

**WEST BANK AND GAZA:
INFRASTRUCTURE, INSTITUTIONS, AND GROWTH**

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INFRASTRUCTURE, INSTITUTIONS, AND GROWTH

I. Introduction

In the West Bank and Gaza (WBG), infrastructure development, economic growth, and the peace process can powerfully reinforce each other. The nexus between infrastructure and growth is clear: while high quality infrastructure will spur growth, the present lack of an adequate infrastructure will prove a severe constraint to economic growth even in the short-term—and significantly so over the medium-term. In turn, the ability to expand infrastructure is conditioned by the continued legacy of Israeli occupation of these territories. The easing of this legacy—and associated restraints—is permitting some new investments. A significant step-up in investment levels to allow the provision of much-needed infrastructure investments will require a further relaxation of the limitations currently in place. Equally, the very act of these investments—by diversifying the sources of infrastructure services and stimulating growth—holds the promise of facilitating peace and thereby reducing the necessity for continued restrictions on infrastructure investments.

Recognizing these reinforcing features, the economic reconstruction program has focused heavily on infrastructure rehabilitation. The Agreement in December 1993 between the Palestine Liberation Organization and Israel—the *Declaration of Principles on Interim Self-Government Arrangements*—led to a major effort by the international community to establish an Emergency Assistance Program (EAP), which focused predominantly on infrastructure (and partly on education). The peace process was given a further momentum in September 1995, with the signing of the *Israeli-Palestinian Interim Agreement on the West Bank and Gaza Strip (also referred to as Oslo II)*, under which a larger area of the West Bank came under Palestinian administrative and security control. However, a physical infrastructure that was in a state of considerable disrepair and the limited new investments that have been possible through the EAP, imply that a severe shortage of infrastructure exists services for businesses and households.

After several years of minimal expenditures on infrastructure, in 1995, infrastructure investments increased to about \$50-60 million, which was between one and two percent of Gross Domestic Product. In 1996, expenditures are likely to be in the same order of magnitude. On average, developing countries invest four percent of GDP in infrastructure, with a high of six to eight percent of GDP in the rapidly growing economies of East Asia. Though no definite norms exist for the required level of infrastructure investments, clearly even the increased levels are low by international standards and unless stepped up will place a firm brake on economic growth. The investments in the past year have been almost equally divided between the West Bank and Gaza Strip, implying a smaller investment to GDP ratio for the West Bank, which

has the larger economy. The low levels of investment in the West Bank and also the greater uncertainty in immediate prospects could place severe limits on development in that area.

And yet, there are many reasons for optimism. The very lack of physical infrastructure and entrenched institutions allows the possibility of leapfrogging both in the technologies used and, more importantly, in the institutional arrangements. The evidence is that the authorities have been open to new ideas and have implemented innovative institutional measures. Given the limits of donor financing and budgetary resources, and in line with recent international trends, Palestinian authorities recognize the productive role of the private sector in infrastructure provision under the appropriate regulatory arrangements. A number of important—and precedent setting—initiatives have been or are being taken to harness private enterprise. These will need to be built upon. Also, institutional innovations have been conceived and partially put in place for planning, regulation, and project implementation.

Where new institutional arrangements are successfully implemented, a strategy for infrastructure development must be guided by the specific economic needs of the West Bank and Gaza, reflecting its special characteristics:

- Critical for a small economy are international trade and investment and hence the physical infrastructure to *move people and goods* through links to the rest of the world but also within the West Bank and Gaza.
- A forward-looking strategy could make possible the exploitation of modern information technologies to complement the superb human capital, providing additional links to the world, but also making possible *trade in services*.
- Urgent provision is needed of *inputs to production and to livelihood*—electricity, water, and telecommunications; these will also alleviate the severe inequalities that presently exist in the access to services.
- Due regard will need to be paid to ensuring that these investments bring real value to the economy, where the measure of value includes the greater *diversification* of the sources of infrastructure services, thereby *reducing reliance on Israel* and making possible *competition between suppliers*.

While these significant opportunities exist, so do many challenges. Chief among them will be the ability to continue to build increasingly sophisticated institutions to ensure efficient investment in infrastructure. An important element of such ability will be the need to coordinate the activities of agencies and ministries with overlapping jurisdiction—an inevitable necessity in complex infrastructure projects. Equally, a lack of coordination among donors is liable to create suboptimal investments while fostering divisions within the Government. The Government's financial role—and hence of the donors—will need to move from full responsibility to that of a catalyst. The ability to deal with and negotiate contracts with the private sector in a transparent manner will also

have to be bolstered. Moreover, the impact of stepped-up investments on the environment will need to be seriously considered. In all these regards, the initial steps have been made and significant international experience exists. A real prospect of growth with peace is there to be realized.

This chapter is divided into three main parts. First, the present stock of infrastructure and ongoing infrastructure investments in the West Bank and Gaza are placed in an international context to gain a perspective on the limits infrastructure may place on growth; important differences between Gaza Strip and the West Bank are highlighted. Second, an emerging vision of infrastructure's role in achieving specific development and social objectives is described. Several proposed projects are described in the transport, electricity, communications, and water sectors, as is the specific sectoral organization within which these might be undertaken. Finally, cross-sectoral institutional arrangements are discussed, including coordination between agencies and ministries, the development of regulatory capacity, and new private financing arrangements.

II. The West Bank and Gaza infrastructure in an international perspective

A brief perspective on the international experience sets the context for assessing the present condition of infrastructure in the West Bank and Gaza. Years of neglect have resulted in an infrastructure that is deficient and unreliable. A necessary, but modest, effort at rehabilitating the infrastructure has begun under the Emergency Assistance Program (EAP). A sustainable relationship between infrastructure and growth will require stepping up infrastructure expenditures from the current one to two percent of GDP to between four and five percent of GDP.

Infrastructure for economic development: growth, poverty, and the environment

While it is often imprudent to use infrastructure as an economic driver, efficient mechanisms for continued increase in the supply of infrastructure services are essential to permit continued economic growth. Some limited opportunities exist for targeted infrastructure for poverty alleviation; but subsidies rarely reach the poor. Major infrastructure projects can have a serious impact on the environment and need advance planning, especially when private investors are involved.

Infrastructure and growth reinforce each other. In the late-1980s, a series of studies appeared that showed very high rates of economic return from infrastructure investment and suggesting, therefore, that rapid investment in infrastructure would be accompanied by high growth rates of productivity and output. Such studies were plagued by the perennial problem of determining causality: does infrastructure stimulate growth or does growth permit greater investment in infrastructure?

The World Bank's *1994 World Development Report* took an agnostic position on this matter. Historical data show that a one percent increase in a country's GDP is associated with a one percent increase in infrastructure stocks. The causality works both ways. Even when infrastructure is not a prime driver of economic growth, infrastructure investments need to accompany the growth process, otherwise the growth will certainly slow down. Hence, institutional mechanisms need to ensure that efficiently functioning infrastructure is available in a timely manner as an economy grows.

For a small economy, such as the West Bank and Gaza, infrastructure acquires a special importance. Trade links with the rest of the world are especially important as are communications. Studies show that export growth is associated with rapid growth in telecommunications services (Mody and Yilmaz 1996). Foreign investment is similarly attracted by good infrastructure (Wheeler and Mody 1992). Again, the evidence is not that such infrastructure needs to be in place before investors will consider locating in a country, but rather that a commitment to infrastructure development needs to be in place to attract investors.

Infrastructure and poverty: few easy solutions. Infrastructure contributes to poverty alleviation in large part through its facilitation of higher growth. Examples do exist of targeted delivery of infrastructure designed for small, poor communities. These relate principally to cost-effective, community-based delivery of water and sewage services. In addition, rural roads can help integrate isolated communities with each other and with markets; however, several instances also exist of wasteful expenditures on rural roads, including in relatively sophisticated economies such as Malaysia.

The evidence is particularly striking on how *not* to target poverty alleviation. Subsidy of services, however, well-meaning have had a terrible record. Not only do these subsidies limit further infrastructure development, but perversely, they almost never benefit the poor. Indeed, the widespread evidence is that because subsidies constrain the spread of services, the poor are the hardest hit. They typically buy a limited amount of services from private sources at "market" prices, while the more well-to-do households receive the benefits of the subsidies. It is not uncommon, for example, for poor households to pay three to seven times the price of the subsidized, publicly supplied water. The West Bank and Gaza, in this respect, have had a very similar experience: the cost of water rises dramatically in the remoter communities. Similarly, several poor communities either go without electricity or use energy-inefficient and polluting sources of power generation.

Infrastructure and the environment: need for strategic planning. A country's infrastructure bears an intimate relationship to its environment. The choice of technology, the location of the infrastructure, and the efficiency of operations all influence how much damage the infrastructure does to the environment. Strategic infrastructure plans need therefore to be cognizant of the environmental implications. This issue

becomes especially important when the private sector is being attracted to provide infrastructure services. Private investors need a clear understanding of environmental policies and regulations, including options to mitigate risks from changes in these policies and regulations. But infrastructure and the environment are not always at odds. Water and sanitation infrastructure—often referred to as “environmental infrastructure”—enhances the environment and the quality of people’s lives.

Infrastructure in the West Bank and Gaza: deficient and unreliable

The West Bank and Gaza per capita income at \$1450 in 1994 is about the average of lower middle-income countries (as classified by the World Bank). The salient features of infrastructure in the West Bank and Gaza are easily summarized:

- For level of per capita income, and comparing these territories with countries in the region, the provision of infrastructure services is seriously deficient.
- Moreover, in the 1990s, there has been virtually no expansion of infrastructure services—if anything, the West Bank and Gaza has fallen behind in per capita terms not only because of expanding population but often due to *declining absolute levels of service*.
- Large parts of the infrastructure stock are unused because of system losses or disrepair.
- The quality of services is poor and deteriorating.
- The provision—and hence the prospects of the infrastructure—continues to be dominantly in Israeli hands.

Many measures can be used to compare infrastructure stocks and services across countries. Table 1 reports some of these for the WBG, some countries in the region (including Israel), and Mauritius—a small, rapidly growing economy with features not unlike those of the West Bank and Gaza.

Table 1: Comparing infrastructure services in the West Bank and Gaza*

Country	Popula- tion (million)	Per capita income (US \$)	Electric supply (kw per 100 people)	Electric power system losses (%)	% of house- holds with sani- tation	Numbe r of phones per 100 people	Meters of paved roads per 100 people
Egypt	55.0	650	21	14	50	4.3	59
Jordan	3.9	1120	25	19	100	7.0	170
WBG**	2.4	1450	13	30	25	3.1	80
Lebanon	4.0	2500	32	N.A.	N.A.	9.3	N.A.
Syria	13.0	2800	30	N.A.	63	4.1	180

Israel	5.1	13500	82	4	100	37.1	266
Mauritius	1.1	2700	33	14	100	9.6	190

* Data are for the years 1992-1994. ** The West Bank and Gaza are Occupied Territories under Israeli control, with Palestinian self-rule in Gaza and designated areas of the West Bank.

Sources: [**Need to be specified more precisely**] 1994 World Development Report. International Yearbooks of Telecommunications Statistics, Electricity Statistics, Road Statistics. KPMG report on telecom, and internal World Bank reports.

Electric power. Over 95 percent of the households in the West Bank and Gaza have electricity connections, although about 10 percent have only “partial” connections providing power for about eight hours a day. Those not connected tend to live in remote communities. However, connection does not necessarily imply an adequate or steady supply of electricity. At present, the West Bank and Gaza have access to about 300 MW of supply, almost entirely from the Israel Electric Company (certain village communities not connected to the grid use local generators). Per capita supply is significantly lower than for other countries in the region (table 1). Effective supply to consumers is even smaller because of very large system losses which have apparently increased in the past few years as the assets have been allowed to depreciate. Demand is growing rapidly with population growth and the modest rise in incomes. Moreover, a huge suppressed demand is beginning to express itself as years of restricted movements and activities are eased.

Water. As with electricity, over 90 percent of the households are connected to water supply (100 percent in Gaza and about 90 percent in the West Bank). Again, it is the remote communities in the West Bank who are not connected to piped water supply. Despite a generally high level of connections, the absolute volumes of water supplied have been declining over the 1990s, implying a severe fall in per capita supply. Water consumption per head, as a consequence, is much lower than in neighboring countries (e.g., less than 90 liters per capita per day in the West Bank and Gaza compared with 140 and 280 liters per capita per day in Jordan and Israel respectively). In addition, water quality has been steadily deteriorating. With depleting aquifers, sea water seepage in Gaza has rendered the water brackish. The entry of sewage—and fertilizers and other chemicals into the water system—continually damages the water quality.

Though not quite to the same extent as in electricity, water supply is substantially, and increasingly, dependent upon the Israeli company, Mekoroth. Israel restricts the digging of new wells by Palestinians. New sources, within the West Bank and Gaza, can be tapped by Mekoroth, which then supplies to distributors in the Palestinian areas. For example, in 1974, the Jerusalem Water Undertaking purchased virtually no water and produced about 1.3 million cubic meters of water. By 1994, water

production had gone up to 2.6 million cubic meters, while purchased water amounted to 5.0 million cubic meters, almost all it from Mekoroth.

Sanitation. Perhaps, the most immediately serious problem exists with the sanitation services. The share of households connected to sewage networks is small by all standards. Moreover, collection, treatment, and disposal of sewage are growing problems. The networks, where they exist, are under great strain and are liable to burst frequently with damage to people's health and severe disruption to the movement of goods and people as roads are flooded.

Telecommunications. Though not an immediate hazard—as with the severely underprovided sanitation services—the restricted access to telecommunications presents a major limitation on growth in the West Bank and Gaza. With 78,000 phones, the West Bank and Gaza have just over 3 phones for every 100 persons. In addition, and due to the extreme shortage of conventional phones, 25,000 mobile phones, or about 1 mobile phone for 100 persons is in use. Even Egypt with a much lower per capita income has a higher phone penetration ratio. Note the almost 10 phones for 100 persons in Mauritius, a rapidly growing economy, heavily dependent on trade and foreign investment.

That the lack of phones is already proving a constraint to investment is clear from several interviews conducted. For example, even in the relatively advanced city of Ramallah, obtaining a phone connection is a major task and has deterred investors. In Gaza City, the most modern hotel operates with one phone line. If the vision of an “information society” is to be seriously pursued, and if trade in services is to be generate substantial income and employment, the basic phone service needs a major boost.

Prior to the September 1993 agreement between the Palestine Liberation Organization and Israel—the Declaration of Principles—telecommunications services were supplied by the Israeli company, Bezeq, while the military-run, “Civil Administration,” in the Palestinian areas controlled the local access to service. Since September 1993, the control of the local loop is with the newly formed Ministry of Communications of the Palestine Authority. However, most long-distance services, even within the Palestinian areas, and all international services continue to be provided by Bezeq.

Transport. The road network is just over 2000 kilometers in length, with 750 kilometers of main roads, 550 kilometers of regional roads, and 850 kilometers of local roads. Virtually all the major roads were constructed before 1967 and with minimal or no maintenance have stood up to the present time in varying degrees of disrepair.

International transportation—ports and airports—are once again almost entirely under Israeli control. The exceptions are the bridges to Jordan and the Rafah crossing

from Gaza to Egypt. These and other potential links to the rest of the world are discussed in the next section.

The Economic Assistance Program: rehabilitating infrastructure

In the late 1980s and early 1990s, the levels of investment in infrastructure were minimal, in the range of \$20 to \$30 million a year. To some extent, these low expenditures reflected the fact that much of the responsibility of infrastructure supply lay with Israeli providers and so direct expenditures in Palestinian areas were not always necessary (for example, for power generation or international telecommunications switching equipment). However, the low level of expenditures has implied that networks within the Palestinian areas have suffered. Due to the lack of maintenance and general neglect, huge technical losses occur and, as a consequence, consumers are faced with high costs (including the costs of poor services and frequent disruption). The networks are in urgent need of rehabilitation.

Following the Declaration of Principles in September 1993, the World Bank and the international community established an Emergency Assistance Program. Besides technical assistance, two Emergency Rehabilitation Projects are under implementation. Donor assistance is coordinated by the World Bank; the Palestinian Economic Council for Development and Reconstruction (PECDAR) is the implementing agency. In addition, bilateral aid to specific projects has been provided by donor Governments. In 1995, these projects were the dominant financing sources for infrastructure expenditures.

Estimating precisely the total levels of expenditure in 1995 is difficult because disbursements under bilateral projects is not consistently recorded. The term "disbursement" is used in two quite different ways. Donors may disburse money to implementing agencies. In turn, the agencies disburse money to contractors who then rehabilitate or build the infrastructure. It is the latter amount that is relevant in assessing the impact on the economy. PECDAR reports the actual disbursements to projects under the Economic Rehabilitation Project. In 1995, the disbursements were \$42.9 million, of which about \$32 million were for infrastructure (water and sanitation, municipal roads, and inter-urban roads) and the rest was mainly expenditures on schools (PECDAR 1996).

Only rough estimates are possible for disbursements under bilateral assistance and other investment programs. Under a Norwegian program, about \$7 million were spent on rehabilitation of the power distribution networks in Gaza. An USAID program for water and sanitation also probably delivered about \$7 million for Gaza. Municipalities are thought to have spent about \$8-10 million on their own account for distribution of water and power. Investments in the phone network may account for another \$3-4 million (mainly the mobile network). Thus, in 1995, the estimate of total expenditures on infrastructure related activities was somewhere between \$50 million and \$60 million.

At \$60 million, the share of infrastructure expenditures in GDP (\$3.5 billion) is under two percent. Several aspects of this expenditure should be noted:

- It represents a quantum leap over expenditures over the past decade.
- Rehabilitation has high economic returns, is quick to implement, and hence provides some assurance of progress.
- Much of the expenditure has gone to water and sanitation, where the health needs are urgent and environmental benefits are significant.
- Despite its smaller economic size (smaller population and per capita income), Gaza has received at least an equal amount of resources, if not more. This implies that the expenditure to GDP ratio for Gaza has been close to two percent, while for the West Bank, it has been near one percent. Gaza, with a poorer infrastructure, does require more of a boost. However, the reason for greater expenditures in Gaza have been the higher operational flexibility afforded by the peace agreements. In contrast, expenditures in the West Bank have been limited because of limited Palestinian jurisdiction, making the construction and planning of infrastructure networks particularly difficult, as has been the case with inter-urban roads.

While bringing immediate benefits, the Economic Assistance Program has not been an unqualified success. Pledges from donors were withdrawn requiring the scaling back of the original goals. Project preparation has taken longer than expected in some cases, resulting in slower than hoped for disbursements. As is often the case with infrastructure projects, there have been cost overruns and delays in implementation, in some part due to border closures which raised the cost of materials. A criticism also exists that the various rehabilitation projects have not been adequately linked to create synergies from the program. In particular, coordination between the different agencies has often been less than perfect, resulting in some duplication of expenditures. However, the evidence is that the programs have generally been consistent with a long-term investment strategy. The lack of coordination could have much higher costs as the program of investments is scaled up.

III. Beyond rehabilitation: strategic investments and sector organization

Since rehabilitation has such high economic returns, efforts to restore existing infrastructure stocks must necessarily be a part of any long-term strategy for infrastructure development. As the emergency restoration is brought to a close and normal operations resume, the present rehabilitation would convert into routine but essential maintenance, which has similarly high economic returns.

The effort must begin, in parallel, to undertake new investments. These investments must reflect the economic needs of the West Bank and Gaza areas to ensure that productive assets are generated. This section outlines an infrastructure investment strategy to complement and enhance the economic characteristics of the West Bank and Gaza. Also discussed is the organization of the different infrastructure sectors—and the role of private enterprise—required to facilitate these investments.

The role of infrastructure in the West Bank and Gaza economy

Basic infrastructure services—transportation, electricity, communications, and water—are required in any economy. The *1994 World Development Report* estimated that developing countries on average spend four percent of their GDP on infrastructure investments. This is over and above the regular maintenance expenditures, which are classified as current expenditures. In rapidly growing economies, such as those in East Asia, infrastructure investments of the order of six to eight percent of GDP have been common.

If the average for developing countries is accepted as the target for ongoing infrastructure investments in the West Bank and Gaza and if an additional one percent of GDP is allocated to continued rehabilitation to make up for past neglect, then at between four and five percent of GDP, the infrastructure investments would need to rise to between \$140 million and \$175 million a year. Such expenditures, while reasonable for most economies, would represent a further quantum leap from the current level of \$50-60 million.

To prioritize the investments, certain special features of the West Bank and Gaza, and the vision of economic development in these territories, needs to be taken into account:

- The relatively small size of the economy makes it heavily dependent on international commerce. At the same time, the deep historical and religious significance of the region makes it a major tourist attraction. As a consequence trade and tourism are likely to be dominant economic activities. The movement of goods and people within the territories requires a network of roads and the movement across international borders requires land, sea, and air links.
- A heavy dependence exists on Israel for infrastructure services. Diversifying the sources of services, including through internal development and creating the ability to purchase them from other countries in the region will permit cheaper and more reliable services in the long-run. Certain internal investments may appear sub-optimal when viewed by themselves. However, the benefits of diversification will occur not only to the West Bank and Gaza but also to Israel as the multi-sourcing capability will reduce

the huge transactions costs associated with bilateral negotiations on mechanisms of delivery.

- An unusually high level of human capital could be leveraged through the use of modern information technologies. Such technologies would not only support domestic transactions, but also international linkages. In particular, the possibility exists of developing trade in a variety of services. In addition, information technologies could also be used to reinforce the human capital through diffusion of distance learning and other education applications.
- A chronic water shortage is aggravated by a growing population and rising incomes. At the same time wastewater transport, collection, treatment, and disposal requires substantial new investments.

In all cases, an efficient strategy would be to move from the more modest to the more ambitious. Infrastructure investments are sometimes thought of as providing a “big push” to accelerate growth. Not only is that strategy often wasteful, but the resources to simply do not exist to implement any grandiose plans. As a consequence, the term “strategic” investments is used here to imply investments that bring high rates of economic return initially by restoring existing infrastructure and then by relieving key bottlenecks to permit the exploitation of the economic advantages of the territories, while reducing the dependence on Israel and diversifying the sources of services.

Transport: moving goods and people

Heavy dependence on trade is normal for a small economy. In the mid-1980s, exports formed 50 percent of Gaza’s GDP and about 20 percent of the GDP in the West Bank. Imports were almost 100 percent of GDP in Gaza and 60-80 percent in the West Bank (Arnon 1996). Since then, the political uncertainties have resulted in a sharp drop in trade, especially as the ability to move goods through Israel—the main passageway for Palestinian goods—has become increasingly more difficult. Exports as a share of GDP for the West Bank and Gaza fell from 27 percent in 1985 to 13 percent in 1990 and 8.5 percent in 1994. Exports from Gaza fell from \$70 million in 1991 to \$50 million in 1995.

Also, substantial numbers of Palestinians have traditionally worked abroad. In the 1980s, Palestinians were an important source of cheap labor in Israel. However, from about 110,000 Palestinians from the West Bank and Gaza in 1990, the number working in Israel has fallen to 60 million in 1995 (Arnon 1996).

In the past, the Palestinian economy has depended upon Israel for trade, earnings of migrant workers, and infrastructure services—to an overwhelming extent. Today, the trade and migrant worker linkages are being effectively snapped. There is reason to

believe that the heavy dependence of the past, especially for trade was much higher would occur under “normal” conditions.¹ As such, the reduced trade relationships with Israel are probably good in the long run.

However, it is also clear that the movement of goods and people is central to the well-being of the Palestinian economy. To facilitate these flows, new transportation linkages are required: within Gaza, within the West Bank, between Gaza and the West Bank, and to and from the rest of the world.

*International transactions.*² At present, all movement in and out of the West Bank and Gaza to the rest of the world must take place through ports of entry and exit located in Israel, Jordan, and Egypt (table 2). The most developed of these ports—and the passage for over 90 percent of Palestinian trade—are in Israel. As part of the Oslo II Agreement, “equal treatment” was to be accorded to Palestinian exporters and importers at these points of entry and exit. In practice, besides the port fees, goods from or to the West Bank and Gaza are typically subject to stringent security checks and hence to long delays. For the West Bank, an additional problem has been the absence of defined borders with Israel or even passages to Israel.

Of the crossover points to Jordan, only two of the bridges, the King Hussein or Allenby Bridge and the Prince Mohammed Bridge, are presently functioning—and that in a limited fashion. The bridges are in a state of disrepair and security checks restrict the number of trucks (presently 35 per day) that can be handled at these ports. In addition, access roads from the West Bank to these bridges and supporting infrastructure at the bridges to permit speedy customs checks is required. The land crossing to Egypt at Rafah is limited also by the lack of access roads and supporting infrastructure.

Table 2: International Ports of Entry and Exit

Border Country	Name of Port or Border Crossing	Conveyance	Port Fee
Israel	Ben Gurion	Air	2.5 percent of CIF value
	Ashdod	Sea	2.5 percent of CIF value

¹ Arnon (1996) estimates a “gravity” model of trade, which typically is a reasonably accurate predictor of trade flows. The results show that the predicted volume of trade between Israel and the West Bank and Gaza is about one-third of the actual volumes recorded.

² This discussion of infrastructure for international transactions assumes that parallel efforts to ease trading restrictions will be undertaken (see Jawhary 1995).

	Haifa	Sea	2.5 percent of CIF value
Jordan	King Hussein (Allenby) Bridge	Land	None
	Prince Mohammed Bridge	Land	None
	King Abdullah Bridge	Land	None
Egypt	Rafah Crossing	Land	None

Source: The Small Business Support Project (1996) and The Palestinian National Authority (1995)

Expanded options for trade and the movement of people are clearly required. The rehabilitation and enhancement of the crossover points to Jordan and Egypt present the immediate lower cost options. The physical rehabilitation of the Jordan-West Bank bridges is the first step and can be accomplished for about \$60 million. However, the further development of access and transactional infrastructure—the freeways to the bridges, warehousing facilities, customs check points—will require at least an equal expenditure. Eventually, if trade flows grow, two additional bridges may be needed.

At the same time, direct access from Palestinian areas of control will provide increased options—and hence greater comfort—to traders, tourists, and internationally mobile workers. Two projects under active consideration are a port and an airport in Gaza. In the past, there has been some concern that the port and airport require “lumpy” investments and hence may not be economically justified for a small economy such as that of the West Bank and Gaza. Most small economies the size of West Bank and Gaza do typically have their own port and airport—because they have no other choice. Better, it has been argued for the West Bank and Gaza, to use the highly developed facilities in Israel. That argument loses force, however, in view of the serious uncertainties associated with the use of Israeli facilities even under normal conditions and especially at times of border closings. Direct international access from Gaza, consequently, has an important “option value.” In addition, if a free economic zone is to be created, direct access to a port is virtually essential. To Israel, the benefits occur in the form of reduced expenditures on security checks of goods and people moving through Ben Gurion, Ashdod, and Haifa.

However, to be useful, the port and airport at Gaza must provide effective facilities, especially for traders. This implies the ability to handle large ships and bulk cargo speedily and without damaging the goods. According to present plans, port

capacity is to be built in phases (see Box 1). The initial phase is expected to require an investment of about \$60 million for port development at least another \$40 million for associated infrastructure. On completion, vessels up to 15,000 DWT will be able to use the port. Expenditures on airport development are likely to be in the same order of magnitude. Though initially donor financed, private financing can be expected for the second and third phases.

Box 1: The Gaza Port

To be located five kilometers south of the Gaza City border, the plan is to provide international access to traders all over the West Bank and Gaza but also to industrial estates in the immediate vicinity and, possibly, a free trade zone for the assembly of light manufactured goods.

In the first phase, a 600 meter berth in deep water plus a petroleum products berth are planned. The berths and the harbor basin would be protected a 700 meter long and 11 meter deep breakwater. At the end of the first phase, the port will be able to receive small container vessels with a maximum size of 15,000 DWT. Port equipment is expected to be elementary, including mobile cranes.

A multipurpose container terminal with the ability to handle much larger vessels will be constructed in the second phase. In the third phase, the breakwater will be expanded and a new multipurpose terminal will be constructed in the center of the harbor basin to hand even larger vessels (50,000 to 70,000 DWT). At this point, the port will be able to function as a major transshipment facility.

The first phase costs are expected to be about \$60 million for the port and another \$40 million for supporting land development, equipment, and rail facilities for cargo movement. European investors have indicated an interest in financing this phase. Operations are likely to be undertaken through a management contract.

Source: The Palestinian National Authority (1995).

Linking Gaza and the West Bank: the "safe passageway." Today, the economies of Gaza and the West Bank are almost completely disassociated because the lack of transportation links. Thus, not only is international trade constrained, but even trade within West Bank and Gaza is severely limited. For many Palestinian policymakers this passageway has the highest priority among transportation projects.

The Interim Agreement requires the establishment of this passageway. However, discussions have drifted over the past few years. An early feasibility study is required of the various options floated. Should the connection be elevated or not as it passes through Israeli territory? Should it be a motorway or a high-speed rail? What should be the connection points on both sides? In addition, there exist questions of a contractual nature. Will ownership of the passageway be Israeli because it passes over Israeli territory? Would it make sense for the management to be in private hands, possibly with a joint Israeli-Palestinian company? What security mechanisms would be acceptable such

that the risk of closure and hence the disruption to commuters and businesses is minimized?³

Moving within the West Bank and Gaza. Under the EAP, rehabilitation of roads was initiated and such rehabilitation is expected to continue for the coming years. As noted, the focus of the rehabilitation has been internal village roads and rural access roads. Inter-urban road rehabilitation and investment is only beginning.

A major artery through Gaza, Road No. 4, is planned to connect Israel, at the Erez crossing point, in the north with Egypt (Rafah) in the South. A part of Road No. 4 coincides with the Salah-E-Din Road. Construction bids for a 12 kilometer stretch of the Salah-E-Din Road are to be invited shortly and construction is likely to begin in the coming months. The estimated cost of this phase is \$20 million. A second phase, covering about 35 kilometers will cost \$40 million. This phase would include a bypass around Gaza city and would also provide a link to the proposed Gaza port. The construction, using the present alignments, would strengthen the existing structures and widen the road to four lanes in certain stretches, especially near the border with Israel.⁴

Planning for inter-urban roads within the West Bank is conditioned by the Oslo II agreement. Under this Interim agreement, the West Bank has been divided into three zones. Zone A, consisting of key municipalities (Jericho, Nablus, Jenin, Tulkarem, Ramallah, and Bethlehem) are under the political jurisdiction of the Palestinian Authority and under their security control. In Zone B, which is an area surrounding Zone A, the Palestinian authorities continue to have administrative jurisdiction but security control is in the hands of Israeli authorities. And in Zone C, which presently is the large bulk of the land area, Israeli authorities have both administrative and security control. For this reason, much of the early effort has been devoted to rehabilitating roads within areas of Palestinian control, and this has implied a heavy focus on internal village roads and certain rural access roads. Planning for inter-urban transportation requires a level of coordination between the Palestinian and Israeli authorities that has thus far not been in evidence.

However, the Interim Agreement also contains a “principle of graduality,” which requires the periodic transfer of areas from Zone B to Zone A and from Zone C to Zone B until full Palestinian authority—“Final Status”—is achieved. This mechanism and the

³ While this project is under discussion, “safe passing for authorized persons and vehicles through heavily secured, existing Israeli roads is likely to be permitted.

⁴ In addition, a Gaza Strip Coastal Road has been under discussion. The economic value has been less evident while the potential environmental impact has been a source of concern. The economic value would depend upon the ability to create a substantial tourist resort along the coast; but at the same time, construction of the road risks damaging environmental resources. In its grander version, this road would connect Al-Arish in Egypt with Gaza and Ashdod in Israel.

associated forums can be used to determine coordination procedures on a West Bank road network that would permit the Palestinian Authority to commence serious network planning. Candidate projects include: (a) reinforcing and broadening from one to two lanes an 136 kilometer North-South link connecting the cities of Nablus, Ramallah, Jerusalem, Bethlehem, and Hebron and (b) an East-West link from the Israeli border, passing through Tulkarem and Nablus to Jordan through the Prince Mohammed Bridge.

Electricity: powering homes and businesses

As noted, the evidence is that electricity consumption in the West Bank and Gaza is low relative to income levels—and has apparently been falling. To fulfill a large demand from businesses and households for efficient, secure, and reliable electricity networks, a progressive strategy is required to:

- restore existing distribution networks;
- construct new networks to support the development of regional distribution utilities in the West Bank and Gaza;
- build new transmission networks linking the regions, and an associated dispatch capacity; build new generation capacity; and
- invest in international interconnections.

An institutional strategy is required to underpin these investment plans. In keeping with modern trends, the sector needs to be “unbundled” into the distribution, transmission, and generation segments.

Virtually all power consumed in the West Bank and Gaza is supplied by the Israel Electric Company (IEC). In Gaza, the power is supplied to the Palestinian Electricity Authority, which is then responsible for distributing the electricity. In the West Bank, the IEC negotiates power supply with individual municipalities, except in the case of the Jerusalem Electricity Distribution Company, a share-holder owned utility, which serves Jerusalem, Jericho, Bethlehem, Ramallah, and Al Bireh. Power is supplied by the IEC at a flat rate of about US \$0.07 per kilowatt hour, a rate reflecting the technical complexity of supply to small, dispersed communities and also the weak bargaining position of the Palestinians, given virtually no alternatives.

Due to rapidly growing demand and the very limited investments in past years, including only small rehabilitation expenditures under the EAP, the investment requirements in the power sector are considerable (table 3). Rehabilitation—principally of local distribution networks—is expected to require upwards \$40 million a year for the next three years. In addition, substantial new investments in transmission and generation are required and will need to be spread over the next 3-5 years.

Table 3: Investments in the power sector

Project	Description	Estimated cost
Distribution network rehabilitation	Replacement and upgradation of substations, introduction of automatic regulators, additional switching devices, new interconnections between locations to optimize supply management.	Over three years: Gaza: \$30 million. West Bank: \$100 million Continuing investment thereafter of \$30-50 million a year.
Regional distribution networks	Add new capacity to optimize networks and support: (a) three planned, regional, utilities in the north, center, and south of the West Bank and (b) a network for Gaza.	Gaza: \$50 million West Bank: \$100 million.
National transmission capacity	Capacity to link and dispatch power sources to regional distribution networks.	\$150 million.
Independent power generation	New generation capacity	Gaza: \$250 million West Bank, still a concept: \$400 million?
International interconnections	Egypt-Gaza Gaza-East Jerusalem-Hebron West-Bank-Jordan.	\$150 million.

Source: Palestinian Energy Authority (1996) and Palestinian National Authority (1995)

Distribution: rehabilitation and investment through regional utilities. The PEA estimates the immediate rehabilitation needs of the distribution system to be \$100 million in the West Bank and \$30 million in Gaza. The distribution networks have been managed by the municipalities and the assets have deteriorated over time. New substations are required in the Nablus, Hebron, and JDECo. areas plus various substations need to be upgraded. In addition, automatic voltage regulation to prevent large drops in voltage is needed. Also, new interconnections within the existing jurisdictions are required to more efficiently manage the distribution. As with roads, such rehabilitation would need to convert to ongoing regular maintenance to prevent future asset depreciation.

Presently, the network is designed principally to receive power from Israel. Power at low voltage is supplied to individual municipalities, resulting in substantial system losses. Moreover, the municipalities are technically isolated from each other so

that effective load management is not possible. Consolidating municipalities into regional utilities will not only permit greater technical efficiencies but also increase administrative and managerial efficiency. Moreover, utilities with a certain critical size are much more likely to attract private investments than are small municipal networks.

Based on geographical conditions and demand projections, one proposal is to create one utility for Gaza and three West Bank “regional” utilities in the north, center, and the south. These utilities would be responsible for sourcing electricity, dispatching and transmitting, and distributing to households and businesses. Such utilities would require the construction of new transmission facilities to link the principal locations in their respective regions and hence will require the right-of-way to lay the lines. As with the development of the road network, obtaining and establishing the rights-of-way will require Israeli permission to cross zonal boundaries with the West Bank.

A challenge ahead lies in managing the interests of municipal governments, for whom electric power distribution has been a lucrative business in the past. These interests could be met by making the municipalities shareholders in their utility along with rotating membership of the utility’s Board. Once such a structure is in place, and an independent, commercially operating distribution utility becomes a reasonable prospect, private investment will become attractive. Strategic private investment by an internationally experienced operator and the public shareholding should both be possible.

Transmission and dispatch. To link the various sources of power—from the IEC, the independent power generators in the West Bank and Gaza, and power received from international interconnections, a national grid will be required. The manager of the grid will ensure that power is efficiently distributed according to prevailing supply and demand conditions at particular times in the day. A Palestinian Grid Company—possibly under private ownership—will be required to undertake these investments necessary and manage the transmission and dispatch operations.

Power generation capacity. Should a small economy such as that of the West Bank and Gaza invest in its own power generation capacity? Is the demand large enough to support an efficient-sized plant? The numbers suggest the answer to be a positive one. As noted, at present, the West Bank and Gaza have access to about 300 MW of power through the IEC in Israel. A study by the consulting firm, Kennedy and Donkin, shows a huge pent-up demand, which is evident even from the simple numbers presented in table 1. If power consumption in the West Bank and Gaza is to reach Egyptian levels in per capita terms, generation capacity needs to increase to 450 MW. Hence, an extra 150 MW could be used immediately. Population and income growth over the next five years, will likely require at least another 250 MW—and more if peace allows rapid growth.

The Palestinian strategy in this context appears to be one of procuring power from multiple sources. The supplies from the IEC will continue, though at lower levels.

New generating capacity would be created within the West Bank and Gaza. And, in a longer term view, interconnections to networks in Egypt and Jordan will provide an extra source of power, which increase the efficiency with which capacity is used and, equally importantly, create a measure of competition between the different sources of power, allowing the Palestinians to procure power at lower costs.

The PEA is presently negotiating the development of a power generating plant in Gaza under a 20-year build-operate-transfer contract with a private sponsor. In the first phase, two gas turbines of 40 MW each will provide 80 MW of power. These will be augmented with additional gas turbines and a steam turbine to create a combined-cycle, 215 MW plant. The goal is to have the first phase completed by February 1997 and the second phase by March 1998.

Contract negotiations for the Gaza power plant are still on. The present state of discussions, however, indicate some noteworthy features. First, the cost of the power is to be 4.7 US cents per kilowatt hour. That compares with the 7 cents being paid to the IEC. If realized, the price of power also compares favorably with the power being procured in the Philippines, which has the most extensive private power program in the developing world. Second, and a more intriguing feature of the contract is the lack of a commitment to buy the full (or substantial) capacity of the plant. All private power contracts in developing countries have the so-called “take-or-pay” feature—or more accurately, the “take-or-pay anyway” requirement. Private sponsors and lenders thus require a commitment that even if the power is not required, payment will be made to pay back the lenders and provide some equity return. For the Gaza plant, the take-or-pay requirement does not presently exist, thus allowing for the possibility that no payment need be made if the power is not needed. It is likely that the private sponsors will be able to sell excess capacity to the IEC.

Two hurdles need to be crossed before the Gaza power plant is a reality. First, permission is required from Israeli authorities for the construction of the plant. Second, as in other countries, the Government has taken on the obligation of providing the sponsors with the land. The chosen site of the plant, near the proposed Gaza seaport, is private property and cash compensation would make the costs prohibitive; it is expected that the owners of the preferred site will be compensated with Government land of equal value.

International interconnections. In addition, interconnections of networks in Egypt, Gaza, Israel, the West Bank, and Jordan are expected to bring significant benefits, which include:

- the capacity to exchange power on a daily, weekly, monthly, or seasonal basis because of different load patterns in different areas, thereby reducing overall demand for reserves and hence generation capacity;

- the consumer benefits from greater continuity in services (reduced load shedding) and the ability to recover more rapidly from disturbances to the network; and
- for technical reasons, greater interconnection reduces network losses.

An important example of an effectively functioning international network is the western European interconnected network (Union for the Co-ordination of Production and Transmission of Electricity), functioning since 1951 (Lahmeyer International and Verbund Plan 1995).

International interconnections connecting the West Bank and Gaza to Israel, Egypt, and Jordan are still at an early stage of conceptualization. While a *prima facie* case exists for the interconnections (Lahmeyer International and Verbund-Plan 1995), detailed technical planning, identifying sites for interconnection, and performing feasibility studies of alternative options is required. But of critical importance, once more, will be the obtaining of rights-of-way. The Gaza-West Bank link could, in principle, use the same right-of-way as the safe passageway. Once established, this interconnected network could further integrate into the more ambitious schemes being planned in the Middle East.

Telecommunications—and the new information economy

To create the basis of an information economy, the fundamental requirement is a substantial and efficiently functioning telecommunications network. It is often tempting to compare the West Bank and Gaza with Singapore and Hong Kong as model small economies based on international trade and investment and supported by a world-class communications infrastructure. While that vision is a distant one at the present time, the one lesson that is relevant immediately is the need to invest in modern telecommunications.

Once such a network is in place, several creative opportunities to build on such a network are likely to arise, with little or no government involvement. Moreover, since telecommunications is extremely attractive to private investors, the primary Government's primary objective needs to be to ensure efficient new entry by multiple providers into the sector.

Basic communications. The economics of telecommunication networks is quite different for the local loop (which provides the connection from the nearest switch to the customer), domestic long-distance services, and international services. On top of this basic network are an overlay of services, which typically require additional investment in hardware and software.

Until the mid-1980s, the entire communications network was regarded as a “natural monopoly” and hence thought to be best provided by a single operator. The advent of wireless technologies (permitting transmission using microwaves, radiowaves, and satellites) has led to increased competition in long-distance communications, including international communications.

The local loop has remained a monopoly in most countries. But the trend is quite clear: even in the local loop, competition is increasing, partly because radio-based technologies are allowing such competition but also because cable networks offer an alternative conduit. Most importantly, regulators are no longer able to keep pace with changing technologies and the innovative opportunities these offer. As a consequence, a policy of open entry to all segments of the network (with due regard to preventing fly-by-night operators) is increasingly becoming the benchmark.

Infrastructure investments in Palestine must be guided by the vision of this open network, where a *prima facie* basis exists for allowing all new entrants to establish new networks or lease lines to provide services. Only then would it be possible for the Palestinian territories to exploit the several new opportunities afforded by international developments in technologies and organizational structures. In particular, links to international consortia offering global services will provide alternative channels to the rest of the world, reducing the dependence on Israel.

To reach Jordanian levels of telephone usage, the West Bank and Gaza require another 100,000 phones, which the KPMG study confirms will be readily absorbed into the economy. Another 75,000 phones will be required to reach the current phone spread in Mauritius.⁵ If about 25,000 new phone lines are to be installed every year, an expenditure of between \$25 million and \$35 million will be required.

Two hurdles lie in the way of achieving rapid telecommunications expansion. First, all policy options are directly or indirectly constrained by Israeli regulations. Even domestic long-distance services are provided by Bezeq. For international services, Bezeq provides the only gateway, on onerous terms. For any progress, and especially to attract private, competitive suppliers, much greater operational flexibility and choices will be required.

Second, a certain degree of confusion presently prevails on the policy of new entry into the sector. While the telecommunications legislation appears to provide the openness required, discussions are apparently ongoing to award an exclusive franchise to a single company for a period of ten years (with a non-exclusive franchise for a further 15 years). The lack of clarity in this regard is damaging not only for urgently needed

⁵ To reach the phone density in Singapore, about 1 million phones will need to be installed.

investments in the sector, but may ultimately have wider adverse reputational implications for Palestine. The private company expecting to receive the exclusive license has raised \$70 million through a public share offering—but does not yet have the license to operate.

Early resolution of these considerations must be a priority for peace negotiators and Palestinian policymakers.

Leveraging human capital through information technology. By integrating Palestine into a network of international information flows, new economic activities can be developed as traditional activities are strengthened. New activities could include service sectors that directly or indirectly depend upon information flows where the high quality human capital in Palestine would complement a modern telecommunications network.

Immediate investments in trade facilitation are likely to pay high dividends. These would include electronic data interchange to speed customs processing and invoicing. In addition, the linking of the proposed Export Development Institute and the Standards Institute to international counterparts and data bases will provide access to evolving international norms.

Looking ahead, Hassan Abdou and Ahmad Zuaiter (1996) have proposed the marketing of Palestine as an information conduit and a series of possibilities in that context:

- *Middle East financial center* which would, for example, tap specialized Palestinian bankers, provide a safe haven for investors, integrate regional stock markets, be a center for currency trading and clearing credit card obligations.
- *High skill hub for professional services* including legal services, insurance, investment banking consulting, education, specialized medical treatment, advertising and software development.
- *Tourism.* Significant infrastructure, including modern communications, would be needed to connect hotels, resorts, restaurants in the historic sites.

Water: a history of shortage

The most scarce resource, and one for which there are the fewest immediate solutions, is water. Sources of water supply are under Israeli control and the development of new supplies require extensive negotiations. As a consequence, the dependence on Israeli sources, principally through Mekoroth, is high and increasing.

The Palestinian Water Authority has been established to determine strategy and policy in the sector. However, since any discussion of the basic problem of long-term water supplies appears to be on hold, the focus has been on: (a) continued rehabilitation of the existing networks; (b) restoring management capacity to deliver water through an innovative management contract for water supply in the Gaza; (c) laying the basis for creating regional water utilities, in parallel with the regional electric utilities, as described above; (d) planning modest desalination plants; and (e) planning and implementing investments in sewage collection and treatment.

As in other sectors, rehabilitation needs are enormous. Some rehabilitation has occurred under existing programs but will continue under multilateral initiatives (such as the World Bank coordinated Municipal Development Project) and bilateral assistance. The rates of return to such rehabilitation have been estimated to be very large (World Bank 1996b).

At the same time, the institutional structure to channel these expenditures and future investments is being considered. A first step in that direction is the amalgamation of municipal authority to deliver water and sanitation services in Gaza. A management contract has been awarded to an international operator for a period of four years, during which time significant new capacity is expected to be built, both in the physical distribution and managerial strengths. The contract was awarded through an international competitive bidding process and through payment linked to performance imposes tight incentives on the contractor.

The consolidation of municipal authorities into regional utilities is planned also for the West Bank, as with electric power, for the north, center, and south. The economic logic for such consolidation is the same as for the electric power sector and a similar institutional structure, which makes the municipalities shareholders and Board members, is being proposed.

New planned investments include small desalination plants in Gaza, where brackish water (due to seepage of sea water into the aquifers) needs to be rendered potable. The major new investments will likely occur not in water supply but in water and sewage treatment where, as discussed, the West Bank and Gaza are in urgent need. Over the next 3-5 years, these investments could run into a few hundred million dollars.

IV. Institutions for infrastructure: increasingly sophisticated needs

As these investments occur and sector-specific institutional arrangements are put in place, important cross-sectoral issues will need to be resolved. These include:

- The ability to coordinate the work of different ministries, policy making and regulatory agencies, the infrastructure providers, and the municipal authorities.
- The development of regulatory capacity will require particular attention since regulation is a technically complex task and prone to all varieties of lapses.
- Finally, new financing mechanisms that leverage donor money in the short-run through attracting private finance and the development of local credit markets in the long-run will need to be developed.

Coordination: the tension between centralization and decentralization

One advantage of a new start is the absence of entrenched institutions and the ability to design new institutions that can promote efficient investment and operation. To some extent, the Palestinian authorities have taken advantage of this situation. The creation of the Palestinian Electricity and Water Authorities as the strategic planning and policymaking bodies is already bringing a certain discipline to planned investments and institutional structures for delivery of services. At the same time, the creation of regional utilities in electricity and water allows the exploitation of economies of scale, while resolving constraints imposed by the financial and managerial limitations of small municipalities.

However, certain important issues remain unresolved and, in some instances, potentially harmful precedents are being set. Chief among the unresolved issues is the coordination of transport, especially road networks. Unlike for the power and water sectors, no national policymaking body appears to be in place. A high-level commission, comprising of representatives from various ministries is a substitute but its authority or influence does not appear to significant. This sector, unfortunately, does require a tremendous amount of coordination. Today, the Ministries of Public Works, Transportation, and Local Government, along with PECDAR perform overlapping tasks. Greater clarity of their responsibilities is an urgent priority. One likely casualty of this overlap, paradoxically, is that maintenance may fall through the cracks, at future cost to the economy. If the activities of PECDAR are absorbed by other ministries, as was the original intent, then the overall planning task could stay with the Ministry of Planning, while the project implementation, including maintenance responsibilities, could become the mandate of the Ministry of Public Works.

In the electric power sector, though the legal mandate for strategy and policy is with the Electricity Authority, a former non-governmental organization, the Palestinian Energy and Environmental Research Center, appears to be acquiring influence in matters of national policy. Coordination of the roles of these agencies is again a priority. Finally, in telecommunications, the current stalemate in awarding a license (or licences) is arising from a lack of coordination within the various arms of the Government. Silsby (1996) has suggested that such overlap is more widely prevalent within the Government and, indeed, may be arise from a deliberate policy of “divide and rule.” The policy of division can

easily succeed, but the “rule” in that case is likely to extend over an increasingly smaller economic pie.

An intriguing question is whether some economies may be realized by coordinating the activities of the regional electricity and water utilities. As noted, the areas served by the electricity and water utilities will match. There are likely to be economies in joint billing and collection, saving both on software development and collection costs. There are also likely to be economies in joint network planning, laying of pipes and cables, and in maintenance. Mechanisms to effect coordination will need to be given some thought.

Beyond these narrow jurisdictional considerations lies the need to coordinate between major development objectives. In particular, the coordination of infrastructure investments with environmental objectives is obviously important. Early steps have been taken in this regard (Box 2).

Box 2: Infrastructure and the environment

Early efforts at assessing the environmental assets in the West Bank and Gaza are ongoing. Under preparation is an environmental protection plan. For this purpose a survey of the soil, water, coastal resources, and other environmental assets is being undertaken with a view to determining the sensitivity of these assets to human encroachment. The results of the survey will create the basis of rules and regulations, especially for zoning construction of houses and buildings, and development of the road networks. Careful consideration is needed especially for the rich coastal resources while exploring the possibilities of developing the tourism infrastructure. Similarly, urban development will require a balancing of infrastructure and environmental goals, except where they are congruent, as in the case of water and sewage treatment.

Regulatory design and process

The heavy emphasis on private provision of infrastructure will require the capacity to regulate the providers to ensure that societal interests are met. Two aspects of regulation need to be distinguished, that of design and process. While design relates to the tools used, process refers to the manner in which the tools are applied including the checks and balances on regulators themselves. Ultimately, the establishment of a sound process—that is able to accommodate unexpected events and evolve with changing needs—may be the more important achievement.

Today, regulatory design is based on the principle that the various parties be given the right incentives to act on the basis of the information they privately possess. This lowers the burden on the regulator, while allowing the possibility of outcomes beneficial to society at large. At one extreme, competition is the best regulator. Where competition is effective, service providers have the right incentives to price in a socially desirable manner and no price regulation is required (although other objectives, such as safety and environmental protection, may still make regulation necessary).

Where market power continues to exist, as is likely in most services, an increasingly popular form of regulation is the method of “price-caps.” Instead of restricting the rate of return of a provider with market power, prices are capped at a prespecified level. Rate of return regulation creates perverse incentives, leading especially to an over built capital base. Also, where poorly executed, all costs are passed on to consumers, leaving no incentive to minimize costs. In contrast, where prices are capped, the provider has the incentive to operate as efficiently as possible. In practice, the periodic revisions in level of the cap requires an implicit measurement of the rate of return to the provider and so the difference between the two forms of price regulation is less than was originally thought.

The principle of creating incentives for performance is already being adopted for infrastructure projects in the West Bank and Gaza. For the Gaza water supply management contract, compensation has been tied closely to performance. For the Gaza power plant, the price paid for electricity received will evolve according to a prespecified formula, in the spirit of price cap regulation. The operations and maintenance costs will be tied to a cost of living index and the energy cost component will be tied to a world energy price.

However, the challenge of price regulation will increase over time. For many services, the basic determination of tariff structures needs to be undertaken. For example, even in the electric power sector, where prices have covered costs, relative prices for different types of services (including for power provided at different times in the day) need to be determined through careful cost and demand analysis. In the water sector, pricing has been largely *ad hoc*. Most municipalities do not even know even the costs they incur, including that of maintenance and asset depreciation. The scarcity cost of water is an even more refined concept which plays no role in current pricing. In telecommunications and electric power, the principles and methods of interconnection pricing will need to be established.

For these reasons, a core group of technically qualified tariff analysts will need to form the core of regulatory system. Given the special features of each sector, the analysts will need to specialize in setting tariffs for each sector.

However, the benefits of an umbrella structure, such as an U.S. style *Regulatory Commission* are worth considering. The Commission serves two functions: establishing common principles of regulation across sectors and insulating the regulatory process from continual political interference. The application of common principles and techniques, with due regard to sectoral specificities, could help economize on the scarce skills required. Political insulation occurs where the Commissioners are responsible ultimately to the legislature and where their appointments are for fixed but staggered terms, preventing any sweeping changes in the composition of the Commission.

Private sector financing: unbundling and managing risks

Where based on commercial principles, infrastructure sectors provide high, and more importantly, stable results since for the most part they remain monopolies or quasi-monopolies. Private sponsors are, therefore, attracted to infrastructure investments. Over the long-term, infrastructure can be largely self-financing.

However, infrastructure provision is also characterized by important risks, including that of expropriation, the inability to convert and transfer currency, and regulatory reversals that render the enterprise financially unviable. In the West Bank and Gaza, the risks associated with set-backs to the peace process are an additional, perhaps critical, concern. These risks limit entry of private providers even where large profits can potentially be made. Thus, while the opportunities exist for private financing and operation of infrastructure services, strategies for risk mitigation and management must form a crucial element of Government and donor strategies.

It is worth clarifying here that for significant infrastructure investments, governments continue to play an important financing role and such is likely to be the case even in the West Bank and Gaza. Where the Government's role continues to be important, taxes that are a substitute for user fees—certain portion of gasoline taxes, vehicle registration fees, and property taxes—can be used to finance infrastructure development.

However, here the focus is on mechanisms to attract private financing. The extent of private financing depends upon the form in which the private sector participates in infrastructure delivery and hence on the extent of risk sharing. The right strategy for risk sharing will vary by sector: in certain sectors such as water, a limited operational role for the private sector—as in a management contract—may be the appropriate strategy, but in telecommunications it is already clear that private investors are willing to bear most risks. Even in the water sector, a more aggressive strategy of shifting risks to private investors needs to be considered and evaluated. In parallel, specific financial instruments, such as private cofinancing with donors, well-targeted guarantees, and efforts at developing the domestic credit and capital markets will each play a role in fostering private investment.

Cofinancing. A transitional mechanism for attracting finance, and one that significantly leverages donor and government resources, is a cofinancing facility. Established in Pakistan for financing private power investments and recently in Sri Lanka for all infrastructure investments, such an Infrastructure Financing Facility is that concessional resources is used to share risks with the private sector in the early, transitional periods (World Bank 1988 and World Bank 1996c).

Leveraging is achieved through supplying a limited portion of the project financing, say about 25 percent on average. Private sponsors provide the equity, the facility is the source of subordinated debt, and private lenders provide the senior debt. Thus, a dollar of money from the facility, can leverage another three dollars of private money for effectively structured projects. The subordinated debt is provided at “market” interest rates, though both for Pakistan and Sri Lanka the grace period and overall loan maturity is much higher than would be available from the market.

Government guarantees. In most countries where private financing has occurred, including in some advanced countries such as Australia, governments have provided assurances to private sponsors and lenders against country and policy risks. Like the cofinancing structure described above, guarantees are a transitional mechanism, designed to share risks with the private sector, providing comfort against legitimate risks that the private sector cannot bear or even evaluate. Such guarantees have been used principally in the context of “project finance” (Box 3).

Box 3: Project finance: allocating risks

Where a new infrastructure enterprise is being created, no credit history exists, requiring the financing to be based principally on future cash flows and project assets. Such financing is referred to as “project financing” because it relies on the success of the project rather than on the balance sheet of a credible sponsor. For this reason, the financing is also referred to as *non-recourse* since there is no recourse outside the project—in practice, it is more accurate to label it *limited-recourse* financing because typically some recourse is available either from project sponsors or, more importantly, from governments who provide guarantees against specified risks.

Precisely because of its limited recourse nature, the project risks are very carefully identified by the parties involved and allocated through an often drawn out negotiating process. By providing guarantees, governments agree to take on specific risks. These are risks of non-payment by government-owned entities, the inability to convert and transfer domestic receipts into an international currency, and changes in the rules of the game that significantly alter the project economics. In turn, project sponsors are expected to take on risks of timely completion of construction, cost overruns, and of operations and

mangement. Also, ideally, sponsors should take on market risks, unless these risks are primarily a function of the creditworthiness of a government-owned utility.

Just as guarantees are a transitional instrument to create a track record of government good behavior, so also project finance is a transitional vehicle for financing infrastructure projects. Ultimately, where a viable commercial enterprise exists, a credit history will develop, which allow lenders to lend money on the basis of—a generally strong—balance sheet. For this reason, the proposal to create commercially self-standing utilities for electricity and water is a step in the right direction.

Since guarantees create contingent liabilities, rather than cash payments, it is important to keep careful track of the obligations being created and to manage the risks carefully by ensuring that the guarantees are being provided for carefully defined risks that the government is best positioned to bear.

Often overlaying government guarantees are another set of guarantees provided by multilateral institutions, such as the World Bank and MIGA, and by bilateral agencies, such as export credit agencies and specialized insurance entities, such as OPIC. The additional security offered by these international agencies is required when sponsors and lenders are reluctant to take country risk.

Developing domestic credit and capital markets. Because they are traded only to a small extent, infrastructure services obtain revenues in domestic currencies and so require sources of domestic finance. In addition, the long-lived infrastructure assets require long-term financing to prevent the debt burden from creating unreasonably high tariffs in the early years of a project. By all accounts, large amounts of liquid assets exist in the Palestinian economy. However, credit has been available for very short periods of time, completely unsuitable for infrastructure projects. Early efforts are ongoing to create longer maturities through the availability of a rediscounting window. Also, the efforts to create a market for mortgages will have beneficial effects in terms of developing long-term debt markets.

V. Conclusions and some next steps

Three main messages emerge from this survey:

- Infrastructure stocks in the West Bank and Gaza are low compared to countries in a similar income group and low by comparison with countries in the region.
- Some of the initial institutional decisions have been constructive and even innovative, but major challenges lie ahead.
- A program of investment, consistent with the needs of the Palestinian economy and with the peace agreements, and sensitive to Israeli security objectives can be undertaken.

For several years, there has been little investment in infrastructure in the West Bank and Gaza. In 1995, a program of much needed infrastructure rehabilitation commenced. Total investment under this program, however, was between one and two percent of the GDP of the territories. To compensate for years of asset depreciation, and to meet the needs of future growth, a significant increase in infrastructure investment is needed to reach about the average for developing countries—about four percent of GDP. Under favorable political conditions, the economy appears able to finance (significantly through private sources) and absorb such expenditures.

The efficient absorption of these expenditures, however, requires the continued development and maturing of Palestinian institutions. Resolving the tension between the need to centralize and decentralize, the Palestinian Electricity Authority and the Palestinian Water Authority have been created as strategic planning and policymaking bodies while the actual delivery of electricity and water and sanitation services is to be undertaken by regional utilities that consolidate the activities of small and undercapitalized municipalities. At the same time, a clear recognition exists of the role of the private sector in providing a wide range of services and private initiative is already being harnessed for key projects. Significant regulatory capacity will soon be required, including possibly the creation of an independent Regulatory Commission to coordinate regulation across sectors and insulate the process from political interference.

Of some concern is the growing overlap in the authority of various ministries and agencies. While some overlap is always present for large infrastructure projects, the matter requires early attention as the Ministries of Transportation, Public Works, and Local Government along with PECDAR at the central level and municipal authorities have to continually coordinate with each other on transport and water and sanitation projects. The potential emergence of competing agencies for electric sector strategic planning is also a matter of some concern. While a temptation exists to centralize authority to resolve jurisdictional claims, the first step must be a clearer articulation of the responsibilities of the different bodies. Where the President's office is called upon to resolve disputes between the various bodies, transparency of decisionmaking is essential to ensure the credibility of the still evolving institutions.

At present the institutional framework for infrastructure in the West Bank and Gaza is delicately poised: building on the innovative features could create strong institutions for facilitating long-term growth. However, equally, the danger exists that the institutions may unravel as conflict ensues over patronage of a small, and slowly infrastructure sector. While internal capacity building and transparency are important to success, so is the evolution of the overall peace process, which will be the ultimate stimulant of infrastructure development. Absent peace, the danger of downward cycle of little infrastructure and fragile institutions is a real possibility.

Rehabilitation of existing assets has high economic returns and efforts already initiated need to be built upon. But increasingly, new investments will need to be undertaken. In keeping with the present strategy, and to avoid the construction of expensive structures that have little economic use, investments can occur in a phased manner.

Hence, consistent with the Oslo II, a program of infrastructure development that opens up West Bank and Gaza to international commerce is essential for the short-term revival of the economy. The small size of the economy makes it very heavily reliant on trade. But with such trade transacted almost entirely through Israel, the policy of closures has stifled trade flows. As a consequence the economy is being *de facto* decoupled from the Israeli economy but without any alternatives for channeling trade.

It stands to the benefit of both Israel and the West Bank and Gaza territories that alternative channels be created, including the Gaza seaport and airport, the bridges to Jordan, and the crossing to Egypt at Rafah from southern Gaza. Passages within the West Bank and Gaza are also needed. These passages will help revive Palestinian trade and hence promote economic growth. The contractual basis for operating these passages needs to ensure that users can be confident of reliable service, without the risk of frequent and arbitrary closures. For Israel, appropriate mechanisms can be instituted to meet its security objectives and greater economic activity should, in fact, alleviate security concerns (Baskin 1996). Ultimately, these links could become part of a more ambitious regional transportation network—the “peace network.”

Within the West Bank, the Interim Agreement (Oslo II) divides the territory into areas of Palestinian and Israeli control, making long-run planning of roads difficult. The divided jurisdictions create similar “rights of way” problems for electric power transmission and telephone networks. This is a central element of the peace process that unless resolved can severely limit the growth of infrastructure networks in the West Bank. However, Oslo II does provide for a continuing transfer of jurisdiction to the Palestinians through six-monthly negotiations. In the meantime, feasibility studies of links consistent with long-term objectives can support the negotiating process.

At present, infrastructure is being financed almost entirely by international donors. Even projects benefiting from private enterprise are being supported by donor financing. Such is likely to be the case during the transition to peace, as political and regulatory uncertainties continue. Over time, the role of donors can diminish through cofinancing with the private sector, leveraging concessional money by attracting private risk capital. A Fund, which provides subordinated debt to private infrastructure projects could be such a vehicle for cofinancing. Also, guarantees of government compliance with the rules of game—both on the part of Israel and Palestine—could be a substitute for direct financing. Ultimately, the development of local capital markets for long-term debt financing is required; however, such a debt market may be some years in maturing.

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