

# CLIMATE CHANGE AND ENVIRONMENT IN THE ARAB WORLD PROGRAM

## Sustainable Transport Series

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The Climate Change and Environment in the Arab World Program aims to understand the climate change and environment policy process in the region and define the most appropriate policy recommendations by linking development in applied sciences on issues related to climate change and environment to social sciences.

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### Economic Impacts of Adopting a Sustainable Transport System in Beirut

#### Summary

The current congestion levels in the Beirut Central District (BCD) are not acceptable. These levels are expected to get worse with further development proposed in the BCD and New Waterfront District. Beirut will not be able to economically compete with other cities as it is lacking a comprehensive multi-modal transport system. One way to improve this situation is by introducing a more sustainable transportation system. In addition to reducing congestion levels a sustainable transport system will generate benefits related to: travel time, fewer accidents, a decrease in operational costs of vehicles, reduction in carbon emissions, better individual wellbeing, increased productivity, and easier mobility and accessibility.

#### Recommendations

- Adoption of a multi-modal transport approach to establish and maintain economic growth
- Action Plan to ensure economic growth demands. This includes area-wide policies, parking, and traffic management measures.
  - » Acknowledge that a new public transport system is necessary and establish the most appropriate system for Beirut
  - » Establish the cost of any additional infrastructure needed to deliver this public transport system, and what traffic management measures are needed to help provide benefits to other users such as private car drivers (keeping a balance between both)
  - » Establish a traffic management plan that can give priority to public transport users and to encourage users to see these benefits in order for it to be successfully taken up by the population
  - » Establish a clear environmental and climate change policy that buys into transport proposals and vice versa
  - » Provide value-for-money studies to help finance the above under the auspice of a transport plan for Beirut, as part of a comprehensive plan for the country. By doing so donors and funding institutions can see the wider picture and are more likely to find their investment attractive
  - » Adopt new policies that aim to give advantages to users of a sustainable transport system whilst maintaining a balanced approach with traditional methods of transport

## Problem Statement and Key Messages

Beirut City Center (BCC) is one of the most congested zones in the Arab world even though less than 50% of its area is developed. Currently, construction of the remaining 50% is ongoing and there are plans to develop a reclaimed land known as the New Waterfront, which will be part of BCC, with the aim of promoting Beirut as a hub for international trade and investment, and a place of work and leisure. Therefore, it is expected that congestion will get worse resulting in negative impacts on environmental, social, and economic aspects of the country.

Beirut City Center is one of the most congested zones in the Arab world even though less than 50% of its area is developed.

Transport in Beirut is car dominant, which is leading to unacceptable congestion levels impacting directly on the economy, environment, and health. A multi-modal transport system is fundamental in maintaining economic growth. The authors are proposing a sustainable transport system for Beirut including the Beirut Central District (BCD) and Beirut Waterfront District (BWD) areas emphasizing the influence that such a system would have on business efficiency, labor markets, labor flexibility, and the attraction of the right caliber of investors and international corporations to Beirut, by providing the quantified losses caused by traffic and their economic implications.

## Sustainable Transport for Beirut

Sustainable transport reduces economic, social, and environmental impacts. It reduces travel time, has lower vehicle operating costs, results in reduced carbon emissions, decreases the number of road accidents, and improves road safety.

Sustainable transport is one of the key measures required to secure a continuous economic growth in the country, as there is a vital link between transport and economy. Hence, shifting to sustainable transport mode has become a necessity for Beirut and its economy.

The Beirut Master Plan aims to develop 3.3 million m<sup>2</sup> of mixed-use development split almost evenly within the Beirut Central District (BCD red cordon Figure 1) and the New Waterfront District (NWD Blue Cordon Figure 1).

Figure 1: Study Area



A public transport system is needed to address issues/objectives that include<sup>1</sup>:

- Reduce severe congestion levels prevailing;
- Congestion is increasing costs for businesses - employees are losing productive time;
- Commuters need reliable means of transport that will reduce daily chronic stress;
- The road network in Beirut generally cannot be widened to increase capacity due to physical constraints; thus bottlenecks will get worse;
- Existing traditional peak hours are spreading and congestion levels are constant for larger periods of the day;
- When the Beirut Master Plan comes in effect, congestion levels are expected to get worse bringing the city to a gridlock;
- Costs associated in using private cars are rising
- Pollution levels are rising and will get worse when the BCD and NWD are fully developed. The existing car-dominated transport is one of the main factors contributing to this air pollution problem. There is a need to reduce CO<sub>2</sub> emissions.

## Economic Impacts of Adopting a Public Transport System in Beirut

The research results demonstrated the economic benefits of a sustainable transport system. It compared a scenario with and without such a system, and calculated the loss of time as a result of being held up in congestion during key peak hours, mainly due to relying entirely on the private car. The research demonstrated that in addition to reducing congestion levels, a sustainable transport system will generate benefits related to travel time, accident costs, vehicle operating costs, carbon emissions, environmental impacts, wellbeing of individuals, and incentives for international companies to locate in Beirut.

Bus fares should be low and not exceed LBP 2,500.

The authors performed qualitative and quantitative analysis to determine the economic impacts of adopting a mass type sustainable transport system for Beirut. The results were alarming for the Do Nothing Scenario, i.e. remaining reliant on the private car as a sole means of transport. The analyses showed that without a road map adopting a sustainable transport system, Beirut would reach an economic standstill. Therefore, Beirut will have to develop a multi-model transport system to become resilient and to be able to meet the economic growth that is being pursued by stakeholders and interested parties alike.

The results obtained under the scenario “with the public transport system” compared to the existing car-dominant scenario showed:

- Reductions in average delays encountered by each vehicle will lead to timesaving benefits.
- Average speed increases will result in a reduction in fuel consumption and hence produces benefits related to savings in vehicle operation costs and carbon emissions.
- Decreases in vehicle-kilometers will reduce the number of accidents and provide savings.

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1. The authors assumed that public transport would be adopted whilst not naming any particular system

**The Issam Fares Institute for Public Policy and International Affairs (IFI) at the American University of Beirut (AUB)**

was inaugurated in 2006 to harness the policy-related research of AUB's internationally respected faculty and other scholars, in order to contribute positively to Arab policy-making and international relations. IFI is a neutral, dynamic, civil, and open space that brings together people representing all viewpoints in society. It aims to: raise the quality of public policy-related debate and decision-making in the Arab World and abroad; enhance the Arab World's input into international affairs; and, enrich the quality of interaction among scholars, officials and civil society actors in the Middle East and abroad.

These savings were quantified and the benefits of adopting a public transport system are summarized in Table 1.

*Table 1: Benefits Summary (LBP 2014 Prices)*

Peak hour	AM Peak Hour	PM Peak hour
Base Scenario–2014	7,980,160	9,305,828
Future Scenario-2045	9,768,249	14,787,776

These benefits are considered as direct benefits to employers, employees and the environment.

The following conclusions were reached:

- Current congestion levels on the road network - BCD - are not acceptable. These levels are expected to get worse with further development proposed in the BCD and New Waterfront District.
- Beirut will not be able to economically compete with other cities as it is lagging in terms of the lack of a comprehensive multi-modal transport system.
- A sustainable transport system will, in addition to reducing congestion levels, generate benefits related to:
  - » Travel time.
  - » Less accidents thus a reduction in costs.
  - » Reduction in vehicle operating costs.
  - » Reduction in carbon emissions.
  - » Positive environmental impacts.
  - » Positive wellbeing of individuals and increased productivity for employers.
  - » Positive effect on business efficiency.
  - » Wider labor catchment in terms of penetration of non-car owning communities thus improving labor mobility and accessibility.



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