BREAKTHROUGH IN DEVELOPMENT AN IMPERATIVE FOR PAKISTAN'S FUTURE

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Pakistan's development has been totally inadequate, compared even to the other developing countries. No clear objectives, the inability to meaningfully utilize its resources, over-dependence on foreign loans, neglect of science and technology and ineffective governments appear to be amongst the cardinal reasons. One of the poorest living standards in the world, insufficient agricultural and industrial productivity, hardly any worthwhile industry except some inessential import-dependent units, unemployment, and the brain drain etc. are the results.

National goals for development in a certain fixed period to attain a certain standard of living require to be clearly enunciated. With some essential parts of the new development strategy already underway like the administrative reforms, the other sound essentials should be : Self-reliance ; utilization of the latest technologies ; increasing modern knowledge ; education ; technology in agriculture ; modern management ; manufacture in Pakistan etc.

The priority sectors of Energy, Communications, Knowledge and Education, and Agriculture are considered. The present development in these sectors, as well as that previously planned for the future, has only relevance to yesterday. The dynamic Pakistan of tomorrow has to make a revolutionary and rapid breakthrough in development. The levels of development in these sectors need to be given a quantum jump.

Pakistan's Poor Development Compared To Developing Countries

Twenty-eight years after our emergence as an independent nation, Pakistan is still one of the most underdeveloped countries. In these twenty-eight years the rest of the world has developed at such an accelerated pace that the disparity between Pakistan and the rest of the world has greatly increased Even more alarming is the fact, that whereas the disparity in 1947 was about the same as existing between most of the developed and the developing countries, the situation has arisen that there is now a disparity – and a widening one—between Pakistan and even the other developing countries.

Many of developing countries at about our stage of development in the late forties are now far ahead of us, and progressively getting further ahead. And these developing countries have not been free of the restraints and problems that are generally cited in our country as the reasons for our lack of development.

These reasons cannot be ignored ; nor the unjust economic order against the developing countries of the Third World which finally is being rightly protested against more forcefully But apart from these there have been our own short-comings. Among the cardinal reasons for our failure have been the following :

- Lack of definition of objectives and goals and of effective long-term planning.
- Adoption of the philosophy of dependence on foreign loans.
- Inability to meaningfully utilize all our resources, natural, manpower and capital.
- Neglect of science and technology, and the absence of the modern scientific and professional approach.
- Failure of governments to act as initiators of change and as effective and purposeful governments.

OBJECTIVES AND GOALS AND EFFECTIVE LONG-TERM PLANNING

It was tragic that after the death of the Quaid-e-Azam we were not even able to produce objectives and goals for the nation. In economic terms we should, at least, have enunciated the achievement of certain standards of development in a certain time span. Even the outline of a meaningful grand master plan for the future stretching over two or three decades was not made.

This could have even been done in simple terms, if we lacked the expertise to put our goals in concrete terms based on sophisticated techniques or elaborate models. Even if it was over-simplification, we could have set goals like attaining the standard of living similar to a relatively developed country in a certain period.

This would have given us goals in the various sectors including social, agricultural industrial and infrastructual. This could have led to setting goals for literacy and education ; for the production quantities of agricultural products and raw materials ; of energy requirements, of industrial products and hence of industrie ; quantified the number of houses, schools, colleges, hospitals that would be required ; miles of road to be built ; number of telephones to be installed

etc. It should then have been planned that in a reasonable number of years we would have to achieve those targets. The ways and means for achieving these targets would have been great work. For a colonially exploited and plundered country to be content with adding a few percent every year to what little it had, can hardly have been a great or even satisfactory objective. Because there were no goals, there was no accountability. Our long-term planning has been a failure.

Planning Defects

In the real sense it could not even be called long-term planning. Overall it was a haphazard collection of some seemingly big projects. It appears that the previous governments did those exercises to impress foreign donors for foreign loans[3]. These plans were made with the help of foreign experts whose main objective was to further the economic interests of their own countries. The approach of these plans was so diametrically opposed to our needs that instead of being geared to the utilization of our indigenous resources, both physical and human, they were primarily made to absorb the stringed foreign loans. We were so easily willing to accept every approach that was detrimental to our national interests, that it is difficult to believe.

Dependence on Foreign Loans

The incorrect philosophy that foreign loans were the only means of development was adopted[2]. Thinkers from even the developed countries have strongly come out against foreign loans even on a planned and directed basis, to be able to produce development and have pointed out the severe limitations on the effectiveness of foreign loans. "Heavy capital investment from abroad may become a barrier to development rather than the spur many still consider it to be", says Drucker. "Investment of capital in the developing countries, other than in extractive industries, therefore, tends to create a foreign exchange liability that is not off-set, as it was a hundred years ago by the foreign exchange earnings created by the investment. In short order the investment thus begins to create a demand for foreign exchange to service it and begins to exert pressure on an already feeble balance of payment. The investment may generate wealth in the debtor countries but also threatens to drain away capital and to create disinvestment. At least, it requires a steady new inflow of capital from abroad, to prevent a shrinkage of the capital base of the economy. This has been painfully demonstrated in Latin America"[5].

In Pakistan, mostly because of foreign loans and foreign advice only capital-intensive, low productivity economic planning was practiced, whereas the need was clearly for employing our abundant resources of manpower. Instead of working on production targets, investment targets were pursued.

Planning Failure Results

The execution of these plans was harmful in that besides the projects being dependent on foreign loans, they were executed almost entirely through foreign consultants and foreign contractors, thereby not only being exhorbitant in costs, but preventing the formation of the most vital engineering and managerial talent. Without doubt this talent is of far greater import to national development than foreign loans.

The results of this planning are still worse : With a debt liability of over Rs 6000 crores in foreign exchange with an annual debt servicing liability of Rs 300 crores, our standard of living is still hardly above subsistence level and amongst the poorest in the world[6]. We have been unable to provide food shelter, medicare, education or employment to our people. We are nowhere near attaining self-reliance. Our resources, material as well as manpower, remain by and large, unexplored and untapped. Only a limited foreign aided consumer goods industry has been produced. These billions of dollars borrowed on unfavourable terms were not used to exploit the vast spectrum of our economic activities or to generate resources.

Being an agricultural country and an historical granary, hundreds of crores rupees have been spent annually on import of foodstuffs. Industrially we are so backward that we do not have any basic producer industry. We do not manufacture necessities like vehicles. We do not even manufacture a single truck or transmitter[4]. Even a bicycle cannot be completely made in our country. All we are stuck with is an "inefficient, import dependent, industrial complex catering to domestic needs of inessential nature", in the words of the Governor of the State Bank[22].

The social sector has fared no better. Nothing was done to utilize our vast human capital. Education-wise the positlon is so bad that only 3% of the population has matriculation or above education. Not only did the plans fail to solve the unemployment problem ; instead of attracting all of the brainpower and

the skilled workers they made them leave the country in the tens of thousands. In other words the country's most precious wealth, a resource it could never have enough, has continuously been lost[21].

DEVELOPMENT IN A FIXED PERIOD

But it is time that we learned from the mistakes of our past. Clear national goals are required to be set. There is a need to work out a framework or a bluei-print for the future, which should enable the Government to clearly determine the socio-economic goals. Priorities need to be fixed.

Our long-term planning must be directed to the achievement of a certain level of development in a definite number of years. It must be directed to achieve a certain living standard for our people within a fixed period. This development has to be achieved by our learning various methods, and these have to be learnt. It must be directed with vision. It must be made with intelligence and knowledge which are much more important than money. Our long-term plans must utilize the experience of the gainful methods as well as the mistakes of other countries. The present Government has started very considerable development. But what is required is to aggressively push this development at many times this level and with the required effort. Some ideas on the levels required and goals in certain key sectors are indicated later in this paper.

SOME ESSENTIALS FOR THE NEW DEVELOPMENT STRATEGY

With the revolutionary administrative reforms primarily, and other reforms, our future planning and development also have better chances of success. But it is essential that the new development strategy must be based on certain sound essentials. These should include :

Self-Reliance

Self-reliance is now an accepted part of our national policy. Pakistan's development must be based squarely on its domestic, material and manpo wer resources. Every rupee and every human being in the country must be mobilized.

"The economics of development rests on the twin pillars of developing people and multiplying capital. To get development, both have to be organized. And there must be concentration on boths.[5]" All the available capital of Pakistan's economy has to be vigorously attracted into development opportunities, for devlop-ment requires the multiplication of the productivity of capital. If not ore, equallym

impotant for development is the necessity to multiply human resources. Our vast manpower resources need to be brought fully to work and participate. China used manpower as capital. Our manpower resources are our vast human capital. Meaningful data needs to be collected on this resource at the highest speed so that a comprehensive employment policy can be framed. This is necessary for the maximum utilization of our manpower resources in the country's development. It is to be realised that present estimates indicate that not more than 35% of the total population is engaged in gainful economic activity and that not more than 20% of the labour force is educated. Then there is the most damaging 'Brain Drain' with all its very serious causes and concerns. Our development planning most urgently correct these situations.

That development can only take place by making productive the fundamental resources, and that it is essential to multiply indigenous talent and capital, can be well illustrated by taking the example of Japan.

Japan, today a fully developed modern and wealthy country, was poorer in the nineteenth century than any of the western countries. It was probably poorer than any of the developing countries today, including Pakistan. Japan was densely populated and it could rely neithar on imported capital nor service such capital through exports of food or industrial raw materials. The Japanese accomplished the development of their country under conditions similar to ours. They did not depend on foreign investors and did not borrow abroad. The shortage of capital never impeded Japan's development because she attracted and mobilized every yen of capital within the country. It attracted, trained and utilized every man and woman in the country. It put to work all the talent of her people. Besides capital, Japan's stress on human energy, gave it within thirty years, the highest rates of human-capital formation and of literacy ever recorded. Japan could well be a model for us.

But that is not to say that foreign loans should not be utilized at all. External financing should be selectively secured and utilized. Its primary goal should be the development of our own indigenous resources which should serve our own essential economic interests and priorities rather than those of the creditors. There has been too much waste and uncareful spending of foreign loans in our country of which we are all aware. Priorities have been allowed to get mixed up. How many times have we observed the sheer wastage on unnecessary items costing amounts which could run a university for a year, build a hospital, or run a

dozen schools and a dozen hospitals ; the reason given was that the amount was only a fraction of a percent of the project. Further loans must be carefully planned and ruthlessly administered to prevent all this. They must not be allowed to act as inhibitors for the development of our own industries, which it has obviously been allowed on the basis of notorious excuses like :

(*a*) The creditor country wants it so ; and

(*b*) Urgency this time to import and next time we shall have local manufacture ; but the next time has not yet come in 28 years.

Technologies of Today and Tomorrow

In reframing our future plans, we have to understand and act upon a fundamental change in concept : Following the same road that the western developed countries took to reach their present development state is doomed to failure, and slavery of the developed states. It is imperative that we evolve our own strategy, tied to the technologies of today and tomorrow, and not of yesterday. Japan and China, two countries which have achieved unprecedented technological growth, (even over their erstwhile peers), did just that.

An early example of successful technological strategy is Japan. It was obvious to the founders of modern Japan that the country could not attempt to lead in technological innovation ; all its energies had to go into social and cultural innovations. And while neither society nor culture could be imported, technology could be. The Japanese, as a result, have learned how to look for the emergence of new technology ; how to acquire new technology from abroad at the right stage5.

The Japanese "pushed aggressively the importation of new and latest in technology, in electronics, in optics, in pharmaceutical industry and so on"[4]. However, to be able to achieve this, is no mean task. It will require effort in a new direction and on a gigantic scale. It requires, first of all, a nation-wide effort. As Maurice Zinikin says "In the long run, economic development if it is to be rapid requires the cooperation of the whole people". Our people want development. The avenues of development can only be opened to them with a very great effort by the government.

Education and Knowledge

Increasing knowledge is a key factor in a country's international economic strength. We must very greatly increase our knowledge. Education must be

given a big push. "In the modern world, the formal education has replaced experience as foundation for productivity, capacity and performance. There is a close correlation between the ability of an economy to grow and to compete in the world today and the rate of increase of its population at school beyond 15", The percentage of matriculates and above certainly needs to be raised from the present about 3% to at least 30% in the next 3—5 years. It is essential that we increase and raise skills of our educated persons at all levels.

Not only has knowledge become an industry in America, it has changed it from an economy of goods into a knowledge economy. Half the money in the American economy is spent and earned from ideas and information. "Knowledge' rather than 'science' has become the foundation of the modern economy". (This does not mean that science scientists and engineers are not in the centre of the political, military and economic stage, in the developed countries). Knowledge with skills has become productive and it is the key to productivity. "The systematic and purposeful acquisition of information and its systematic application ———are emerging as the new foundation for work, productivity and effort throughout the world". There is therefore, no option for Pakistan but to streamline the framework for, and to raise the level of purposeful acquisition and systematic acquisition of knowledge to a plane very much higher than the present. Our problems are complicated. Development is a difficult business. Amateurish solutions have been tried in our country for too long. The serious problems of development should be tackled by the professionals, for whom no pains should be too great to gather all the required knowledge, and no effort too ardous to put get the development of country progressing at the very high level required.

Technology in Agriculture

The backbone of our economy, agriculture, must be modernised, improved and its productivity very substantially increased by the application of modern technology (without creating unemployment), since it would be a sure way of raising the standard of living of our people.

Agriculture in the developed countries (excepting perhaps only Russia) has become the most technologically advanced and the most industrialized of basic industries.

Modern Construction Management

Our construction methods are just not tuned to large scale developmental activity, with economies in money and time[1]. It is imperative that modern

management techniques are employed. Construction must not be done in wasteful, slow and watertight compartments, but instead by achieving unity over men, materials and time. We have to learn, particularly in our largest development organisations to execute dozens of projects simultaneously and economically, without creating a separate department or an empire for each one. Modern techniques would involve utilizing network techniques, CPM, PERT etc and the computer. This requires great effort in education and training at all levels of personnel both in engineering and management.

Manufacture in Pakistan

All our efforts must be made to ensure that almost all the equipment required for the massive development programme in the heavy engineering as well as the light engineering field is manufactured in Pakistan. This is essential for development of industry in the country, as well as for creating employment, saving and earning foreign exchange and raising the living standards.

Since the fifties Pakistan has purchased machinery, heavy electrical equipment, defence material, vehicles, steel and numerous other items worth thousands of crores. With the requirement and purchase of so much machinery and equipment, there is no reason why by this time, it should not have been self-sufficient in most of these requirements. Yet we have hardly even made a start.

It is obvious that the developed manufacturing countries do not consider manufacture in the developing countries in their interest. There are many reasons, among them naked exploitation, that is why they have. and will continue to, advance various excuses why machinery, equipment, vehicles etc. should not be manufactured in Pakistan. But foreign manufacturers have been forced in other countries to manufacture locally and experience has shown that this can be done here. A start can be made with phased manufacture in collaboration with suppliers of the equipment. Alternatively manufacture should be done under licensing arrangements from the most competitive sources. Local manufacture should be made a condition of purchasing. Only those suppliers should be selected who initially manufacture a certain minimum (say not less than 50%) in Pakistan, and give an undertaking for setting up plants for complete manufacturing. Many of the country's existing industry can also be utilized in this direction.

Science and Technology Essential for Development

Our neglect of Science and Technology is a cardinal reason for our failure.

In war as in peace, only those nations that fully utilize science and technology can exist, succeed or make progress. In the West this is undoubtedly an accepted fact. Ame ica's power lies in nothing more than in its execellence in science and its dominance in technology. Russia owes its position of being a Superpower by conceding the highest importance to its scientists and engineers.

One of the most important contributions Mao Tsetung made to the beginning of the China's resurgence was introducing in the 1930s the vital change in the manifesto of the CCP by stipulating the major objective of "Science" with democracy[7]. The ascendancy of the West over the Muslims commenced when Muslims abandoned Science, and evolved a wrong stratification of society. Scientists and engineers were relegated to the lower levels without even hope of rising to the top. Brilliant scientists and engineers of Pakistan have left us because we failed to create conditions which could make them have careers of purposeful achievement in developing the country. Our failure to attract them was not only due to less emoluments. Only the present Government has been able to correct the situation which existed before when even if we produced a scientist like Einstein, an engineer like Kettering or a Macnamara they would have ended up heading a small department, far removed from high policy and decision-making, and drawing a salary onefourth that of the ordinary generalist bureaucrats.

Pakistan's powerful bureaucracy did not allow science and technology to come up. They usurped control of all facets of national life. They also condemned everybody else including the politicians, the lawyers, the teachers, the professors. This might have been forgiven had this not directly led to the present state we find ourselves in. The suppression of science and technology is one of the major reasons for our being so weak and poor.

Technology has to be given paramount place in the development of the country. The scientific method has to be adopted in our approach to development. The world has become divided into nations that know how to manage technology to create wealth and nations who do not know how to do this. Without technology we cannot overcome our under-development.

Productivity Maximization

That our productivity is low is well known. A publication[8] shows that with an investment of Rs 4,000 crore the annual industrial produce of consumable goods in 1970 was worth about Rs 600 crore per year. In the western countries

the output per year about equals the investment, in other words, more than eight times Pakistan's figure Our productivity has to be maximised by the application of technology. for, by definiton, productivity is the application of technology to means of production, to produce more at least cost.

Basic Industries, Steel, Vehicles

Another terrible failure of our development planning was the policy that adopted our going in easy stages from consumer industry to intermediate industry and onto heavy industry. Only very unscientific minds, unknowing of either the processes of development or of technology, could have failed to see the flaws in this policy or failed to realise that the world is not going to wait for us and that in fact we should have started all three i.e. consumer, intermediate and producer industries simultaneously. We should also have given a high priority to the capital goods or machine producing industries We should also have set up steel mills, vehicles petro-chemicals and other basic industries. Not manufacturing vehicles in the country, have been and shall continue to be a source of impediment in our development. It was ignored that the main industries, such as agriculture, steel, automobiles, and petro-chemicals, are the ideal foundations for rapid economic growth in a developing economy. They combine high immediate economic impact with great multiplier effects.

It is, therefore, essential that we correct this position with due haste. These industries could provide the fastest growth in a developing country such as ours. Drucker has suggested that the development of developing countries such as ours should be based on these main industries, for their technology can easily be imported. Besides the steel mill under construction, we should start setting up other steel mills cheaper and faster and with the latest steel making processes. The conventional steel-making process, invented more than a century ago and basically unchanged until recently, is a grossly uneconomical process. Pakistan should plan to take full advantage of the technological revolution in steel-making including the new oxygen process, continuous casting etc. Vehicle manufacture should not be delayed any longer. Instead of grappling with the old cliches of the economies of scale, Pakistan should utilize the automobile industry's potential as a major growth industry. The autombile industry is considered to be 'the' major growth industry for the developing countries. Brazil, within the last five years has built and can support a substantial automobile industry. This is

taken as an indicator that it has reached the take off position in economic development.

Government's Role as Initiator of Change

In the present day world, the governments have to act strongly for initiating changes. Developing countries such as Pakistan, greatly need an effective and purposeful government. As in other developing countries, the ineffectiveness of governments has indeed been a central problem.

Mineral Resources Exploitation

Great importance must be given to the exploitation of our mineral resources. With better and most serious efforts on the exploration and exploitation of our mineral resources we could have had many metals & other material that are required. Again because of the unscientific and unmethodical approach, this source of wealth and strength has not been given the importance and the serious effort that was required.

It is necessary to alter our mineral exploitation laws so that those who have present knowledge of various valuable deposits be given an incentive to go ahead and exploit them.

Substantial quantities of ores of copper, manganese, nickel, iron, phosphate, flouride, uranium, lead, mica and many others are supposed to exist in the NWFP, the Northern Areas and Baluchistan. We have precious stones, emeralds, rubies etc[2].

What is required is to make a policy that will very greatly accelerate the country's effort in this field, at levels that compare favourably with the efforts of other countrie. The latest techniques and technologies must be procured for this purpose.

It is most important that these factors are given utmost importance in the future development of the country. Many barriers have to be broken. One of these is our mental barrier about financial restraints : We shall not be able to develop because we consider we do not possess resources and unless we develop we cannot raise more resources. Only by removing this barrier, can we destroy the vicious circle. We obviously cannot opt for the alternative of abysmal backwardness,

PRIORITY SECTORS

But development means above all, concentration on a few major priorities, for concentration is fundamental to any successful effort. Some priority actions for Pakistan's development have been mentioned above. Some sectors requiring priority are being given below.

Energy as a Basic Factor in Development

Let us consider first the Energy sector, which is crucial.

Development just cannot take place without energy.

Living standards of our people or of any people cannot be improved without energy. Power has been given primary importance in the socialist and the capitalist systems. It is a well known fact, and a very basic economic one, that the growth of energy consumption has a direct bearing on national income. In his book "World Markets of Tomorrow"9, the well known consulting engineer Freemont Felix has made a statistical analysis of 155 nations, including Pakistan, showing the relationship between each country's use of energy and its living standards. The United Nations also have considerable material on the relationship between the use of energy and living standards. Ignoring the importance of the fact that energy is a basic factor in economic growth, has been a terrible blunder in our past development policies. Another developing country Brazil, has succeeded in growing as a dynamic power, developing at a very fast rate in all fields, by utilizing energy as the basic factor.

Pakistan's Standing Compared to Developing Countries

Before we go any further let us see in the electrical energy or power sector, how Pakistan stands today and how our plans stand today in comparison, not with the developed world, but only with the developing countries, in other words how we stand in the Third World. Table 1 shows the installed and projected electric power capacities of 20 developing countries[10].

TABLE 1

ELECTRIC POWER—INSTALLED AND PROJECTED CAPACITY IN MEGAWATTS

	Total Installed Capacity		
	End of 1969	Estimated End of 1975	Projected End of 1980
Argentina	6,318	13,836	20,300
Brazil	10,263	17,300	29,100
Chile	1,901	3,420	5,500
Colombia	2,400	6,000	9,700
Greece	2,271	3,590	5,290
Hong Kong	1,374	2,700	5,000
India	15,493	26,000	28,100
Republic of Korea	1,636	4,700	9,800
Mexico	6,987	11,500	18,550
Pakistan	1,741	2,680	4,500
Peru	1,700	4,600	7,410
Philipines	2,033	2,928	4,350
Portugal	2,033	2,928	4,350
Puerto Rico	1,250	3,400	5,800
Taiwan	2,375	3,800	7,600
Thailand	1,044	1,694	3,900
Turkey	1,973	4,264	6,900
UAR	2,725	4,990	8,000
Venezuela	2,455	6,555	10,540
Yugoslavia	5,541	9,800	15,950

From this table it is clear that Pakistan's standing is amongst the lowest. This inspite of the loud pronouncements of adding 1600 MW in about 16 years.

It was misleading the people to make them think that this was a great achievment. This amount of power is insufficient even to feed a normal city in the developed countries. It is the amount of power which should be added in one year and not sixteen. At the end of 1969, Pakistan was in the same scale, in terms of power, as a small country like Peru with a population of only 14 million; but at the end of 1975 even Peru would have installed capacity almost double that of Pakistan ! Nearer home, if we continue without changing our planned path (chalked out over a decade ago when Pakistan was in a very different state and the compulsions of the world were different). Turkey with an installed capacity about Pakistan's at the end of 1969, would have an installed capacity 75% higer by the end of 1975. Iran which started behind us, had achieved 2800 MW by March 1972 and will have over 4600 MW by 1977. India's installed capacity was about 8.9 timesP akistan's at the end of 1969, and the gap bewteen its installed capacity and Pakistan's was then 13,700 MW ; It would be 23,600 MW at the end of 1980. The depressing fact is that the disparity between us and the other developing countries is increasing.

The average availability of electric energy for the developing countries in end 1969 was 162 watts per capita and the average estimated for 1975 is 290 watts per capita. The per capita availabilty in Pakistan is estimated at about 32 watts per capita at the end of 1975[1]. In other words, Pakistan's per capita availability will be only about 11% of the under-developed world average. It would also be lower than any other developing country listed in the tables.

Table 2 shows the availability of electric energy in the developing countries[10].

TABLE 2
AVAILABILITY QF ELECTRICAL ENERGY

	Population (Millions)		Watts per capita	
		Estimated		Estimated
	1969	1975	1969	1975
Argentina	24.0	26.3	264	526
Brazil	90.8	107.3	113	161
Chile	9.6	11.0	198	311
Colombia	20.5	25.4	116	236
Greece	8.8	9.2	261	384
Hong Knog	4.0	5.0	344	540
India	537.0	632.0	29	41
Republic of Korea	31.1	36.2	53	130
Mexico	48.9	60.2	155	191
Pakistan	111.8	69.2(West)	16	32
Peru	13.2	15.9	128	289
Philippines	37.2	45.3	54	79
Portugal	10.0	10.6	203	276
Puerto Rico	2.8	3.0	446	1,130
Taiwan	14.0	15.4	170	246
Thailand	34.7	42.6	30	40
Turkey	34.4	40.7	57	105
UAR	32.5	39.5	84	126
Venezuela	10.0	12.7	246	515
Yugoslavia	20.4	21.7	272	450

Acceleration of Power Development to Spur Develoment

If Pakistan's electrical energy development is to maintain the old poorly planned rate, then we will remain amongst the most under-developed nations in the world. Unless Pakistan builds its capacity at a much more accelerated pace to meet the demands of electric energy, productivity and gross national product will remain correspondingly low. There will be no chance of raising of living standards of the people. Obviously Pakistan can neither remain so backward nor live out of context with the rest of the developing world. Its installed capacity

and availability of power must be able to bear comparison with those of other developing countries.

The lack of electrical energy development has been a brake on the growth of the economy and development. This brake should be removed, without any further loss of time. Power development should lead the rest of the economy in developing all the other sectors. Abundant power would certainly lead to rapid industrialisation. Cheap power at the hydel stations could be used to set up aluminum plants, besides other electro-metallurgical industries.

The error of holding back the power demand must be corrected if we are to develop our country. We must completely revise and reframe our plans and the methods we have used for making future projections. The Prime Minister himself is so vitally concerned that he has stated that Pakistan's making or unmaking depends on how rapid and revolutionary will be our breakthrough in the Power sector ; and the Communication sector. This realisation at that level is very fortunate and it requires that we take a new look at what should be Pakistan's goals in these two sectors.

Goals in the Power Sector

The old planned capacity of about 4500 MW for 1980 is obviously totally inadequate. What is therefore required is a quantum jump to a higher order of magnitude to a revolutionary and rapid breakthrough.

On the basis of the end of 1975 per capita availability for the 20 developing countries listed above (from the World Energy Conference source) the installed capacity of Pakistan should be of the order of 20,000 MW for an estimated population of 69 million. The installed capacity for a population of 69 million at the average of Turkey and UAR, two muslim countries with many similarities with our situation, at 115.5 watts per capita, would come to about 8000 MW.

The author of the present paper has been advocating a 'Quantum jump' in our power development since 1971. Since 1972 the Government has been making considerably larger investments on the power sector. In January, 1974 the National Symposium on Power had accepted these recommendations and recommended to the Government this quantum jump. In early 1975 the Energy Panel jointly set up by the Pakistan Academy of Sciences and the National Science Council did the same.

Since five to seven years would be required to get large plants constructed we should target for the years 1980-82 and at least consider aiming for about 20,000 MW. This is an ambitious goal. But even if we achieved 20,000 MW at the end of 1982, we would still be 7 years behind the 1975 per capita installed capacity of the developing world. It is obvious that the gap would be still larger than 7 years because by 1982 the developing world average would have already very considerably increased.

But one reason —— the major reason this figure may appear even unrealistic to some is because we are too tied down to the past to comprehend the future. I can do no better than to quote Drucker : ''All we can ever predict is continuity which extend yesterday's trends into tomorrow. What has already happened is the only thing that can be quantified. But these continuing trends, however important, are only one dimension of the future, only one aspect of reality. The most accurate quantitative projection never predicts the truly importent : the meaning of the facts and figures in the contest of a different tomorrow''. If some still continue to think after all this and all our experience of continuous power shortages, load sheddings, long waiting power connections, suppression of demand and bribery for electric connections, that we do not require more than 4500 MW by 1980, then they are too engrossed in the past to consider the reality of the future. They also forget that the one thing certain about the future is that it will be a period of change. Plans that call for 4500 MW by 1980 also call for the electrification of the over 40,000 villages of Pakistan in over half a century. Is that anywhere near realistic ? Are our people going to be made to wait so long just to get light in their houses ?

But how is this goal to be achieved ?

First of all is it possible to add an additional about 14,000 MW in seven years. The answer to this question is that even during the period of relatively less accelerated development betweent 1969-1980, Argentina will have added 14,000 MW, Brazil 19000 MW, India 13700 MW[17], Mexico 11500 MW and Yugoslavia 10500 MW. Already in the decade preceding 1973 Brazil had embarked on a dozen large hydro-electric projects on its large rivers. At present it has active projects for installing over 27,000 MW, with one single project Sete Quedas of 12,000 MW, to be completed by 1982[11].

In terms of finances the estimating cost of adding an additional 14,000 MW generation, transmission and distribution capacity would require in international terms about $ 5,600 million spread over 7 years (i e. aboat Rs. 5600 crores and or about Rs. 800 crores yearly). A great deal of research would be required to utilize various measures, including labour intensive work (to also give lacs of jobs which has to be another important national goal), manufacture in Pakistan, utilization of the latest technologies etc., it should be possible to considerably reduce these costs. It should also be possible to limit the foreign exchange component to under 1/3rd of the costs. It must be ensured that the costs of power installations are not allowed, as hitherto to exceed those prevailing in the rest of the world. Previous ignorance of costs have led to exorbitant rates and other damaging results.

This amount of electric energy investment would require, larger investment in the other sectors for their development. It is necessary for Pakistan's development, of course, that development in the other sectors should in any case take place side by side. With the availabitity of abundant energy the development effort all round would be easier and hence get accelerated. This should be properly planned and executed. There has hardly been ever a country where the availability of energy was surplus to the demand. Pakistan would hardly become the first one.

With such a gigantic development effort there will, of course, be a visible development of Pakistan and a visible improvement of the living standards of the people.

Here I would refer again to Brazil. In Brazil there was also a holding back of the building of power capacity to meet the demands of the various sectors. There was the usual reason given——the lack of adequate funds. The slowdown was also prompted by the poor earnings of the electrical power enterprises. Their earnings were not sufficient for attracting the required capital needed to develop energy which in turn could develop the living standards. In the last decade. Brazil corrected this error. By various methods including making the working of their power enterprises more efficient so that they could earn the cost of money; by using modern management and engineering techniques; by raising the electricity rates, etc., they were able to obtain and earn the required capital. Since then Brazil has built the power capacity to meet the demands of electric energy and its

GNP, productivity and living standards have responded correspondingly. Brazil's growth rates have been above 9% since 1967. In 1973 Brazil had the biggest gain of GNP of any major nation ———11% ! It is expected to climb even higher. In 1973 Brazil emerged as a dynamic industrial and economic power.

Brazil showed great foresight in developing her hydro-electric resources.

Pakistan's Great Hydro-electric Development Potential

Pakistan's water resources hold its biggest potential for power and energy. Pakistan shall have to show the same foresight in developing power from this resource.

Figure I shows the river profiles of the main rivers in Pakistan. It gives an indication of the hydro-electric potential[13].

Table 3 shows that the main gorge of the river Indus can provide 30,000 MW by utilizing eight dam sites[12]. Then there are other sites on the Indus including Kalabagh with a potential of 1760 MW. The power potential of the river Jhelum at Kohala, through regulation and control at the Domel bend and raising Mangla dam and harnessing its principal tributories including Kunhar, is over 3000 MW. Other rivers of the Kabul-Swat-Chitral basin also hold a great power potential in the rugged range topography of the gorges through which they flow. Thousands of feet of head on relatively smaller rivers and streams of Gilgit and Baltistan and tne vast watershed of the river Jhelum and its tributories also have very considerable unexploited potential.

Karpov says that the 30,000 MW to 40,000 MW could not be the limit, because the presumably smaller generating capacities of a number of the other rivers have not been considered, nor the remaining possibilities of the Indus river. Compared to this the present installed hydro-electric capacity is only about 867 MW out of a total installed capacity of about 2200 MW for the whole of Pakistan. This tremendous resource of hydro-electric power has remained dormant and untapped for too long. Even if half of the 40,000 MW can be utilized, it is still ten times the country's present installed capacity. It would make a tremendous contribution to the country's development, and provide a continuous and big source of generating wealth.

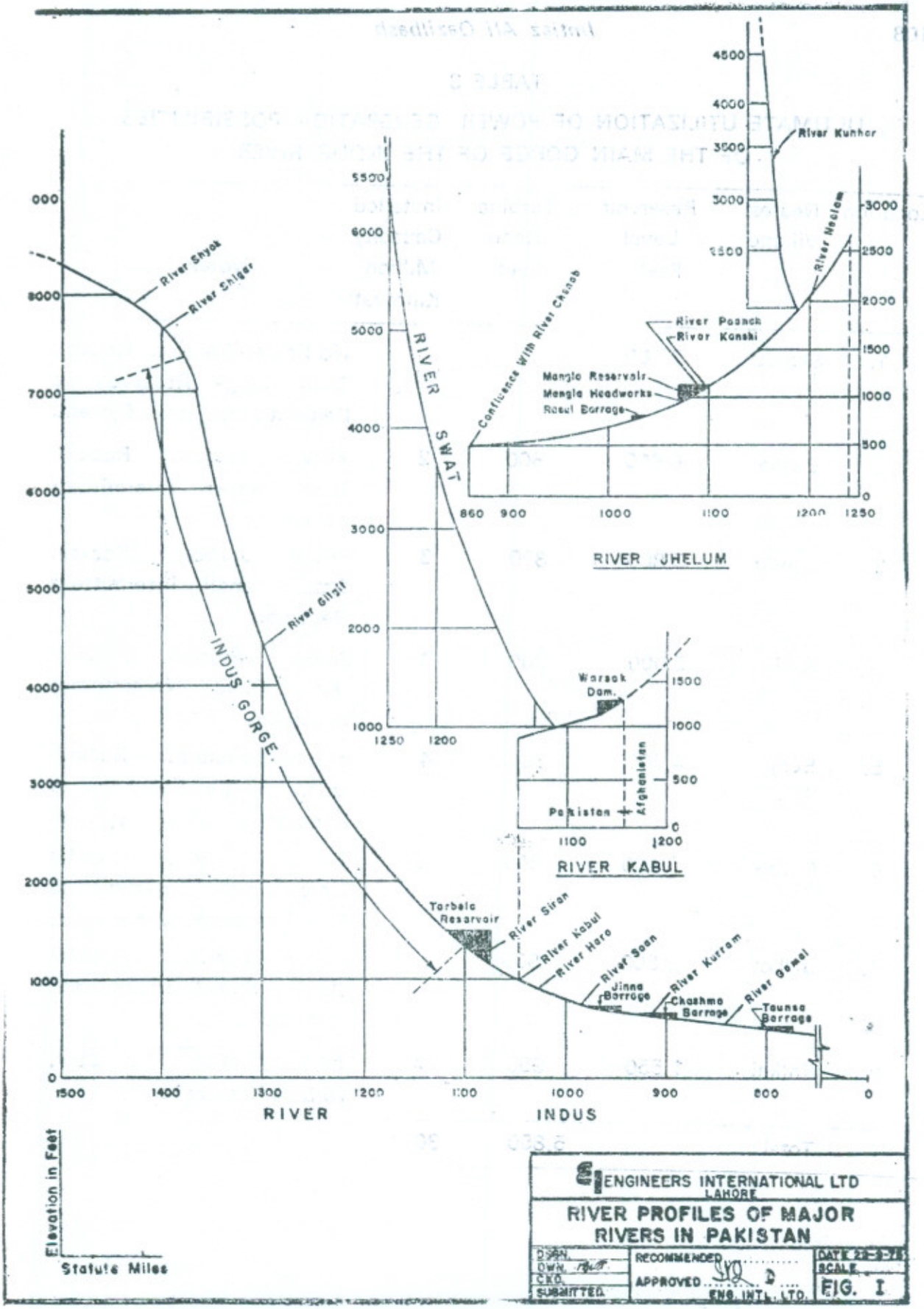

River Shyok
River Shigar
River Gilgit
INDUS GORGE
RIVER SWAT
RIVER JHELUM
River Kunhar
River Haelam
Confluence With River Chenab
River Poonch
River Kanshi
Mangla Reservoir
Mangla Headworks
Rasul Barrage
Warsak Dam.
Pakistan
Afghanistan
RIVER KABUL
Tarbela Reservoir
River Siran
River Kabul
River Haro
River Soan
Jinna Barrage
River Kurram
Chashma Barrage
River Gomal
Taunsa Barrage
RIVER INDUS
Elevation in Feet
Statute Miles
ENGINEERS INTERNATIONAL LTD
LAHORE
RIVER PROFILES OF MAJOR RIVERS IN PAKISTAN
DSGN.
DWN.
CKD.
SUBMITTED
RECOMMENDED
APPROVED
ENG. INTL. LTD.
DATE 23-3-78
SCALE
FIG. I

TABLE 3

ULTIMATE UTILIZATION OF POWER GENERATION POSSIBILITIES OF THE MAIN GORGE OF THE INDUS RIVER

Location	Nearest Village	Reservoir Level Feet.	Turbine Head Feet.	Installed Capacity Million Killowatts	Notes
1.	Skardu	7,400			No Power Station. Rockfill Dam. Large Reservoir to Regulate the Power System.
2.	Basha	6,600	800	2	Power Station. Rockfill Dam. Small Intermittent Reservoir.
3.	Rondu	5,800	800	3	Power Station. Rockfill Dam. Small Intermittent Reservoir.
4.	Sasii	5,000	800	3	Power Station. Rockfill Dam. Small fntermittent Reservoir,
5.	Bunji	4,200	800	4	Power Station. Rockfill Dam. Large Reservoir to Regulate the Power System.
6.	Chilas	3,400	800	5	Power Station. Rockfill Dam. Large Reservoir to Regulate the Power System.
7.	Jalkot	2,500	900	6	Power Station. Rockfill Dam. Small Intermittent Reservoir.
8.	Kotkai	1,550	950	7	Power Station. No Dam. Tarbela Reservoir.
	Total		5,850	30	

The urgent and necessary development of Pakistan's hydro-electric resources should not again be held up because of restraints that are more due to lack of vision and intelligence than actual ; like that so much power is not needed yet, lack of finances, access and logistics. All of these can be solved and have been solved in other countries. With the scarcity of fossil fuels there is no alternative for Pakistan but to dovelop its hydel resources.

Nuclear powar has to be developed side by side. But it must be remembered that the cost of installation of nuclear power is still very high compared to the hydro-electric power station. The cost per kilowatt installed is commonly taken as $ 500 and above in 1974 dollars, with 1981 dollar figures of $ 700 to $ 750 per kilowatt often quoted[15]. Also the nuclear power station's lead time is long, about 10 years. As we realise that even the largest power stations Mangla and Tarbela were built in less time than that, the argument that hydro-electric power stations take a long time to build is also taken care of.

Power Development to be Predominantly Hydel.

Pakistan's future power development must be predominantly hydro-electric. This view has fortunately gained acceptance. It was also accepted by the National Symposium of Power January 1974 and by the Energy Panel set up jointly in 1975 by the Pakistan Academy of Sciences and the National Science Council for framing the National Science Policy. Recommendations on this went from both to the Government. The Seminar on the Role of Hydel Power in the Development of Pakistan, under the Minister for Fuel, Power and Natural Resources specially highlighted this.

Because of the desire for national security and economic independence many countries have intensively developed their hydro-electric resources. Pakistan cannot do otherwise when nature has so abundantly endowed her this valuable self-renewing resource. The improvement in the techniques of water power resources development, the ease with which hydro power plants operate, the small maintenance, operation and other costs associated with them, the availability of Extra-High Voltage transmissission systems covering the country being within less than 100 miles from these major sources, will make it necessary to assign hydro power its rightful role in the development of Pakistan.

Need for Urgency of Hydel Development.

The exploitation of the water power resources must be fitted into the country's macro-economic framework. Forward planning is required to be undertaken to investigate in detail each of the major sites ; to prepare a programme indicating the priorities of the hydro-electric projects to be undertaken simultaneously ; determine prime features of the projects in respect of reservoir characteristics Power Plant characteristics lincluding the time pattern of capacity anp energy output, costs etc. on a time scale which fits system evaluation schedules.

It is imperative that not only Pakistan show courage and foresight for the development of the hydro-electric resources, it must do this with great urgency[14].

Oil Exploration.

The Energy sector cannot be complete without a mention of oil. Again the shortcomings are the same. There has been far too little effort. It would have been a miracle that with so little effort more results could have been obtained. Countries, developing or developed, engaged in oil exploration drill thousands of wells every year. In all the 27 years only 82 wells have been drilled in Pakistan.

The Government has now considerably increased the effort. But what is required is still greater effort to bring it at par with effort comparable to that being put up by other countries in the number of wells being drilled and the technology being utilized.

The technology for exploration, as well as drilling has made and is making rapid advances and these we must make all efforts to possess.

COMMUNICATIONS SECTOR.

The position of Pakistan in the Communications sector is not good either, Our roads, highways and modes of transportation and telecommunications are quantatively and qualitatively again far from the standard that we should have.

Telephones.

Taking one part of this sector viz., - Telephones - it will be seen from Table 4[16] that Pakistan's position compared even to the developing world is so bad that it is amongst the lowest out of the twenty-two developing countries

about which data has been obtained. In January, 1974 Pakistan had only 1/15th the average number of telephones compared to the other developing countries. With the accelerated development programmes framed by other countries, this gap is bound to increase.

TABLE 4

NUMBER OF TELEPHONES PER 100 POPULATION

	JANUARY 1960	JANUARY 1965	JANUARY 1970	JANUARY 1974
Pakistan	00,08	00,12	00,17+	00,29*
India	00,10	00,16	00,21	00,27
Iran	(00,45)	00,78	01,01	01,74
China	00,05	00,05		
Taiwan	00,64	01,21	02,37	04,77
Iraq	00,66	(00,87)	01,25	01,22
Turkey	(00,97)	00,99	01,48	02,09
Syria	01,05	01,32	01,74	02,08
Israel	04,90	08,51	16,00	20,73
Lebanon	02,64	04,34		
Thailand	00,17	00,22	00.38	00,65
Hong Kong	03,20	05,87	12,45	21,65
Republic of Korea	00,40	00,83	01,80	03,09
Japan	05,21	12,54	22,41	35,40
Phillipines	00,40	00,48	00,78	01,04
Indonesia	00,13	00,19	00,16	00,21
Egypt		01.03		01,33
Nigeria	00,11	00,11	00,13	00,15
Greece	02,30	05.06	09,96	18,67
Yugoslavia	01,27	01,91	03.05	04,77
Italy	07,15	10,54	15.98	22,86
France	09,06	11,71	16,05	21,66
Portugal	04,01	05,72	07,27	10,02
United Kingdom	15,03	18.27	24,96	34,06
Sweden	35,3	44,01	53,74	61,20
Australia	20,88	23,98	29,27	35,36
New Zealand	28,95		42,63	46,35
Brazil	01,48	01,60	01,94	02,34
Argentina	05,99	06.64	06,90	08,30
Chile	02,43	02,89	03.60	04,20
Peru	00,96	01,15	01,44	02 02
U. S. A.	39,52	45,88	56,38	65,47
Canada	30,85	36,12	43,76	52,31
Mexico	01,46	01,80	02.67	04,20

+For population about 125 million
*For population about 66 million

What is required in this sector is to fix our target so that our number of telephones per hundred population should be in the region of other developing countries. This again means a quantum jump and consideration should be given to making our goal to rapidly increase the number of telephones in Pakistan between 2 to 3 per 100 of population i.e. between about 1.4 million to 2.0 million, from the present 0.29 per hundred hardly about 200,000 telephones. And they must be spread throughout the length and breadth of the country. Pakistan must be the only country where it is still difficult to find coin operated public telephones.

Again what is repuired is a revoltuionary and rapid breakthrough.

Integrated Communications System

Actually it is about time that we planned for Pakistan an Integrated Communications system integrating roads, highways, road transport railways, city transport and rapid transit, waterways and telecommunications into a well knit and efficient system for the transportation of goods and people conducive to achieving accelerated development.

The mileage of our roads and highways is much below than that it should be for a country of the size and populations of Pakistan. Road construction needs to be accelerated to open up many still inaccessible parts of the country and even in the rural areas. New highways need to be built to internationally acceptable standards and the present ones require to be greatly improved much more rapidly.

Inter-city and particularly in-city public transport is an essential pre-requisite to any society today, but utterly neglected previously, needs a great deal of work to be brought up to acceptable standards.

The railways have to be expanded, made faster and more efficient. Electrification must be carried out extensively with the availability of abundant hydroelectric power.

Waterways are most economically used for the transport of many goods throughout the world. Waterways have been used for centuries in the Indus Basin. We have neglected this great resource. It is greatly needed for transporting goods from and to the Karachi seaport. It will be a great engineering challenge to bring the great rivers and canals of our country into use for playing an active part in the country's development and economic life.

It is important that all these parts of the Communications sector be developed with speed and into an integrated system, where all modes, complement and supplement each other and have acceptable standards compared with other countries.

AGRICULTURAL SECTOR

18. Pakistan is fortunate in possessing the wealth of land, area of 310,403 sq. miles. The total land being utilized for agricultural purposes is only about 52 million acres. Again the tragedy is that we are nowhere near attaining the maximum potential from our land and agriculture.

It is a fact that the main and the foremost engine of economic growth in the developed countries during the last twenty years has been agriculture. In all these countries, except the Russian block, productivity on the land has been increasing faster than on the manufacturing industry. Even steel comes second with the automobile industry third. And agricultural productivity in the developed countries, which has been growing at about twice the rate of increase of manufacturing productivity, has been forecast to grow at three times that rate during the seventies.

We are not utilizing all our land (including barani) and water in the most productive and effective manner. Much more land can be brought under cultivation by using conventional engineering methods. Meaningful studies and actions are required towards the objectives of maximizing the total agricultural production, utilizing our water most efficiently and fighting salinity and water logging more aggressively.

Although 70—80% of our people are farmers, yet most of them live in poverty. The yield per acre of irrigated rice in California is over 20 times than what is produced in our better-managed and better-watered farms. There are productivity differentials of 10-1 or even 25-1 between the agricultures of the developed countries and Pakistan. Productivity is low whether measured in per man-hour or per rupee of capital.

19. It is nothing to be proud of that an agricultural country as ours still has to import 1.1 million tons of wheat, besides other foodstuffs costing over Rs 314 crores this year. Yet fuller advantage must be taken of the advances of the newand greatly more productive varieties of wheat, rice, cotton and sugarcane etc. more and better fertilizer. Better forms of marketing, giving better incentives to the

farmers, and security are also necessary. But if we are to compete, at least in agriculture, with rest of the world, we have to give serious consideration to the fact already stated that today agriculture in the developed countries, has become the most technologically advanced and most industrialised of the basic industries. Fundamentally, what is required is to make an all-out efforts, for reducing the productivity differentials of per acre produce from the land in our country compared to other countries. This efforts should give consideration to increasing Pakistan's goal for agricultural production frcm three to four times the present output of wheat, rice, cotton and the other major crops.

Farmers have to be given monetary incentives. The farmers in Pakistan must also be covered against risks for one crop failure or price drop to save them and their family from total destruction. A great deal of thought has to be given to agribusiness i.e. the systematic application of management and entrepreneurship to a agricultural development, with the government possibly providing re-insurance for a few years.

But these are only some general points and these aspects require a great deal of systematic objective study which they should be urgently given. For land reforms without all these accompanying measures would not provide the necessary increase in agricultural produce for making the poor productive and raising their living standards.

CONCLUSION

Economic development is the central economic task of our age. Every nation has a right to economic development. Pakistan, the Quaid-i-Azam said, had been given everything. We did not listen to his call of going ahead even through he wished us Godspeed. But our people must not be made to wait any longer. Development for Pakistan is an imperative. For Pakistan, there is no alternative but to develop in the shortest possible time.

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