managerial and supervisory training programmes in developing countries. The use of these methods implies the employment of work forces with little or no experience of construction sites. Worker training should therefore be an integral part of labour-intensive construction programmes (13).

Appropriate technology as a concept aims to improve the quality of life, to maximise the use of renewal of resources and create workplaces where people are living. This human face of technology is the subject of study. The solution chosen should employ local skills, materials, and resources. They should be compatible with local culture and practice, satisfy local wishes and needs. The coverage includes the food, agriculture and agricultural engineering, water and health, energy, services, small industries; education, training and development (14).
Appropriate Technology and appropriate management have a special significance at the stage of implementation to get the desired result. This experiment has been analysed with the wide coverage of the rural sector in the areas of water supply, sanitation, irrigation and drainage, processing of agriculture products, building methods and materials, energy production, solar energy utilisation, and metal processing. This has been the subject of study in few developing countries (15).

The development of Indian farm technology and the consequent increase in the agriculture production, storage facilities created for subsistence farming have not been simultaneously adapted to the change brought about by the commercial farming. Of the total food grains production in India, about 60 to 70 percent is retained in the farm, leaving the surplus for marketing of about 30 to 40 percent. All those engaged in the process of marketing are faced with the problem of storage. Government policies and programmes in relation to food policy, problems of grain storage, causes of losses, storage on farms, improvement in existence of storage structures are analysed in-depth. Suggestions to improve and minimise the farm losses and food grains storage by public agencies are indicated (16).

Auditing of the process of appropriate technology starts with the planning stage and implementing the introduction of (assumed) appropriate technology in developing countries situation becomes critical. The social, religious, cultural and economic values are the criteria on the basis of which the individual as well as institutions at national level are to be evaluated. A balanced environment resource utilisation is the answer that helps for proper application of appropriate technology (17).

In the multi-dimensional rural development there is vast range for technology to be liberated which opens up the field of appropriate technology with large scope for new
employment. This is studied in its entirety with the theatrical concept of appropriate technology for new employment generation. The relationship between the technology and society, its consequences, followed by content in concepts of theory of appropriate technology is used to analyse technological development and its methodology. Reidijk has evaluated the projects "water provision for rural areas" in West Jawa, Indonesia, and Ayurveda Project in Sri Lanka with focus on the construction of simple medicine production facility. The work also highlights the application of the theory in the education process (18).

A detailed study of the three rural based manufacturing activities in Ashanti and the central region of Ghana, one involving in pottery and the other textiles employing traditional technology indicate the possibility of improving existing indigenous technology as a strategy for appropriate technology. The origin and the nature of technology, and the role of activities in national development are examined. The potential development of the activities are also explored with policy implications. It is suggested that a "national technology policy" should incorporate traditional technology into the broader framework of the appropriate technology for national development (19).

The use of standard electric motors as generators coupled with locally manufactured turbines in micro-hydro power in Nepal is an example of application of appropriate technology to small scale hydroelectric power. This is a pointer to indicate that there are several possible ways to harness the energy of mountain rivers and streams, of which some relay only on large civil engineering works with sophisticated imported equipment from industrialised countries. Have studied in this aspect in detail and suggests the possibility of using standard pump units as turbines. The comparison of the possibility of using standard pump units as turbines has clearly gone in favour of
utilising appropriate technology both in terms of cost and reliability. The wide spread use of this technology has enabled the remote rural communities to take advantage of the benefits of cheap electricity while retaining the control of their local resources and without disturbing the environmental balance (20).

Appropriate technology implies self-management, with the support of voluntary organisations in addition to Governmental support by way of policies and programmes. The study of two community organic and agriculture centres in the Dominican Republic suggests the objectivity of stimulating support in the process of development of rural self-management. The two centres with the support of non-voluntary organisations have proved the philosophy that it is possible to achieve better use of locally available resources and appropriate technology adaptations for economic and social betterment of the local community. In order to achieve maximum impact the decision makers were in close and continuous communication and interaction with the members of the farmers' associations. Each centre having a training section for persons selected by village associations to provide conventional extension instruction. The centres have served as applied research and demonstration centres, running a vegetable and pig rearing farm, a vegetable processing industry and fish ponds. The centres were practically self-sufficient to successfully adopt technology to small-sized parcels, land adopted to local small farmers diets and diversified to traditional monocultural production (21).

Appropriate technology (AT) has increasingly become an important instrument for the development of small-scale industry. The study indicates historical perspective of the development of the AT concept and approach in the context of international socio-economic and technological change. Specific issues have determined the present scope of AT as an instrument for small-scale enterprise development.
Prospects for the future of AT depend on the political economy, technological change, choice and the most recent changes in production technology. The future prospects of AT are determined by (a) ensuring international economic recession, which makes small enterprise development essential as a strategy for income and employment generation in developing countries, and (b) a shift in the nature of production technology in Western countries, away from mass production to smaller scales of production. This adversely affects the advantage of appropriate technology development in the developing countries (22).

Improving agricultural productivity through appropriate technology adaptations are analysed in an Indian context taking into consideration the input factors such as seed, fertiliser, pesticide, irrigation and farm management in the over all context of pre-harvest and post-harvest technology utilisation. The introduction of appropriate technology have been found to be more advantageous both technically and economically compared to the earlier traditional methods (23).

The Community Information and Planning System (CIPS) of the Philippines has been the means to enable educational, organisational and socio-economic programme to yield personal, political and economic power to the rural community. In this direction establishment of appropriate technology centre is novel. The study in this field have aptly proved that people can only actively participate in the development of their region if they are involved in decision making which implies better and quicker access to the right information. The appropriate technology centres are planned to give training and leadership, community organisation, research, planning and project management to expose the participants in their village development programme based on education, organisation and socio-economic upliftment. Thus community
information and planning system has become an appropriate technology for peoples empowerment (24)

The village ecosystem planning is a holistic approach to village development. There has to be an integrated approach planned and carried out at the community level, taken into account enormous diversity of the ecosystems. Majority of the villages in India have their own crop lands, grazing areas, forested regions which interact with each other as land use systems. It is observed that conversion of common property into government owned lands as a major obstacle to sustainable development. The alternatives to overcome this impasse are privatisation of land and management of common property through village communities, to develop lands as community enterprise (25).

One of the weakest links in the rural development process has been illiteracy and also the absent of motivation in the educated group of the rural community. The Bumumbu project in Sierra Leone has addressed this problem focusing on the teachers’ largely negative attitude to rural life and work. The need to motivate persons, particularly the polyvalent teachers, i.e., people who act as primary teachers, adult education educators, community development workers, and community leaders in a coordinated way focuses the attention to this problem towards solution. Through interviews of this heterogeneous group, the impact is assessed. Inclusion in the curriculum at all levels, the participation of community works and projects, would help in enhancing readily marketable skills. Better school-community integration and self confidence in community leadership (26).

The project on transfer of technology in dairy production, and cattle breeding in Kerala, is a part of the bilateral agreement between the government of India and the...
government of Switzerland Transfer of technology has resulted in improving the genetic qualities of indigenous cattle in Kerala, India. Studies have shown that there has been a rapid adoption of this technology at the farm level which has resulted in significant increase in productivity of cattle and production of milk. Income levels and nutritional status of farmers have improved. It is argued that a systematic review of the Kerala experience may help to get insight into the conditions under which the transfer of technology in the sphere of cattle production may become successful in developing countries. The development and gains of the cross-breeding technology in Kerala are examined, the factors that have facilitated the rapid diffusion and adoption of technology are described, and the farm level impact of this technology is looked at (27).

The electrical copra dryers using solar energy is a novel appropriate technology used at Kasaragod, Kerala, India. The solar cabinet dryer which is of chamber type has direct heating and natural air arrangement conversion aptly suitable for our conditions with abundant solar energy. An electric dryer, of the tray type with mixed flow and forced hot air circulation devised for drying thousand coconut at one time is most suitable for use during rainy season (28).

Majority of the developing countries with tropical climate are endowed with an endless source of solar energy. This has not been tapped extensively and exhaustively to meet the energy requirements. The need is all the more necessary in view of the depleting oil and coal reserves. The disturbing environment caused due to the burning of oil and coal, reflects on the health of the citizens. The alternatives which are at our reach are the development of Photo-voltaic (PV) Cells which converts sun light into electricity and its vast utilisation in various application of appropriate technology. PV powered energy has its applications in grain milling,
domestic lighting, water pumping system in irrigation etc. They are simple to operate, reliable and will reduce the cost almost by 50% at present levels for this technology as an acceptable alternative. Even health sector PV vaccine refrigerator are cost effective and reliable. There is possibility of the extension of PV technology for use in telecommunication and water treatment (29).

The constraints at three levels of finance, organisation and manpower are the reasons for the poor health care industry in Malaysia. The fourth Malaysia Health Plan (1981-85) implemented by the government of Malaysia had planned to continue to strengthening the existing health services particularly to rural areas. The main reasons for this situation was the shortage doctors and specialists as well as good medical training in public services. Other reason was the brain drain from public sector to private sector where income are more lucrative (30).

On farm adoptive research (OFAR) is a relatively new concept developed at the International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria. The necessity of understanding the farmers' needs, conditions, and problems as a precondition for development is the requirement. The OFAR stresses the need for a high degree of farmer involvement. The West African farming systems research network is the result of OFAR (31).

The regional integrated agricultural research system approach to technology transfer developed by the Ministry of Agriculture and Food, Philippines was designed to improve the agricultural practices. As a part of this, trials were conducted in farmers' fields to study the farmers' practices and a suitable technology package. The applicability of the research findings have improved current farm practices. After three years of evaluation, on 50 percent of the test sites, the technology was
identified, that was ready for dissemination which had substantially higher returns than the existing practice. The extension officers who resided near the test site were consistently more successful in managing and implementing the On-farm trials. Promising technologies with respect to cropping pattern comprising crops such as rice, mung bean, maize, groundnut, tomato and coconut have emerged as better alternatives. The percentage of the innovation adoption of various technology components is an important factor that triggered the utilisation (32).

The lab to land programme launched by Indian Council of Agriculture Research (ICAR) aimed at employment and income generation among the weaker section of the population through the transfer of well-tested and economically viable technologies developed at various research institutes of the council. The new technologies helped in significant improvements in generating employment and income. The technology transfer systems, if implemented in an integrated manner guided by scientists and technicians, can gradually improve the socio-economic conditions of the weaker sections of the rural community (33).

The linkages between agricultural research institutions, farmers and technology transfer agencies (the technology triangle) is very important. The institutional context of links, organisational factors affecting links, types of linkage mechanism, staff management issues and the need for active management are the main issues on policy. Links between agricultural research institutes, farmers and technology transfer agencies are vital for successful technology development. The establishment of links are found to be costly in terms of resources which have to be diverted from research site to extension execution (34).
The technology transfer mechanism at the Central Institute of Agricultural Engineering, Bhopal, India, include product development for commercial production, supply of blue prints and prototypes, implant guidance in the upgrading of existing technology, marketing assistance, exhibitions, farmers' day, and manufacturers' day. The distribution of leaflets and other literature, screening of video and documentary films are regular features of popularisation of agricultural machinery. The CIAE is a small national R&D institution and it therefore coordinates with other government and private agencies in the promotion and popularisation of agricultural machinery (35).

Closing the gap between research and extension through a new technology model in Guatemala indicate that the assumed On-farm research can substitute technology transfer efforts. On-farm research provides a focal point for developing strong links Direct link with farmers alone are sufficient for wide dissemination of technologies. The Guatemalan study illustrates and shows that there is strong collaboration between On-farm research and extension can bring significant increases in production and net income for the farmers. Guatemala success in closing the gaps in research and resource-poor farmers, depend on meeting three major conditions in three successive stages. They are On-farm search to generate appropriate technology, efforts by extension institution, and lastly participation of rural leaders and groups (36).

The many sided pharmacological and other beneficial properties of the neem tree, a native of Indian sub-continent, (potential indigenous plant resource) in agriculture and rural development in less developed countries is an important aspect of research. The tree's hard termite resistant wood is used for construction and its resin is a gum substitute. The potential of the neem tree lies in the manufacture in the two
products, namely need oil, and the neem cake. The pest control material obtained from the neem tree at the village can be used effectively to reduce dependence on imported synthetic pesticides (37).

A number of low-cost techniques suitable to poor farmers in Indian context like, a seed drill for rice, drawn by a pair of bullocks, which plants 10 rows of seeds at a time and facilitates mechanical removal of weeds. This drill can replace the broadcast planting method of planting rice. Another simple low-cost technology is nitrogen management under flood conditions to overcome the nitrogen loss through leaching. Split nitrogen application and blending urea with neem cake helps in a slow release of nitrogen for plants. This helps farmers to save as much as 20 percent of nitrogen. Other techniques like planting Sugar-cane in autumn instead of spring, optimum spacing of fruits, chemical control of insect pests in cotton, water harvesting, paddy cum fish culture, livestock, sericulture, bee-keeping and kitchen garden have been the plank of the appropriate technology to suit the small farm (38).

The Hambanathota Integrated Rural Development Project (HIRDEP), Sri Lanka, has developed a food processing project on limited scale with a number of local enterprises involving Jam and fruit juice making. This project reflects more than the smallness of the scale in use of local resources in developing an appropriate food processing technology. The objects and preconditions of the project envisages the criteria for selection of an appropriate technology, the identification of local entrepreneurs and methodology of small food processing enterprise development. It is demonstrated that in addition to simple low-cost technology, facilities such as technical support, business awareness, and business practice training, access to credit and product and marketing development are also essential to promote
successful small-scale enterprises. Further, if poorer groups are to participate in the development project, then the special measures have be taken to reach them. (39)

Serculture is an important segment of rural development which sustains quick and fast development if proper care is taken in its technology application. It is an important strategy which helps in alleviating rural poverty, provides employment and income opportunities to rural landless labours including women. It is mainly a labour intensive agro based cottage industry. Serculture allows low investment, offer high profit potential and foreign exchange earnings. The role of sericulture in the economic and rural development in Indian context is high and has been a potential and effective employment generator. This has been possible because of the development of appropriate technology and human skills. This is an indicator for application to develop and expand sericulture industry in other Asian countries. (40)

The policy issues connected with the development of rural industries in Bangladesh, considers the structure of rural technologies, which comprise traditional and modern small firms and cottage technologies. Attention is given to raw material availability, technology, credit, marketing and entrepreneurship. Institutional involvement in the promotion of rural technologies is discussed using the examples of the Small and Cottage Industries Corporation, the Serculture Board, the Rural Development Board and the Hand-loom Board. The policy measures for implementation are: (a) transform unproductive cottage technologies into productive rural technological units, (b) promote research examining on whether the use of labour in the agricultural sector is complementary or competitive to its use in the rural technology sector, and (c) improve cooperation and coordination among different ministries and departments on technology. (41)
The economic condition of rural women which form a major chunk of the work force of the rural scenario needs attention by extending the opportunity to work in appropriate technology environment in Pakistan. The areas of adoption of new income-generating activities are crucial in increasing economic productivity. This improves the socio-economic status and living condition of rural women in Pakistan. The areas covered are bee-keeping, a cottage technology demanding very little investment, lac cultivation and processing sericulture, small-scale or commercial poultry farming, low-cost fish farms, mushroom cultivation, and other community development activities such as fruit preservation, carpet weaving, and basket making. By adopting appropriate technologies, the rural women's loads can be greatly be reduced both in terms of time and labour saving technologies. (42)

Handicraft industry is an important cottage industry which has a high employment potential and scope for export and foreign exchange earnings. India being an agrarian society, the spread of handicraft industry is far and wide. The trends that underline the development in handicraft industry identified the problems, and evaluate the public policy framework for a coordinated development. There are two type of handicrafts, those of an artistic value and other with utilitarian purposes. The growth in the export of handicraft have brought about changes in this traditional sector which may, over a period of time lead to a loss of cultural heritage of skills and crafts. Another problem is the use of low level of skills and technology, a major cause of low productivity and poor quality of crafts. The successive government policies towards the promotion of handicraft sector, including the institutional set-up for implementing the promotion measure is an important factor for consideration. (43)

The non-farm agricultural technology which fall into the category of Khadi and village industries in an important wing of the rural industrial scene. This wing would
offset the employment and income opportunities during the off-season agricultural farming. There is need for the promotion and development aspect of this traditional village industry. An action plan based on the available local material resources and human resources which includes mechanism for monitoring and evaluation is the need of the hour. A comprehensive approach to upgrade skills, technology, employment, marketing, input supply, in the action plan will be appropriate (44).

The compatibility or otherwise of the portable ground water for use as drinking water and for other major sanitary situations like excreta disposal, for use in unsewared sanitation or sewage treatment in stabilisation ponds with effluent reuse has a direct bearing on the health hygiene and sanitation aspect of rural area with a special reference to developing countries. Under certain hydrogeological conditions the low-cost technologies used, conflicts with the use of portable supplies. This intricate problem of potential hazards has to be analysed in detail, first to understand the problem in-depth. This helps in improving design and integrated planning of the installations involved. This reduces the ground water pollution hazard in the rural setting which in turn helps better sanitation condition and better living situation of the rural masses (45).

The social forestry programme of the Karnataka Government was introduced along with the land reform act. The social forestry programme has resulted in small and marginal farmers abandoning food grain cultivation not out of choice but out of the inability to grow these crops in lands surrounded Eucalyptus plants. In Karnataka, vast natural forests have almost disappeared to provide fuel and raw material for a number of old and new forest based industry. The systematic programme of aforestration of the Karnataka Government with single-stand eucalyptus plantation in
the areas that have been cleared of the natural forest. This is another reason for abandoning food grain cultivation by small and marginal cultivators (46).

There is a direct link between social forestry and problems the rural poor. There are two forms of social forestry, one being individual farm forestry and the other community planting on wastelands. Both have potential contribution towards rural welfare and prosperity and to the successful extension of total tree-cover. Farm forestry has been more successful both in addressing rural welfare needs and in eliciting enthusiasm for tree planting than has wastelands or community land planting (47).

There is urgent need to find the alternative employment especially in rural areas of the developing countries to develop food and agricultural products, conservation and processing industries using appropriate technology. This is because the agriculture sector has reached the saturation point in many countries as an employment resource. One of most effective means to achieve this is to introduce economically viable, employment-generating, energy-conserving, capital-saving, waste-reducing, easily manageable, environment-protective and poverty-reducing technologies. In consultation with the developing countries, technology transfer has made 26 recommendations covering the fields (a) for implementation at international level, (b) for implementation at national level, (c) preparatory steps for the establishment of an Asian network for technology transfer in agro-industries (48).

The entrepreneurs are playing an important role as an integral part of development programmes in Sri Lanka. Most of the existing industries are small-scale and located predominantly in the rural areas throughout Sri Lanka. The problems and demands of rural entrepreneurs need immediate assistance and improvement. In particular,
problems related to production and technology, marketing, financing and management need attention. Problems frequently found are the variable quality and shortage of raw materials, lack of capital or lack of access to institutional finance, underdeveloped marketing channels, lack of access to market information, and the absence of basic management skills among entrepreneurs. Policy recommendations include the improvement of the entire policy environment within which rural enterprises are operating, together with a package of financial, technical, infrastructural and institutional services in order to effectively support the development of the small enterprise sector (49).

The design and planning for creating a database on dental health programme for the economically disadvantaged for rural areas draws priority attention to cover the large mass of rural children. The procedure for the collection of data through interview survey of the beneficiaries has to be effective, so that the compilation of descriptive data about the dental disease, the classification schemes devised for analysing the data can be used effectively to alleviate the sufferings (50).
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