

The Arc

A Formal Structure for a Palestinian State

The RAND Corporation developed comprehensive recommendations for enhancing the success of an independent Palestinian state. (See *Building a Successful Palestinian State*). RAND also developed a design for addressing the infrastructure needs of a growing Palestinian population.

A Ladder of Linear Cities

The population of the West Bank and Gaza may reach 6.6 million by 2020, because of natural population growth and immigration. Thus Palestine's infrastructure, inadequate even for current needs, will soon have to support perhaps twice as many people.

Palestine's crumbling infrastructure presents a major challenge for a new Palestinian state. Yet it also provides an opportunity to plan for sustainable development and to avoid the environmental cost and economic inefficiencies of haphazard, unregulated urban development that might otherwise result from the need to accommodate a rapidly growing population. The Arc, RAND's concept for developing the physical infrastructure of a Palestinian state, provides such a plan.

In developing its concept, the RAND team recommended sparing Gaza the burden of further population growth. Gaza, at 9,200 people per square mile, has one of the highest population densities in the world. The team instead developed strategies for directing population growth to the West Bank, while encouraging economic growth in both the West Bank and Gaza.

The premise of the Arc concept within the West Bank is that the area's physical size and linear arrangement of connected cities is comparable to extended urban regions like the San

Key findings:

- Population in the West Bank and Gaza may reach 6.6 million by 2020, taxing the already overburdened infrastructure of a new Palestinian state.
- An infrastructure corridor linking the West Bank and Gaza could create conditions for economic development and sustainable population growth and engender a common sense of purpose.
- The corridor, called the Arc, would support high-speed interurban rail, a toll road, an aqueduct, an energy network, and telecommunications lines linking Palestine's major cities and towns.
- Boulevards connecting the train stations to the towns would create new areas for housing and commercial activity.
- The Arc concept provides for sustainable development and would preserve open land for agriculture, parks, and nature reserves.
- Building the Arc's core infrastructure would cost about \$6 billion and employ more than 100,000 Palestinians over five years.

Francisco Bay area or metropolitan Cairo along the Nile. It followed that for planning purposes, the West Bank should be envisioned as an integrated urban region of independent but connected cities, with Gaza as the southernmost urbanized area. The team assumed the probable construction in Gaza of the national airport and seaport and suggested that plan-

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ning in Gaza should emphasize linking these two vital ports to the West Bank, development of facilities for seaside tourism, and major rehabilitation of Gaza's urban areas.

The fundamental feature of the Arc is therefore an interurban rail line linking the main cities of Gaza and the West Bank—including a stop at the international airport—in a journey of just over 90 minutes. Each rail station, located several miles from existing historic urban centers, would create a focal point for new development and would be connected to these historic centers via a new transit boulevard and an advanced form of bus rapid transit (see Figures 1 and 2).

Along each boulevard, new commercial and residential neighborhoods would be developed—largely by private-sector investment—to accommodate population growth. Housing and jobs would be created within walking distance of the transit system. New building design would incorporate sustainable systems using solar energy and recaptured water.

Figure 1
A Ladder of Linear Cities



Each rail station along the Arc is strategically sited to create an east-west line of urban growth between the historic center and the new station area. The line between the two poles is established with the construction of a transit boulevard (typically from 5 to 15 kilometers in length) served primarily by rapid bus transit and taxis. Along the boulevard, new neighborhoods can be developed sequentially to accommodate as many as 3 million people in the next 15 years. The pattern creates the locations—and the boundaries—for long-term urban growth, assuring protection of the national open space system.

Development along each boulevard would pump economic activity into the historic centers of Palestinian cities and assure their preservation and revitalization—an essential strategy for creating a much-needed tourism industry.

Multiple Infrastructures

Although the core of the Arc is interurban rail, the Arc is actually multiple infrastructures. Construction of the transportation line invites concurrent, cost efficient, parallel construction of other needed lines for electricity, natural gas, telecommunications, and water. A national park following the line of the Arc would provide needed recreation space within each city, and a path for hiking and biking between municipal areas. A parallel toll road would provide access for trucks and other vehicles for people and freight, linking the country to its economic gateways at a possible airport and seaport in Gaza.

Figure 2
Aerial View of the Arc



Aerial view showing the Arc within the West Bank, including the infrastructure trunk lines, the lateral boulevards or "branches" between the new station areas (white dots) and historic centers (black dots), and the parks and reserves of the national open space system.

Connecting Palestinians to Each Other and to the Outside World

The Arc, which links Gaza and the West Bank while uniting the West Bank itself, is a design intended to foster a coherent, unitary, and, it is hoped, a cohesive economic, political, and social Palestinian entity. The Arc connects Palestinians not only to one another, but also to the outside world. Over the long term, Palestinian economic development will almost surely depend crucially on exports. Thus infrastructure that connects the West Bank to seaports and airports is vital to the success of Palestine as a state.

Social and Political Challenges of Absorbing Refugees

The RAND team identified a cluster of sociopolitical challenges that will complicate the ability of a Palestinian state to manage the return of refugees following a final status accord. For example, RAND analysis indicates that the perceived legitimacy of the Palestinian government will be essential to the success of the new state. The readiness of the state to absorb refugees will contribute significantly to this sense of legitimacy. Yet the influx of relatively poor refugees from Syria, Jordan, and Lebanon is likely to strain the government's ability to deliver basic services and thereby erode its legitimacy.

A related challenge is the need of the new state to absorb refugees without stimulating a rivalry between refugees and the indigenous population over scarce resources.

The Arc concept is intended to help the new government cope with these challenges by encouraging private investment, creating jobs, generating the conditions for the distribution of new population growth in all the major cities, and nurturing a social cohesion that will reduce frictions caused by the return of refugees.

Cost and Direct Economic Benefits of Constructing the Arc

The construction of the key elements of the Arc will require substantial investment. Benefits will include the employment of thousands of Palestinians, in addition to longer-term economic and social development.

To provide a frame of reference for the scale of infrastructure investment that would be required to implement the Arc concept, the RAND team used information from analogous construction projects in other places, particularly Israel and Jordan, and adjusted it to reflect the details of the Arc. More precise estimates would require site surveys and formal engineering studies.

RAND estimated that the cost of constructing the core elements of the Arc—the rail and road infrastructure—

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Doug Suisman, Steven N. Simon, Glenn E. Robinson, C. Ross Anthony, and Michael Schoenbaum, *The Arc: A Formal Structure for a Palestinian State*, Santa Monica, Calif.: RAND Corporation, MG-327-GG, 2005.

A companion RAND study developed comprehensive recommendations for the success of an independent Palestinian state, focusing on governance, internal security, economic development, water supply, health, and education. See The RAND Palestinian State Study Team, *Building a Successful Palestinian State*, Santa Monica, Calif.: RAND Corporation, MG-146-DCR, 2005.

For a summary of both studies, see *Helping a Palestinian State Succeed: Key Findings*, Santa Monica, Calif.: RAND Corporation, MG-146/1-RC, 2005.

All three books are available at <http://www.rand.org/palestine/>.

would be about \$6 billion. Assuming that this core would be built over five years, the project would employ 100,000 to 160,000 Palestinians per year over this period.

The Arc—A Perspective on the Future

No single construction project, not even one as comprehensive as the Arc, could address all the political, social, and economic issues that a new Palestinian state will face. The purpose of the Arc concept is to create conditions for economic development and sustainable population growth, while engendering a common sense of purpose. However, infrastructure by itself cannot produce these outcomes—it can only shape the environment in ways that make them more likely.

In addition, the Arc concept is not intended to be a blueprint. Rather, it is a starting point for discussion and planning for future Palestinian infrastructure development.

At the same time, the RAND team concluded that infrastructure development of the scope and scale described in the Arc is a necessary, if not sufficient, condition for the success of a new Palestinian state over the first decade of its independence. It seems plausible that key aspects of the Arc design can be pursued, with great benefit, even before an independent Palestinian state is established. Indeed, it might be politically useful to do so, in that the work and related employment would buttress the legitimacy of Palestine's newly elected government and enhance prospects for stability and security. ■

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