CHAPTER THREE

NATIONAL POLICIES AND THE DEVELOPMENT OF INDIGENOUS TECHNOLOGIES: THE PAKISTAN CASE

The importance of reducing construction costs through low-cost technologies was emphasised in the rural Village Agriculture and Industrial Development (Village AID) programs adopted by the Pakistan government in the early fifties. Using low-cost, particularly indigenous, technologies to reduce housing costs was an issue as early as the mid-sixties when provincial building research centres were established nationwide. The Rural Works Program[1] was launched at about the same time with the stated objectives of simultaneously improving rural conditions and generating employment in the rural areas.

Despite this long-standing acknowledgement of the potentials in construction and indigenous technologies, there has been a clear trend to adopt increasingly more capital- and

---

1. This was introduced under the system of Basic Democracies during the regime of President Ayub Khan. With the change in government in 1972, it was renamed the People's Work Programme (PWP) and was combined with a new model of rural development, the Integrated Rural Development Programme (IRDP). In 1979, it was again renamed the Rural Works Programme.

import-intensive technologies in public sector programmes (see Table for a listing of indigenous and import-intensive construction and materials production technology). Why has this been the case, and what if anything should be done about it?

The answers to these questions can be addressed at two levels.

First, at the level of national objectives, policies and programmes, how do these influence technology choice and, specifically, what obstacles and potentials do these objectives, policies and programmes present for the development and adoption of low-cost, indigenous technologies?

The second level is that of specific factors that influence technology choice, especially at the local level. These factors include: 1) the belief that a tradeoff between equity and efficiency exists in choosing between indigenous and import-intensive technologies; 2) the likelihood of a mismatch between the characteristics of indigenous technologies and the spatial and institutional environments within which most construction has been promoted; and finally 3) the influence of interest groups who stand to gain or lose from a shift in technology choice.

In this chapter we will discuss the issues at the national level. Chapters four and five will examine the more local-level factors. We argue that, although well entrenched national policies have favoured import-intensive technologies, new possibilities to promote indigenous technologies have emerged. These possibilities lie in the rising demand for low-cost construction, shifts in public investment resulting from a recent move towards privatisation, and a strengthened local government system based on the rural district.

Public investments have been reallocated from large industrial projects and urban housing to the social sectors, specifically their rural construction component; the responsibility for construction has been transferred from the Buildings Department to the local councils supervised by the Local Goverment and Rural Development Department. Policies and programmes to develop indigenous technologies can take advantage of or be "piggybacked" on these recent changes.

We first examine the conditions that have favoured import-intensive technologies. We then discuss those emerging possibilities for developing indigenous technologies.

1.0 Conditions Favourable to Import-Intensive

Technologies

Pakistan's development efforts have supported import-intensive technologies producing for an upper-income market to the detriment of indigenous technologies producing for a low-income market. This is a combined result of policies that encouraged an unequal income distribution, a specific type of import substitution policy, and investments on large-scale construction and industries. We shall examine the individual effects of these factors in some detail.

1.1 Income Inequalities

As mentioned in Chapter 2, the growth model of development relies partly on income inequalities, or at least accepts such inequalities as a temporary but necessary price for sustained progress. This model and its assumptions shaped Pakistan's policies.

To quote a leading Pakistani economist:

> "[Pakistan's] model of development relied on income inequalities as basis of generation of surplus funds needed for investment. It implied that the higher income groups would save a large proportion of their incomes and that growth would be rapid enough to percolate down through to the lowest income strata of society. Both were false assumptions, repudiated in the Pakistan context (Naseem, 1981:58)."

The result was an income distribution pattern where 43 percent of the national income in 1972 accrued to the highest quintile, compared to only 8 percent to the lowest quintile. By 1984, the share of the lowest quintile had dropped further to 7.3 percent (World Bank, 1984:vii).

Expectedly, the effective demand of the upper-income groups dominates the market. The demand is for luxury type housing using import-intensive technologies and materials. A study of new housing construction in 19 Pakistani cities shows that almost 60 percent of total investment in new housing was made by the highest income bracket but they constructed only 22 percent of the total number of units. More revealing, 71 percent of the units had cemented roofs (reinforced brick or cement concrete roofs), and 84 percent had cemented walls (fired brick in cement mortar) (Table 3.2; United Consultants 1975:9).

1.2 Import Substitution for the Upper-Income

An import substitution policy whose objective is to produce locally those goods required by low-income groups and to use production technologies that draw on local resources would create a demand for indigenous technologies. The import substitution objectives and policies implemented in Pakistan, however, simply attempted to produce locally the goods being imported, largely for the upper-income, by

importing the large-scale, capital-intensive production technologies used in the country of origin.[2]

The import substitution policies lowered the effective price of capital relative to labour, thus encouraging capital-intensive technologies over labour-intensive ones.[3] The prices of materials using capital-intensive technologies therefore became lower relative to those using local resources, thus encouraging the purchase of more of the former and less of the latter. For example, the price of roof girders equalled that of timber beams, their direct substitutes, partly because of the substantial savings accruing to the steel re-rolling mills through the import

2. This type of import substitution was influenced by at least three basic principles of neo-classical economics: production for the market, the inevitability of scale economies and the superiority of the latest in capital-intensive technologies.

3. Such policies included overvalued, sometimes multiple, exchange rates, low duties for imported equipment, subsidised loans, sometimes with negative interest rates to finance capital investments, tax concessions to lower effective cost of fixed capaital, import permits for raw materials linked with capital investment, accelerated depreciation, and other tax concessions.

substitution policies.[4] In contrast timber, a major building material of low-income groups, is given little attention as an industry.

1.3. Public Investments in Large-scale Construction and Import-Intensive Materials' Industries

A significant proportion of Pakistan's public investments has been on large-scale infrastructure and building construction thus creating a demand for the import-intensive materials and technologies required for such construction. This construction program and the manufacturing industries established as part of the import substitution objectives mentioned above closely reinforced each other.

Examples of such projects are the huge Mangla and Tarbela dams, the ten cement plants that these dams in part provided a justification for, and the nearly completed National Steel

---

4. These policies result in low, subsidised prices for capital equipment and energy, both of which comprise a major portion of costs in the re-rolling mills. Lack of data has prevented the inclusion of these subsidies in the economic analysis of construction using steel. Timber production, even if industrially organised to use some of these subsidised imported inputs would not benefit equally, since by nature it is a more labour-intensive process. Its longer gestation period and special problems, such as the competition for its use as fuel, and the prevailing attitude that timber is a second class building material and cannot be really considered an industry (although, or perhaps because, it is so widely used by low-income groups), all require govternment attention to resolve. Such attention might have been forthcoming if the import substitution policy was of the first kind mentioned above.

Mill near Karachi. The cement plants and the Steel mills are both highly import-intensive which naturally makes construction using cement and steel also import-intensive. In addition to the imported capital equipment, the cement plants are fueled by imported furnace oil (GOP/Planning Commission, 1983). Imported raw material alone - iron ore and metallurgical coal - make up one half of the production cost of steel (Zuberi, 1983:15).

These projects absorbed a large share of public industrial investment. The steel mill cost Rs 27.7 billion, of which Rs9.6 billion was spent on the construction of infrastructure and a new 3,290 hectare township for 10,000 employees (Zuberi, 1983). Ten percent of the investment budget of the Sixth Five Year Plan, 1983-88 was set aside simply for the completion stages of the mill.

These projects continue to claim a significant proportion of government expenditures even after completion because of their large-scale and the technology used. The maintenance expenditures for the Tarbela dam, for example, absorbed an average 3 percent of total development expenditures between 1980 and 1984 (World Bank, 1984:xviii).

The sophisticated technology ties the government to regular capital improvements if these industries are to remain competitive in the international market. Thus the Sixth Plan

budget provides for the rehabilitation of six of the nine cement plants. Similarly, the technology of the nearly completed steel mill is already outdated (World Bank, 1984:xviii).

Although the economic justification for the steel mill and recently the mining project at Saindak was questioned at the highest levels of government and by international agencies such as the World Bank, interests in these projects were so deeply rooted, they could not be dislodged (World Bank, 1984:xviii).[5]

The foregoing examples are cited not so much to question the wisdom of the development approach adopted by Pakistan nor its policies or investment programmes, but primarily to show how these trends, dominant at the national level, have influenced technology choice in favour of import-intensive methods and against indigenous ones.

In sum, income inequalities, import substitution policies and investments in large-scale, capital- and import-intensive projects all worked to favour import-intensive technologies over indigenous ones. The above also highlights

---

5. A number of alternative proposals for small-scale, more labour-intensive, cement and steel plants were consistently rejected by the government (Interview with Hafiz Pasha, Assistant Director of the Economic Research Unit, University of Karachi, conducted by the author in Cambridge, MA USA, 1984).

the entrenched interests supporting import-intensive technologies manifested in the physical and financial commitment to these technologies.

Two other related effects of national policies should be noted.

First, Pakistan's market and growth oriented policies have helped channel most construction investments to the large cities, notably Karachi.[6] As we shall discuss in the next chapter, large and, in particular, port cities are not conducive to the development of indigenous technologies.

Second, both large and small-scale construction are the responsibility of the same public institutions - the Ministry of Public Works and the Construction Departments of other ministries. Because large-scale construction and import-intensive technologies have been the national priorities, the preferences so reflected have dominated these institutions and spilled over onto attitudes and practices for small-scale construction as well. Import intensive technologies have been used for such construction where they may not be necessary.

---

6. An account of how such policies channel investments to large urban areas is beyond the scope of this study and also well known. For a general discussion see, for example, For a discussion in the Pakistan context, see Qadeer ( )

The spatial and institutional issues will be discussed in the next chapter.

1.4 Effects on Housing and Rural Works Programmes

Given the above income distribution, national policies, investment priorities, and technology emphasis, it is not surprising that government programs which could have supported indigenous technologies lacked political commitment, imagination, and funding.

Programmes such as low-cost housing and rural works have been long featured in Pakistan's development plans. Their objectives of low-cost construction and employment creation would have been more effectively achieved by adopting indigenous technologies. The national climate in support of the capital- and import-intensive technologies was so dominant, however, that the use of such technologies was not seriously questioned. The programs relied instead on high funding levels to be effective and because such funding was committed to other high priority projects, the impacts of these programmes were minimal.

During the Fifth Plan period, a shortage of 581 thousand urban and 864 thousand rural housing units were estimated. But there were allocations for only 425 thousand urban units, of which only 285 thousand units were implemented. A

major reason for this shortfall was the cost inflation of the import-intensive materials adopted (GOP-Planning Commission, 1983:388).

The number of man-years of employment created through the People's Works Program (PWP) in 1973-74 was only 22,000 of which 12,000 were regular employees of the PWP . This low figure was in retrospect traced to the use of contractors and capital intensive construction methods.

Labour-to-material ratios for construction in the Works programmes averaged 20:80. Based on this ratio, it was estimated that a total of only 15,500 man-years of employment were created (Bokhari, 1978:177-78). The ratios for indigenous technologies (estimated in the next chapter) are 40:60. Thus merely switching technologies would have doubled the employment created (for a discussion on the various rural programs which included construction: Village-AID, People's Works Programme, and Integrated Rural development, see Bokhari, 1978; for a review of Pakistan's Housing policies and programs, see).

It is clear from the foregoing that import-intensive technologies have a well developed market in upper-income housing and government projects, and are also essential for large-scale construction projects. Public commitment to the cement and steel industries which produce the materials for

these technologies is also very strong. Given these conditions, indigenous technologies cannot win serious government support if they are perceived as a threat to these industries. Indigenous technologies must complement, not compete with their import-intensive counterparts.

Moreover, given that the above conditions are well entrenched, the development of indigenous technologies cannot be predicated on any fundamental structural change. Instead we need to identify the potentials for promoting indigenous technologies within the existing yet evolving structure, specifically through channels with strong government backing to promote these technologies. Fortunately such potentials and channels exist.

2.0 Potentials for the Development of Indigenous Technologies

There are several potentials. First, there is a long standing need and demand for low-cost construction using indigenous technologies. Next, for the first time, standards below those in the building codes and construction unregulated by these codes have been accepted as official policy. Finally, and most important, under the Sixth Plan, 1983-88, public investment has been reallocated from heavy industry and large-scale infrastructure construction to research into science and technology, including appropriate technology; to rural building construction through the

social sector; and to a strengthening of the local government system.

We shall examine the significance of each of the above for the development of indigenous technologies.

2.1 Need, Demand and Current Investments in Indigenous Technologies

We previously identified the large proportion of total public and private investment allocated to import intensive construction technologies, especially in connection with large-scale infrastructure projects and upper-income housing in the larger cities. A closer look at urbanisation patterns and public investment reveals a concurrent trend in investment more supportive of indigenous technologies.

Urban growth trends show that 25 percent of the expansion in the urban areas is in squatter settlements, which are receptive to using indigenous technologies (the proportion is higher in the large cities. For example, 33 percent of Karachi's expansion is in these areas, see World Bank, 1984:124). Next to the largest cities, the fastest growing settlements are the small towns of 10 to 25 thousand population, settlements where indigenous construction technologies prevail (World Bank, 1976; Annex 1, p.16 and Table 1.8. Also Afshar 1981:3-4). Several housing studies also confirm housing need to be greatest in the low-income,

especially rural areas. It was estimated, for example, that 3 million new housing units would need to be constructed by 1980 simply to achieve habitation density levels of 1960. Of these units, 84% would need to be in the rural areas, 60% in rural Punjab alone (see Zaki, 1981:216-246; Afshar, 1981:7). A surprisingly large percentage of provincial development budgets is allocated to construction; much of it is small-scale and of the type that could adopt indigenous technologies. Over the period 1980-84, for example, the Punjab government allocated on average 41 percent of its total development budget to construction, of which 16 percent was on buildings (Table 3.3).

Although these trends have existed for some time, they have proved insufficient to promote indigenous technologies.

2.2 Acceptance of Lower Construction Standards

The majority of housing construction falls below Pakistan's formal building code requirements. The official policy until recently considered such construction in violation of these codes and subject to demolition. The threat of demolition was used by building officials to extract money from noncompliers. The same threat also prompted some house builders to spend more on construction, especially to use officially approved import-intensive

materials such as cement and steel than they otherwise might have chosen.

Aid agencies have for sometime advocated a relaxation of construction standards. In its 1976 *Urban Sector Survey on Pakistan*, the World Bank urged the acceptance of sun-brick construction (World Bank, 1976:). In 1984, inappropriately high standards was again listed by the Bank as the main constraint, after land, to expanding Pakistan's housing supply. But this time the Bank noted the federal government's acceptance of this position as a major step forward in resolving the housing problem (World Bank, 1984:xxvii).

The federal government's recognition of the need to relax building codes was first expressed in 1981 in a draft national housing policy document. The document stressed the need to revise the building codes, lower standards, encourage research in low-cost indigenous materials and technologies, and accept the use of these technologies in housing construction (National Housing Policy 1981). The entire document has yet to become government policy, but several of its recommendations, notably those mentioned above, were included in the Sixth Plan.

The Sixth Plan document states:

> "The poor will be allowed to construct their own houses according to their own design and with their own labour, without interference from the regulatory building authorities (GOP-Planning Commission, 1983:391)."

As a more active support the Sixth Plan also proposes the provision of low-cost building materials to such house builders (World Bank, 1984:xxviii).

Thus acceptance of standards below those required in the official building codes and of construction unregulated by those codes is, for the first time, official policy.

This measure removes a considerable constraint to the adoption of indigenous technologies. But it does not reflect a higher priority given to the housing sector nor does it necessarily reflect changes in attitude and practice below the highest policymaking levels in the housing and construction sectors.

Allocations to the physical infrastructure and housing sector fell substantially from 6 percent in the Fifth Plan to 5 percent in the Sixth (World Bank, 1984:24) The housing sector has in effect become a lower priority in the current plan. It is therefore unclear whether the new policy on lower standards and unregulated construction reflects a desire to improve housing conditions or to deal with them on a reduced budget. (The relaxation of building regulations is

consistent with a general move towards "privatisation" and "deregulation" advocated by the World Bank and a major feature of the Sixth Plan as we shall discuss.)

The breakdown of allocations within the housing sector suggests that more traditional attitudes and practices in fact continue to prevail. Constructing housing units of higher standards still has priority over assisting the low-income groups to construct on their own using local resources. The 5 percent allocation of the housing sector is to be divided between constructing 670 thousand housing units adhering to building code standards but developing only 500 thousand plots (GOP-Planning Commission, 1983:390-391). In physical units and more so in resources spent, the government housing sector will clearly continue to emphasise the construction of units by contractors and the use of import-intensive construction.

Finally, all of this expenditure will be in the urban areas which, as we shall discuss, is an unreceptive environment for the introduction of indigenous technologies. For example, given the massive investment in the steel mill, its proximity to Karachi where much urban housing investment will materialise, and the subsidies planned for mild steel rods, which will reduce its market price, government housing engineers could argue that these rods and therefore

reinforced concrete construction meet the criteria for using "low-cost building materials."

In sum, what we have so far is only a partial basis for developing indigenous technologies. On the other hand, a significant proportion of government investment is in small-scale construction that could use indigenous technologies. Housing studies as well as the rapid growth of low-income housing areas in the large cities and that of small towns in geheral suggest a need, demand, and similar investment and activity for indigenous technologies in the private sector. And, although the motivations are ambiguous, it is now government policy, if not yet practice, to encourage construction less hampered by building regulations.

Still missing is a channel with sufficient financial and political clout, within an environment relatively free of deeply rooted technological biases, through which indigenous technologies could be introduced into construction practice. Particular shifts in emphasis between the Fifth and Sixth Plans, however, indicate the possibility of such a channel.

2.3 The Sixth Five-Year Plan: 1983-88

The Sixth Plan departs from its recent predecessors: ideologically, by incorporating a push for "privatisation",

and, financially, by reallocating public investments from heavy industrial projects and large-scale infrastructure construction to energy, science and technology, the social sectors, and, to a lesser extent, small industries. In addition, the new Plan strengthens local government at the rural district level.

The resource flow released by the completion or near completion of major industrial and infrastructure projects such as the dams and the steel mill mentioned have made possible the shifts in sectoral allocations (World Bank, 1984:24).

The effect of privatisation and its concomitant emphasis on deregulation are apparent in the policy to ease controls on housing construction mentioned previously. A similar effect can be noted in support of the small industries sector where indigenous production technologies are adopted and materials for indigenous construction technologies are produced. Investment in small industry has been increasing at a relatively high rate during recent years. With the proposed liberalisation of economic controls and a favourable fiscal system, the Plan projects the rate of growth in small industries to be even higher (GOP, 1983:17).

An emphasis on science and technology, specifically research into appropriate technologies, is essential for the

development of indigenous technologies. With regard to this aspect, the Sixth Plan states:

> "The need for self-reliance through the development of appropriate technology will be given special emphasis. A comprehensive programme for the development of science and technology has been drawn up - existing institutes will be strengthened and new ones set up for developing indigenous labour-intensive techniques in sectors such as construction and highways (GOP, 1983:435)."

The development of appropriate technology is based on the following: the use of Pakistan's raw materials and labour, a fourfold increase in expenditure on science and technology, and a decentralisation of technological institutes (GOP, Planning Commission, 1983:17). As part of this effort, Rs. 100 million was set aside for a national building research centre and for measures to strengthen building research at the universities and provincial research centres.

Most important for the development of indigenous technologies are the shifts in emphasis to the social sector, rural areas, and local councils. To realise the significance of these shifts, we have to relax traditonal conceptions about where the potentials for developing appropriate construction technology must lie. We need to turn to potentials in spatial, sectoral, and institutional areas quite different from those usually associated with public intervention in building construction. More specifically, we have to shift our attention from the large

cities to the small towns and rural areas, from the physical planning and housing sectors to the social sectors, and from the conventional construction agencies - the Public Works Ministry and the construction departments of other ministries - to the local councils and the Ministry of Local Government and Rural Development (LGRD). The rural areas, social sector, and local councils together offer the mix of conditions necessary to initiate indigenous technologies: political commitment, public investment and activity in construction, and a potentially receptive spatial and institutional environment.

We have already discussed the high level of need, demand and investment in small-scale building construction in small towns and rural areas. We have also alluded to the relative lack of receptivity to indigenous technologies in the large cities and how the rural areas may be better breeding grounds for the development of such technologies. We will return to the factors affecting receptivity in more detail in a later chapter. Here we shall examine the financial and political factors that make the social sectors, local councils and LGRDs unusual but promising conduits for technology change.

2.3.1 The Social Sector Construction Program

A breakdown of the different sectoral budgets reveals that it is not the physical planning and infrastructure sector that finances most building construction but, ironically, the social sector. Moreover, compared to any other sector, a much larger proportion of the social sector budget goes to construction. Between 1980-84, on average, 55 percent of the annual public investment in building construction in the Punjab was funded by the social sector, compared to only 33 percent and 12 percent by the physical and production sectors, respectively (Table 3.4). The social sector spends approximately 43 percent of its budget on building construction as opposed to only 15 and 4 percent spent by the physical and production sectors, respectively (Table 3.3).

Thus the social sector has the most financial clout to directly influence technology choice in public building construction, and through its buildings' examples, influence private housing as well. Its large share of public construction investment also indicates that it could have the most impact on stimulating demand in indigenous materials industries.

The effectivity of social sector buildings in disseminating technology is enhanced by their greater geographical spread relative to public housing projects as well as by the fact

that they are among the first public buildings to be constructed in the country.

The social sector's leverage is greatly enhanced in the Sixth Plan, especially relative to the housing sector. While allocations to housing and physical infrastructure dropped from 6 percent of the total in the previous Plan to 5 percent in the Sixth Plan, those to the social sector nearly doubled from close to 10 percent to an unprecedented 17 percent (World Bank, 1984:24). And, as we just noted, channeling funds to the social sector largely amounts to channeling funds to building. The result in the Punjab was an increase in the share of building construction in the total development budget: from an average of 14 percent in 1980-83 to 22 percent in 1984. For the same periods, the social sector increased its investment on building from 36 percent to 58 percent of its total budget (Tables 3.2.1-4). Much of this construction is earmarked for the rural areas. As the Sixth Plan document states:

> "An extensive network of primary schools, basic health units and rural health centres will be constructed to extend coverage to the entire rural population (quoted in World Bank, 1984:19)."

Along with the above building construction, a much expanded rural works programme is also being implemented.

2.3.2 Local Governmentas Implementors[7]

The local councils - district and union councils - with the LGRD Departments will be the institutions to implement the expanded construction coverage. Thus the Sixth Plan document goes on to state:

> "One of the major concerns is to bring development closer to the people. There must be larger community participation [in the execution of development programmes. There must also be] a larger role for elected local (council) bodies in the planning and implementation of development programmes ...the local bodies will be expected to play a much larger role in the construction of primary schools, basic health units, rural health centres, farm to market roads and rural water supply." (GOP, Sixth Plan, 1983)

A specific role in the improvement of rural housing is also envisaged for the local councils:

---

7. The present local government system of district and union councils was set up in 1979 under the Martial Law administration of President Zia-Ul-Huq. The councils are elected bodies headed by a Chairman. These have functions and powers to plan, approve (within limits), and implement development activities and to levy taxes. In particular, the councils have overall responsibility for the following construction projects: primary, middle and secondary schools, rural health centres, basic health units, family welfare clinics, small water supply schemes, sanitation and rural roads (Jafri, 1982:6-7).

All government representatives at the respective levels are ex-officio members of the councils. Both tiers of local government are linked to the provincial government through the Department of Local Government and Rural Development (LGRD) which resulted from the merger of the Integrated Rural Development Programme and the People's Works Programe (now renamed the Rural Works Programme). For a description of the larger financial and institutional framework within which building construction is implemented, see Afshar, 1981:).

> "In the rural areas too, housing of satisfactory standards is in very short supply - technical guidance for improved methods of construction with local materials could be invaluable to the rural population. A properly planned house constructed with locally available building materials can, inspite of being much cheaper, be as comfortable as a house having *pucca* (fired brick in cement mortar) walls and rcc roof. The local councils will therefore be required to evolve suitable mechanisms for arranging technical advice on a regular basis (GOP-Planning Commission, 1983:392)."

For the first time, the Housing and Building Finance Corporation has been directed to extend credit to rural housing.

In addition to resources channeled through the social sector, another Rs20 billion has been set aside for the local councils: a 228 percent increase from the last Plan allocation.[8]

The political motivation behind the emphasis on local councils and increased public investment in rural construction through these bodies is unofficially but widely acknowledged in government circles. As one Assistant Commissioner explained: the local elite (elected to the

---

8. Local councils have three sources of income: government grants, local taxes, and income from commercial projects (profits, rents, fees, etc.). Government grants are the major source of funds, these consist of: 1) the development grant for rural development and construction (Rural Works Programme), and 2) a portion from the provincial sectoral departments' development fund to construct and repair schools, staff residences, basic health units, etc. (Jafri, 1983:9).

councils) traditionally with the opposition are won over by giving them the power and patronage associated with these projects. These local elites are encouraged to concentrate on development programmes rather than on political activity by limiting council functions to such programmes.[9] The emphasis on development of the district level shifts attention from political activity, or the lack of it, at the national levels.[10]

---

9. From an interview with Major Fyaz Bashir, Assistant Commissioner of Pakpattan, conducted by the author in Sahiwal, Pakistan on 15 May, 1983. According to Major Bashir:

"The government is giving more development responsibilities and powers to local bodies. These are often the middle level politicians and supporters of the long standing national opposition parties such as the People's Party. They were traditionally the intermediaries between the national leadership and the people. Now, as they get more and more involved in the local government system, in the exercise of local power that comes from being able to influence where development projects occur and how (power that comes from the present government), they increasingly cut themselves off from their former political bosses.

The Chairman of the Municipal Committee in Arifwala is an old and once ardent People's Party supporter. I asked him recently how come he was participating so enthusiastically in local government elections. He replied that, 'if he remained a People's Party worker, he would remain a mere functionary of his bosses, executing their orders.' Now he is Chairman of the Municipal Committee with much more power and independence. We as civil servants do not object to this transfer of development functions and responsibilities since we maintain our law and order, political amd even overall control of development decisions made by the local bodies."

10. Provincial and national assemblies with members drawn in part from these local bodies have recently been insitututed. Some commentators note that these assembly members rival the leaders of the old opposition to the present government.

3.0 Summary

The broader political and developmental merits of the recent move to privatisation and emphasis on local government notwithstanding, the resulting release of public funds for smallscale industries, research on appropriate technology, and rural construction projects implemented through local councils presents a momentum on which can be "piggybacked" the development of indigenous technologies.

The basic ingredients for a successful programme exist: political commitment, substantial financial resources, and as we shall discuss later, a more receptive spatial and institutional environment. But, as we shall also discuss, none of these ingredients guarantee support and success for such technologies. They present positive conditions under which, if handled correctly, programmes for the development of indigenous technologies may succeed.

In this chapter we examined the effect of national objectives, policies, and programmes on technology choice. We found that within the existing structure of unequal income distribution and public commitment to import-intensive technologies, there were nevertheless such emergent potentials as in social sector investment and in local councils through which the development of indigenous technologies could be promoted.

None of the above, however, addressed the basic question whether the promotion of indigenous technologies is a good thing or a bad thing. The answer depends partly on the validity of the claim that, although indigenous technologies may be more equity promoting, importintensive technologies are more efficient and, therefore, in the longer term equity promoting as well. This tradeoff between equity and efficiency was the single most fundamental and common reason given for selecting importintensive technologies. It must be addressed before we can proceed further in our analysis of technology choice and the promotion of indigenous technologies.