

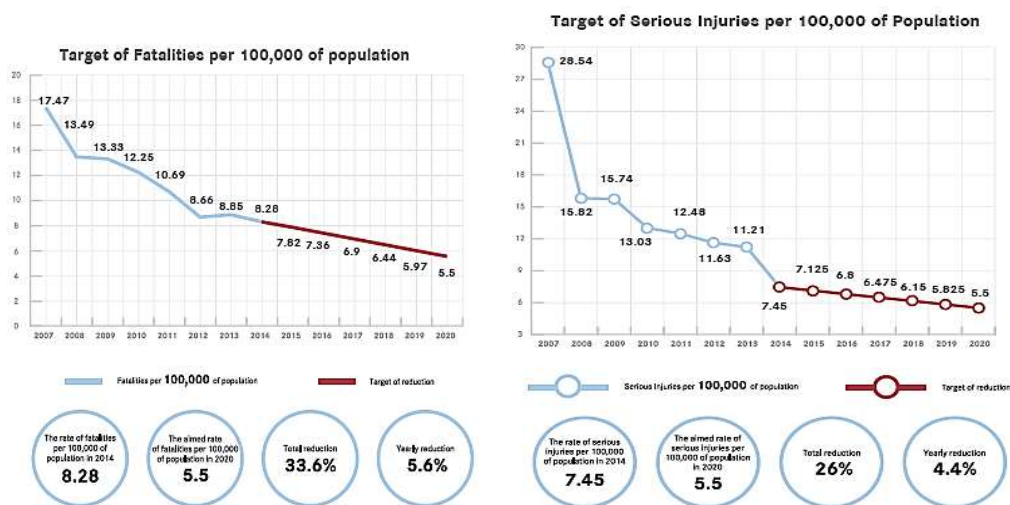
Case study title: Abu Dhabi Road Safety Strategy 2016 – 2020 (Towards Vision Zero)

Key pull-out point:

The document is an overview of the AD 2016 to 2020 Road Safety Strategy and a review of the targets achieved from the earlier Road Safety Strategy.

Main Targets:

- ZERO Fatalities by 2030
- Vision Zero is now a long term initiative of the agencies that are major stake holders to the Abu Dhabi Road Network. The Abu Dhabi Police also have adopted Vision Zero 2030 in their long-term action plan.
- 5.5 Fatalities and serious injuries per 100,000 by 2020



Description of Case:

Location: Emirate of Abu Dhabi, UAE.

Need: “World status Report“(WHO, 2009) estimates that the fatalities per 100,000 population per year in UAE, suggesting that UAE had one of the highest road death rates per head of population in the world.

How we met the targets of improving Road Safety from 2009 to current.

The authorities in Abu Dhabi view is that death and injury on the roads is not an inevitable consequence of mobility and should be tackled vigorously to improve the quality of life for Abu Dhabi citizens. The authorities recognize that the number of road deaths and injuries could only be reduced through pursuance of excellence and integrated approach to road safety across all relevant sectors.

Road Safety System has identified specific areas of possible improvement to deliver a safer road network and appropriate action plans are and have been developed to deliver those improvements.

- Road Safety Management
 - Funding Road Safety Initiatives: A coordinated approach at senior Government level has included the funding for road safety initiatives.

MANAGEMENT & COORDINATION

Established committees to improve stakeholder coordination and engagement for enhancing road safety in the Emirate.

These committees include:

- Joint Committee for Safety and Traffic,
- Safety & Traffic Solutions Committee,
- Speed Management Strategy committee,
- Road Safety Strategy committee,
- Education and Awareness committee,
- Legislation Policy and Standards committee.

- Crash Data System Accessibility -Unified and improved quality of crash data held in a centralized database accessible by all stakeholders; providing reliable data for further analyzing crash data.
- Collation Analysis: Collation and analysis of collision data to prioritize of road safety initiatives and schemes.
- Road Safety Engineering –To ensure that roads in the Emirate are designed, built and maintained with priority to safety towards the most vulnerable road users. Initiatives include:
 - Road safety checks and audits to mitigate existing hazards and prevent the creation of new ones.
 - Reduce traffic speeds, particularly near schools and areas with significant pedestrian activity.
 - Pedestrian-controlled traffic signals to allow people to cross safely at intersections and certain mid-block crossings.
- Education and Driver Training-
 - Road safety education in schools aimed to improve the road safety knowledge of children of all ages. This includes an aim of developing age appropriate road safety curricula for each of the school tiers: Primary, Intermediate and Third Level.
 - Driver training and testing –Improve quality and ability of all drivers across all vehicle classes by improved and standardized training.
 - Mass media publicity and community outreach programs.
- Legislations and Enforcement –
 - Comprehensive road safety legislation that incorporates penalties (Black Points).
 - Sustained enforcement through increased deployment of detection devices.
 - Continuous review of roads legislation, enforcement and outcomes to improve driver behavior in the high risk areas as identified through the collision data analysis.
- Vehicle Safety standards –
 - Improved vehicle inspection and vehicle standards.
 - Improved control of overloading of heavy goods vehicles.
 - Introduce regulations that limit the number of hours driving of a commercial vehicle.
- Emergency and Medical Care –
 - Improved accident site management, emergency response to road crashes and emergency medical services (EMS).
 - Road victim rehabilitation and medical treatment.
- Evaluation – The prime objectives are to ensure that safety improvements are fully evaluated and that lessons be learned for future interventions. Increased co-ordination and access to data is critical for success in this area.

What has been done to date to achieve Vision?

1.1. Institutional/Organizational Changes:

In 2010 the government pledged commitment to improve Road safety and set up a multi- agency body referred as the Road Safety Committee. Membership of this committee includes the Municipality of Abu Dhabi City and other municipalities within the Emirate of Abu Dhabi, Department of Transport (DoT), AD Police (ADP), Urban Planning Council (UPC), Health Authority of Abu Dhabi (HAAD) and Abu Dhabi Education Council (ADEC) amongst others. Robust actions in terms of Engineering, Enforcement and Education were planned and implemented to contribute to the reduction in the number of fatalities.

The strategies of the Committee focused on the following:

- Establishing protocols for co-operation and agreements and memorandum of understanding (MOU). (Completed but continuously under review.)
- Review of existing operational roles of stakeholders and clear understanding of who will be in-charge with delivering measures under the Road Safety Strategy. (Completed but continuously under review.)
- Collision Data sharing and analysis from Abu Dhabi Police, SAAED and Hospitals data through HAAD to other stakeholders was one of the areas for emphasis in Abu Dhabi. (Still to be delivered but progress is being made.)
- Capacity Building: Initiatives were taken to build organizational strength, develop and enhance in-house expertise through training and adopt best practices. (Still to be delivered but progress is being made.)

1.2. Standards and Regulations (manuals, guidelines, regulation.)

Abu Dhabi developed new manuals while many existing manuals and guidelines related to design, maintenance and management of roads and road works have been reviewed, amended and republished since 2009. These reviews are a continuing exercise. Some of the manuals are listed below.

- Abu Dhabi Urban Street Design Manual (USDMA), Abu Dhabi Urban Planning Council (2010), (v1.1 2012)
- Abu Dhabi Public Realm Design Manual (PRDM), Abu Dhabi Urban Planning Council (UPC), (v1.0. 2011)
- Road Safety Audits Procedures for Abu Dhabi City Roads, Abu Dhabi Municipality (2016)
- Abu Dhabi Transportation Impact Study Guidelines, Abu Dhabi Department of Transport (2012).
- Work Zone Traffic Management Manual, Abu Dhabi Municipality (2013).
- Traffic Calming Manual-Update, Abu Dhabi Municipality (2014)
- Traffic Control Devices Manual, Abu Dhabi Municipality (Rev.02) (2014)

(All the current documents are being reviewed to define a set of Unified Standards to be adopted by DMAT under QCC).

Also, several master plans and strategies have also addressed road safety components such as:

- Road Safety Strategy-Emirate of Abu Dhabi (V1.0 , 2010 & V1.1, 2011)
- Walking and Cycling Master Plan (2011)
- Abu Dhabi Freight Master Plan 2030 (2014)

1.3. Road Safety Audits

Road safety audits (RSA) are now mandated to be conducted on all new and schemes on the Road network to proactively identify and then recommend elimination or mitigation of safety hazards which can cause vehicle crashes. Road Safety Audits are currently carried out at various stages of the project preliminary design (1); detailed design (2), before opening (3) and stages (4A&4B) at 12 and 36 months after the scheme is operational.

1.4. Enforcement Measures

Excess speeding accounts for 85% of all tickets given out to motorists by officers in the field. Therefore, Abu Dhabi Police has been focusing on enforcing speed on urban roads and highways. In the 1st quarter of 2014 alone, Abu Dhabi police installed 185 new radars and speed cameras. Also, 36 additional junctions were equipped recently with red-light violation and speed detection cameras. These measures are part of a comprehensive plan to improve traffic safety across Abu Dhabi road network.

Collisions involving “sudden swerves” are the most common type of fatal collision. Tail-gating is one of the possible reasons contributing to these collisions. Consequently, additional measures being reviewed and evaluated to include cameras to detect “close following” or tail-gating.

1.5. Initiatives Towards Various Road User Groups

The accommodation of motor vehicle traffic is important to the continuing growth of the Emirate of Abu Dhabi. However, when considering traffic accommodation on urban streets, it is essential that the non-driving options be at least as attractive as those that involve the use of private motor vehicles. In line with the Plan 2030 goals that promote the creation of a sustainable city environment, the user priorities governing the design of all urban streets throughout the Emirate are set as follow:

- 1st Priority – Pedestrians
- 2nd Priority - Transit Users
- 3rd Priority – Bicyclists
- 4th Priority - Motor Vehicles

1.5.1. Pedestrians

All new developments as per the Uniform Street Design Manual (USDMA) address the needs of the growing population and a desire to improve pedestrian facilities to create more walk able communities. Taking into consideration the summer climate of Abu Dhabi, it will be necessary to offer protection from the heat and create a reasonable comfort level along walking routes. Amenities such as trees, screens, and covered arcades can offer pedestrians shading and places for rest.

Improved walking routes are essential in locations where there are high volumes of pedestrian movement or where there are links between transport interchanges and key facilities. Pedestrian amenities would be developed to create a perception of safety and security, so that those who walk feel protected from nearby traffic. The reduction in lane widths from the vehicle right-of-way have now allowed increased median for pedestrian storage. The “free rights” at junctions have now been changed to Yield-controlled right turn slip lane with raised pedestrian crossing (Speed Table). General

Pedestrian routes shall be level, firm, slip resistant and should not have any holes or cracks that may cause someone to trip or stumble.

1.5.2. Schools

School Safety Zone initiatives have been ongoing across all Schools (Governmental and Private) with Speed calming and other safety initiatives. The Program covers all schools under Abu Dhabi Education Council (ADEC).

Approximately 200 schools under the stewardship of the ADEC were identified for treatment under the project. The School Safety Zone Project implements traffic management and infrastructure corrective measures to provide drivers early indications of schools in the vicinity (Red Zoning and Signage), reduce speeds (Traffic Calming-Posted Speeds at 30kmph), enhance pedestrian connectivity at crossing points (Speed Tables and Zebra Crossings) around schools, separate of bus and car movement and rationalize of parking & drop offs habits (lay-bys).

Improvements were implemented at 44 schools in Phase 1 (2012) of the project and an additional 44 schools were implemented in the Phase 2 (2013). Currently 109 Schools are under consideration for the Phase 3(2016-17) and are going for construction.

This is a multi-stakeholder initiative which includes nominated members of key stakeholders from the Traffic Police, Abu Dhabi Education Council (ADEC), Department of Transport (DoT) and Town Planning and Road Safety Unit at Municipality of Abu Dhabi City.

The Education drive in schools is being passed through the academics with inclusion of road safety education within the curriculum.

1.5.3. Cyclists

The Walking and Cycling Master Plans have been developed with a network of safe clearly marked bicycle routes to connect existing and new developments. Attractive and convenient bicycle parking and storage facilities were provided in many areas within the city to encourage cycling as an alternative to motorized transport. For example, in mainland part of Abu Dhabi city (Khalifa, Mohamed Bin Zayed and Shakhbout cities), the Municipality is building around 27 kilometres of cycle track. Similar schemes have been implemented in Abu Dhabi Island since 2011.

1.5.4. Buses (School Bus Safety)

All school buses that are operational on the Abu Dhabi road network for School transport have to comply to the General Specification Checklist issued in 2012 with enhanced Safety features which specifies the requirements on the Exterior appearance & Livery, Doors, Seating's, Aisles, Seat Belts, Windows, Luggage provisions, Air Conditioning, Mechanical specifications (Engine, Braking, Exhaust and Fuel system), Health and Safety equipment, emergency exits and minimum ITS Equipment on-board each vehicle.

1.5.5. Roads and Drivers

Streets in the urban environment have now narrowed the width of Travel lane reduced to 3.3 meters from the earlier 3.65 meters; The Splitter Islands (median) at intersections are being widened to the latest USDM standards that allow storage of more pedestrians crossing at the junctions and the free right movement are being turned to "Yield" to traffic with raised speed table for pedestrians.

1.5.6. Taxi Safety

In a push to ensure safety and security of passengers and taxi drivers the speed of all Abu Dhabi's new "silver fleet" is monitored by the Centre for Regulation of Transport by Hire Cars (formerly Trans AD). As per regulations the permitted taxi speed limits are:

- City Limit – 60-80 km/h
- Airport Zone – 60-80 km/h
- Outside City – 100-120 km/h

The induction of new technology allows the Centre to monitor taxi speed and send electronic real time messages through the Mobile Data Terminal (MDT) to warn drivers and instruct them to reduce their speed. If there is no response and the taxi speed continues to exceed the limit, fines are imposed instantly and a message is sent to the driver.

Key achievements:

	2010	2011	2012	2013	2014	2015	Percent Change 2010-2015
Total Number of Registered Vehicles	698,070	783,180	831,938	873,243	947,508	1,019,698	46%
Total Number of Registered Drivers	907,107	994,242	1,075,233	1,151,879	1,234,009	1,307,430	44%
Number of Fatalities	376	334	271	289	267	245	-35%
Pedestrian Fatalities	101	81	70	48	54	48	-52%
Total number of Injury Crashes (Fatal and Injury Crashes)	2,537	2,283	2,056	2,071	1,863	1,803	-29%
Rate of Fatalities per 10,000 Vehicles	5.4	4.3	3.3	3.3	2.8	2.4	-56%
Rate of Fatalities per 100,000 Capita	12.25	10.69	8.66	8.85	7.63	7.4	-40%
Rate of Injury Crashes per 10,000 Vehicles	36.34	29.15	24.71	23.72	19.64	17.7	-51%

The previous table shows a decrease in the total number of injury crashes by 29% between 2010 and 2015. Also, the number of fatalities and pedestrian fatalities decreased by 35% and 52%, respectively. Meanwhile, the rate of injury crashes per 10,000 vehicles decreased by 51%, while the rate of fatalities per 10,000 vehicles decreased by 56%. Finally, the rate of fatalities per 100,000 capita decreased by 40%.

These figures show the progress over the term of the last strategy and provide the direction to achieve the vision towards targets set for 2016-2020 and Vision Zero towards 2030.

The E's that Contributed:

ENGINEERING

- Developed, Speed Management Strategy.
- Substantiated implementation and monitoring of Pedestrian Safety Action Plan by implementing pedestrian bridges, midblock crossings and safety fences.
- Developed Road Safety Audit Guidelines and procedures. (2009)
- Published Work Zone Traffic Management Manual. (2014)
- Prepared, updated, implemented and monitored a program of Road Safety Engineering improvements (closing U turns on E11, E65).
- Installed more than 150 permanent traffic count stations to keep track of traffic.
- Developed and published Traffic Calming Manual (2009)

Pedestrian Safety Strategy



EDUCATION & AWARENESS

The achievements happened over the last five years.

Promoted the awareness and use of the Road User Code

to road users in the Emirate, published and distributed

10,000 copies (English and Arabic) through various stakeholders including AD Police Traffic Centres, DMA, UPC, EDC, HAAD, Abu Dhabi Airport, and Border Security etc.

Review the development and evaluation of the TIMS road collision data by ADP.

Improve the analysis of crash data, including damage only crashes, and hold it in one centralized database accessible by all stakeholders by ADP and DoT. Further improvements in the collation and analysis are on-going.

Traffic Safety for work zones



TV	46	1,712	180	5,914
ROAD SAFETY PROGRAMS	CAMPAIGNS	LECTURES	EXHIBITS	TRUCK TRAINING

ENFORCEMENT

300 Additional cameras were installed (in excess of 600 fixed radars are operational in the Emirates currently).



Saving lives into the future:

Researches show that driver/human error accounts for over 80-90% of all fatal and injury crashes. This is no different in Abu Dhabi. Although there are many engineering initiatives that are being undertaken to pave way for economic prosperity there is a major gap in the way Road Safety is still perceived by the public. This gap could be filled out through more focused schemes and programs promoted through Education and Enforcement:

1- Education :

Training of children in school by school teachers, supplied with relevant material;
Training of adolescents in the principles of safe driving and good driving attitudes;
Providing refresher courses for older drivers to refresh good driving practices and knowledge of traffic law;
By mass media such as newspaper, radio, television, to draw the attention of all road users both to dangers and to safe practices on the road, especially with a population that consists of more than 80% expats and over 200 nationalities.

Educational campaigns should identify at risk groups and their behaviours from the collision database and appropriate relevant road safety initiatives need to be developed and delivered at the appropriate times in the appropriate media and language to target the correct audience.

Driver licensing and training should be reviewed to consider level of training needed to allow drivers to operate a vehicle alone and also to consider a graduated licensing system.

2- Enforcement: Continue current police efforts that have shown significant improvement.

Using the collision database to identify risk behaviours by drivers, other road users and trends that are resulting in fatal and serious collisions to target enforcement initiatives.

Road safety advertising needs to be based upon the Education/Enforcement Model, in which advertising is designed to win the moral argument, shape the climate of public opinion and build community support for enforcement of our road safety laws. This is consistent with the policy of the European Commission which states:

“Studies and research on this subject have shown that, to achieve a significant improvement in compliance with the rules by road users, an overall approach are needed which combines police checks with education and awareness campaigns for users.

Information from the same scientific indicate that it appears that enforcement actions are only optimally effective if they are combined with actions to make the public aware of such enforcement actions and of the reasons why they are being held.

Initiatives by Abu Dhabi Municipality that contributed to the Vision:

The Municipality of Abu Dhabi City based on the Vision and Strategies drew out its initiatives to complement the vision and the most highlighted initiatives undertaken were as referred below;

Establishing of an Operational Road Safety Unit at Abu Dhabi Municipality in 2010.

Road Safety Unit (RSU) was established within the Municipality and training programs were developed to build talent pool of local Engineers and endorsed by the Chartered Institute of Highways and Transportation, UK.

- Road Safety Audits Procedures were mandated for all Road Schemes and Introduction to Road Safety Audits and examination of an existing or future road or intersection by an independent, multidisciplinary team. The Audit to be carried out in the following stages;
 - Stage 1 Audit– Preliminary design stage
 - Stage 2 Audit –Detailed design approval
 - Stage 3 Audit- Carried out upon completion of the works prior to opening of the scheme
 - Stage 4 carried out 12 months and subsequently 36 months after completion.
- Initiation of Road Safety Assessment of over 2700 kilometres of ADM Road to identify black spots and to categorize High, Medium and Low Risk Areas through the Australian Road Research Board(ARRB)



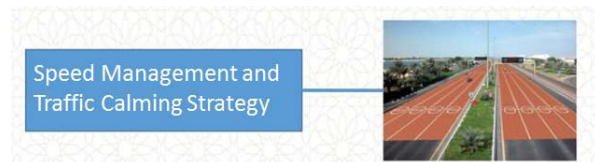
- Abu Dhabi Municipality joined UN Road safety collaboration to meet the targets set by UN decade of Action for Road Safety and the Membership of the United Nation Road Safety Commissions (UNRSC).
- Development of Unified Road Safety Audit Manual for the Emirate of Abu Dhabi: Currently in draft, awaiting approval from the Unified documents committee of DMAT. (2016)
- Development of the Work Zone Traffic Management Manual (Work Zones).2014
- Development to the Traffic Calming Manual. (2009)
- Revision of the Traffic Control Devices Manual (Rev.02).Nov.2014
- Adoption of Design Standards to the guidelines put forth by the USDM (Urban Street Design Manual) developed by the Urban Planning Council.
- Design more walks able and liveable streets, as per Vision 2030.
- Improve safety of all road users (in particular the most vulnerable users).
- RSA of all new road and development projects at all stages of Planning, Construction and Operational Stages.
- Collision remediation at identified sites using the road maintenance programs. (This is currently being developed into a targeted RS initiative based on collision cluster analysis and road risk rating programs which are currently being developed.)
- ISO39001:2012 Accreditation to Achieve excellence in ROAD TRAFFIC SAFETY MANAGEMENT SYSTEMS(2014-17)

Commitment and Road Safety Strategy:

The measures presented above are underpinned by a Vision and Road Safety Strategy adopted in 2009. The Vision establishes that the strategy will “enable the Emirate of Abu Dhabi to become one of the safest societies in the world and to be a regional leader in the field of road safety’

The Strategy comprises the following key activities:

- Clarify mandates and set an improved co-ordination mechanism between relevant stakeholders
- Effective and more rigorous Enforcement
- Safer Roads Infrastructure
- Safer Vehicles (cars, buses, trucks, etc.)
- Focus on pedestrian safety
- Focus on Speed Management
- Providing Emergency Care and Response
- Improving Knowledge through Education and outreach campaigns



Finally, the targets and initiatives identified during the previous Road Safety Strategy have been built upon in the development of the 2016 to 2020 strategy but the Vision Zero has also been adopted to ensure that no avoidable road death occurs on the road network in Abu Dhabi in 2030.

The Emirate of Abu Dhabi represents in microcosm many of the key challenges that need to be addressed by the international community during the Decade of Action.

We have been able to and continue to promote a wider road safety agenda within the region and will continue to make every effort to collaborate at both a governmental, United Nations agencies and non-governmental level.

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