Operating in Green – The case of Attica Tollway

Presented by: Dimitris Mandalozis, Strategic and Organizational Manager

Coauthors: Bill Halkias, Chief Executive Officer
Natalia Kalfa, Civil Engineer
Peggy Kotzampassi, Applied Math Engineer
Mobility

Mobility is the state of being in motion
Impacts of Mobility
Environmental Considerations:

- EIA
- Flood Protection
- Flora & Fauna protection
- Noise
- Air Pollution

- Recycling
- Material selection
- Energy Conservation
- Cultural Patrimony

“Monitoring of all environmental aspects of the infrastructure during the period of operation is crucial in measuring the success of all design and construction considerations and improving any problems that may arise”, IRF
Q: What can a road operator do to solve any problems arising?
A: On-going environmental monitoring and mitigation techniques during operation phase.
The case of Attica Tollway, Greece
Attica Tollway
Athens, Greece

Centerline: 65 Kms
Length: 130 Kms (bidirectional)
39 Toll Stations
195 Toll Gates (95 ETC capable)
16 km of tunnels and cut and cover sections (12% of length)
Daily Entries: 307,000 veh/day

OMC: Operation and Maintenance Center
TB: Technical Base
Attica Tollway & the Environment

Operation phase is dynamic, because conditions change continuously.

Environmental issues that concerns the Operator:
1. Traffic-related Noise
2. Air pollution
3. Fauna
4. Flora
5. Thermal Load
1. Traffic-related Noise 1/2

- Noise barriers (total length currently exceeds 18 km)
- Buffer zones and specially-planted slopes

www.irf2010.com
1. Traffic-related Noise 2/2

- 8 permanent monitoring stations

- Additional measurements using mobile monitoring stations

- Up-to-date software used to determine additional positions for noise-protection measures

- Reports are submitted to the Ministry every quarter, with remedial measures and suggestions for improvements, when necessary.
2. Air Quality

- 8 air-quality monitoring stations measuring 24/7

- Emissions measured:
  - Carbon monoxide \( CO \)
  - Nitrogen monoxide \( NO \)
  - Nitrogen Dioxide \( NO_2 \)
  - Total volatile organic combinations \( TVOC \)
  - Particles \( PM_{10} \) & \( PM_{2.5} \)
  - Dust

- Conformity to Directives for particles and benzene

www.irf2010.com
2. Air Quality for Toll Collectors

- Emissions also measured at toll booths
- Toll booths kept at positive pressure, to reduce ingress of fumes into booth.
3. Fauna

- Stickers of wild birds where applied to noise barriers
- Maintenance of protective fencing and other features
- Maintenance of animal crossings
- Additional fire-fighting installations at cut & covers
4. Flora

- Buffer zones provide adequate insulation from noise, but also improve local aesthetic environment.

- Plants selected so as to:
  - Provide slope stability and avoid landslides
  - Improve environment that was disturbed by road construction, using not only plants with deep roots, but also trees and bushes
  - Balance lateral winds, absorb traffic-related noise and pollution
  - Improve driving experience and road safety
5. Reducing thermal load in Attica...

- Total green areas are twice the total paved areas of Attica Tollway.
- To reduce thermal load from an area of asphalt, an area approximately 6 times as much should be planted.
- Investigation of the use of cold materials and paints.
...Increasing green areas

- Restore the damaged landscape at inactive quarries
- Increase of green areas in Attica and maintenance
- Cut & covers also planted and used as leisure areas
Traffic Management

- Integrated Traffic Management System to ensure free-flow conditions and reduce traffic congestion in the greater metropolitan area of Athens (cameras, detection loops, VMSs)
- Patrolling on a 24/7/365 basis to identify problems, assist users and minimize disruption to traffic
- Electronic Toll Collection facilities to minimize congestion of vehicles entering the motorway
Education is as important as tackling environmental problems themselves.

Eco-driving campaigns, articles re. environmental issues (recycling etc.)

Education of children in environment, safety, to create solid ground for better future
Prize “Décibel D’ Or”

The “Décibel d’ Or” was awarded to Attica Tollway in 2003 from Conseil National de Bruit (CNB), in the category “City and Transport” and for the program «Management and reduction of Road Noise Pollution from the Operation of Attica Tollway». 
Attikes Diadromes S.A. is the winner of the 2008 Global Road Achievement Award in the category of Environmental Mitigation for its continuous efforts to protect the environment.
Environmental Certification

The company is certificated with the ISO 14001: 2004 for its Environmental Management System
Attica Tollway & the future

- Advanced Traffic Management
- Re-use of surface runoff
- Alternative power sources (solar panels, wind energy)
- Optimization of tunnel lighting (LEDS)
- Carbon assessment

Attica Tollway invests €2,8 million per year in environmental protection and mitigation.
Road operation and Environment - Conclusions

• No hard and fast rule, not one solution to every problem.
• Each road is unique.
• Many solutions available, need to keep up with technology and know-how.

IN ATTICA TOLLWAY, WE BELIEVE THAT ROADS AND ENVIRONMENT CAN COEXIST HARMONIOUSLY
Attica Tollway...paving the way

Contact:
Dimitris Mandalozis
Strategic & Organizational Manager
Attica Tollway Operations Authority
Attikes Diadromes SA
e-mail: dmandalo@attikesdiadromes.gr

www.irf2010.com