منتدى دبي العالمي لإدارة المشاريع
DUBAI INTERNATIONAL PROJECT MANAGEMENT FORUM

RTA

RTA's Net-Zero Emissions

Public Transportation 2050 Strategy

dipmf.ae

RTA's Net-Zero Emissions

Public Transportation 2050 Strategy

Environmental Impact

Reduction of 10 million tons of CO2 equivalent

Financial Impact

Save AED 3.3 billion against the business as usual (BAU) costs by 2050

2030

Zero Municipal Waste sent to land fill

2040

Zero Emission Taxis and Limousine Vehicles

2045

Near Zero Energy Buildings

2050

Zero Emission public busses

Safety, Risk, Regulation and Planning Department Strategy and Corporate Governance Sector

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September 2022

Definitions

01 Net-Zero emissions

Reduce GHG emissions in line with a 1.5°C route and come as close to zero emissions as possible, extract from the atmosphere an amount of CO2 equivalent to the residual emissions of the specified Period.

02 Carbon Neutrality

A state in which CO2 emissions are balanced by CO2 removals over a specified period i.e., achievement of the previously defined emissions reduction target, combined with the purchase of carbon credits to offset residual emissions over a specified period.

03 Reduced GHG emissions

This is a measured or estimated reduction in GHG emissions associated with the activities of an organization through changes in consumption and production choices.
They are considered in the company carbon accounting

04 Avoided GHG emissions

This is an estimate of the GHG emissions that are avoided in relation to a baseline situation or scenario. They cannot be counted by the organization to demonstrate either carbon neutrality or Net Zero

05 Carbon offsetting

This is an action that neutralizes the residual GHG emissions of an organization by financing GHG emissions reduction projects or GHG sequestration projects beyond its monitoring scope, in particular through the purchase of carbon credits.

06 Negative GHG emissions

When organization sequesters (captures and stores) more GHG emissions than they produce annually.

07 Residual GHG emissions

When efforts are made to reduce emissions, the residual emissions are those that remain. These are calculated when a revised footprint is completed, and any offset or sequestered emissions are deducted.

08 Scope 1 or Direct GHG emissions

These are GHG emissions from fuel combustion, vehicles, and fugitive emissions such as refrigerants, that are within the organization or direct control.

09 Scope 2 or Electricity indirect GHG emissions

These are GHG emissions related to the production of electricity, heat, and steam purchased by the organization.

10 Scope 3 or other indirect GHG emissions

These are other indirect GHG emissions, not included in Scope 2, related to the organization wider activities but that come from GHG sources owned and/or controlled by others.

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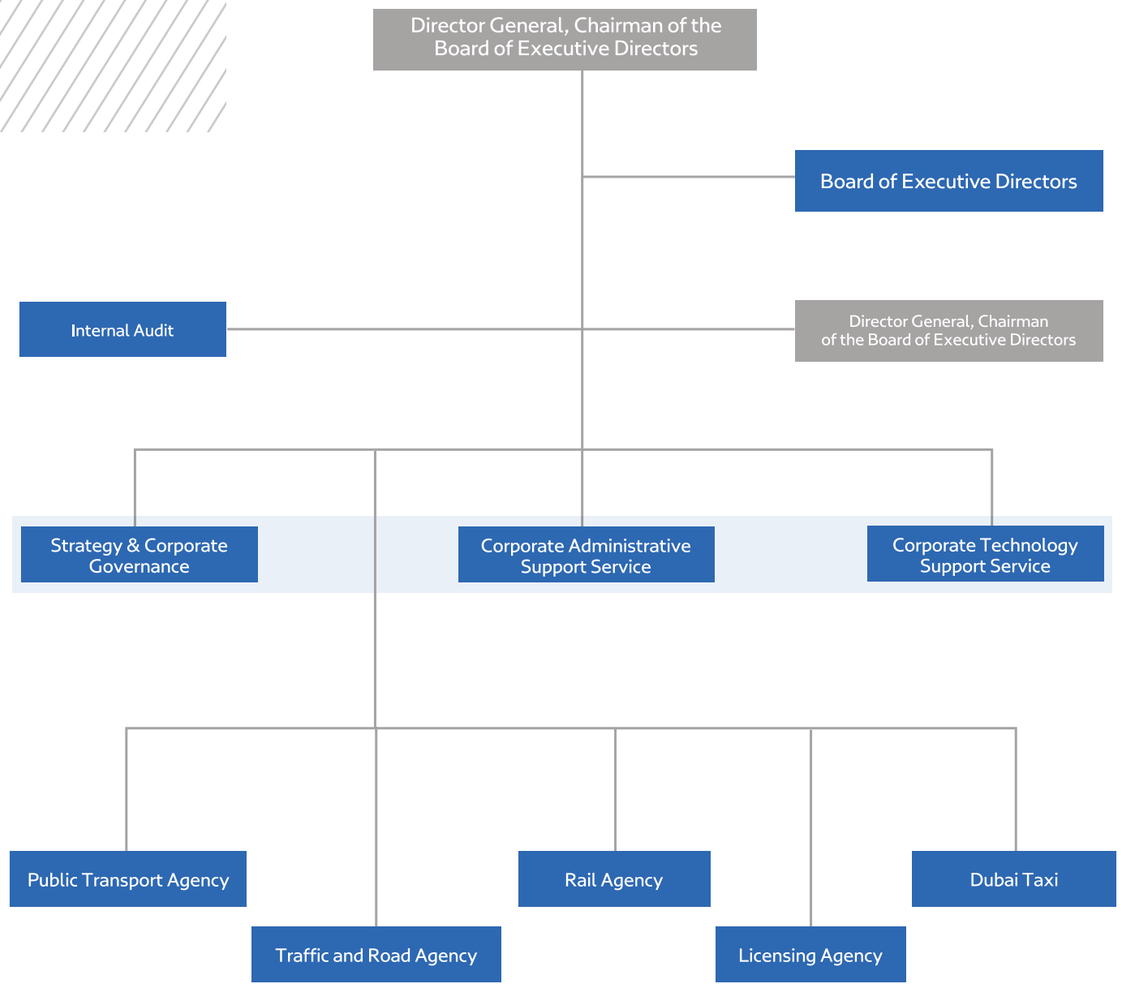
Introduction

1.1 About RTA

The Roads and Transport Authority (RTA) emerged in November 2005 as a public entity with an independent corporate body and a full legal capacity to perform all business operations and actions needed to achieve its objectives. RTA is a government-owned entity and based in Dubai. RTA plans and provides the requirements of transport, roads, and traffic in Dubai, between Dubai and other emirates of the UAE, and between Dubai and neighbouring countries, to provide an effective and integrated transport system that achieves Dubai's vision and serves its vital interests.

1.2 RTA Organisational Structure

RTA's organizational structure (Figure 1) shows that RTA adopts the “Agency Model” which aims to provide flexibility at work and to separate regulatory and governance matters from operational issues. Each Agency is led by a Chief Executive Officer (CEO), who is a member of RTA’s Executive Board that governs the organization and takes strategic decisions. This Project was managed by the Safety, Risk, Regulation and Planning Department under the Strategy and Corporate Governance Sector.



1.3 Project Scope and Objectives

RTA’s Net-Zero Emissions Public Transportation 2050 Strategy is intended to minimize the RTA’s overall negative impact on Climate Change, reduce the RTA’s carbon footprint and improve the air quality, in line with the RTA’s Strategic Goals and Objectives and relevant international, national, and local strategic directions of the United Arab Emirates. The Strategy applies to the various RTA activities especially for public transportation means and related buildings and facilities, focusing on reducing the RTA’s scope 1 emissions.

1.4 Project Schedule

The study started in May 2020 to prepare a roadmap towards net-zero emission public transportation in Dubai by 2050, as per the below mentioned project milestones, and the study was completed in April 2021.

However, due to the importance of the topic to achieve the RTA's vision and mission and the UAE and Dubai government directions in this regard, it was decided in June 2022 to convert the roadmap to be a specialized strategy "RTA's Net-Zero Emissions Public Transportation 2050 Strategy" and hence the strategy was launched in in November 2022.

RTA's Net-Zero Emissions Public Transportation 2050 Strategy (June 2022 - Sep 2022)

01 Initiation

02 Review of intiiatives and Targets

03 Stakeholders' engagement

04 Updating the targets.

05 Finalize the strategy

06 Top Management approval

07 Execution and monitoring

Timeline for preparing the roadmap towards net-zero emission public transportation in Dubai by 2050 (May 2020 - April 2021)

01 Initiation

02 Preliminary Analysis

03 Stakeholders' engagement

04 Data collection and analysis

05 Benchmarking

06 Identifying key Initiatives

07 Analyze Economic and Environmental impact

08 Setting short and long-term targets

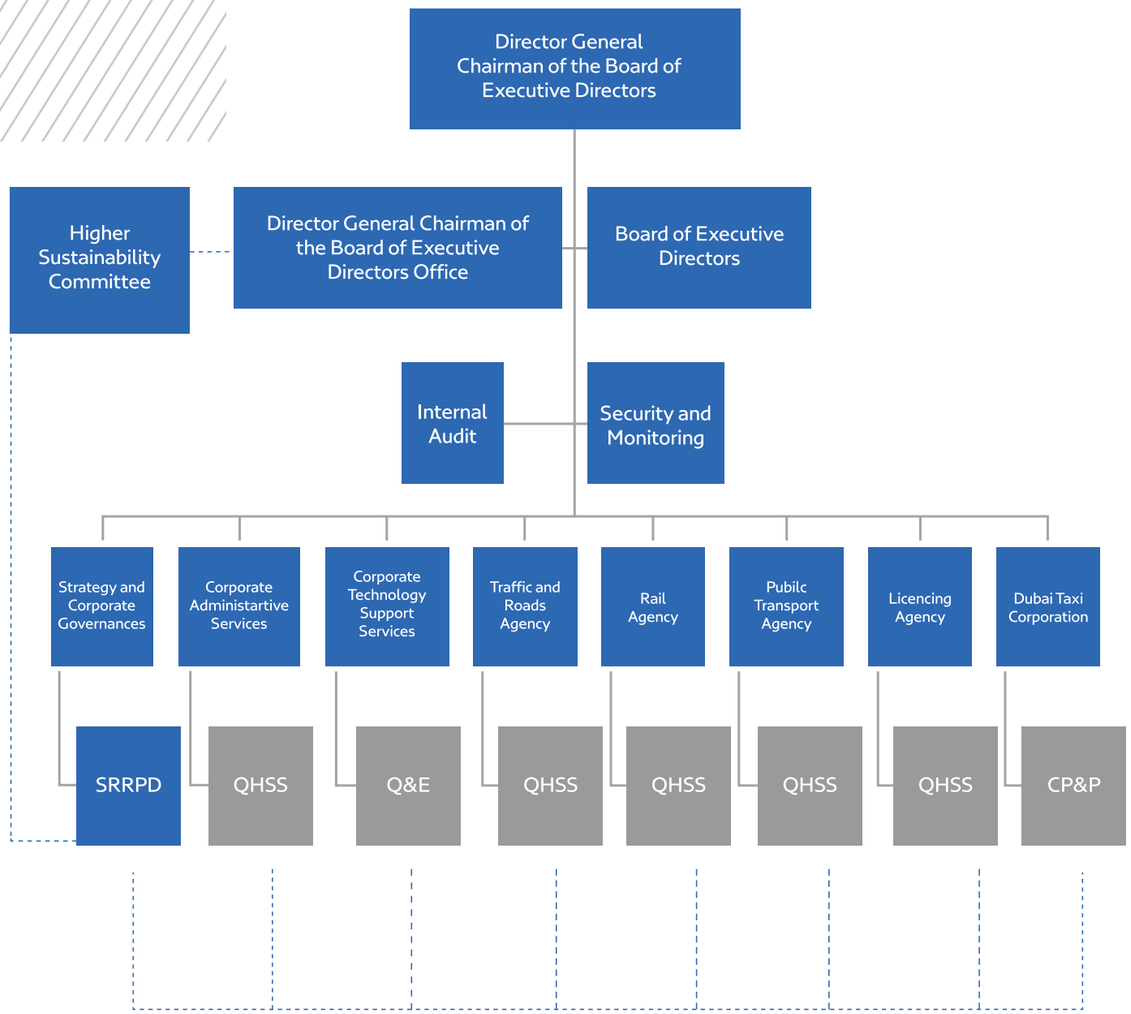
09 Review with stakeholders

10 Top Management approval

11 Execution and monitoring

1.5 Project Stakeholders

The study was managed and completed internally by RTA employees, and it was led by the Sustainability and Green Economy Section in the Safety, Risk, Regulation and Planning Department (SRRPD), in coordination with relevant teams from all RTA Sectors and Agencies. The following chart represents the organizational structure of the Sustainability and Green Economy governance in RTA.



1.6 Alignment with International, National, and Local Directions

While developing the Strategy the International, National, and Local directions were taken into consideration, and the initiatives and targets were identified to align with those directions. Paris agreement which was entered into force aims to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels to achieve a climate neutral world by mid-century. Also, the UAE announced in COP26 its strategic initiative to achieve carbon neutrality by 2050. Below are the key directions:

International Directions:

01
United Nations Framework Convention on Climate Change (UNFCCC)

02
Paris Climate Agreement

03
Sustainable Development Goals (17 goals) - United Nations

04
Network of Leading Cities for C40 Climate Change

05
Global Sustainability Reporting Initiative

National Directions:

01
UAE Net Zero 2050 Initiative

02
The UAE Green Agenda 2030

03
National Water and Energy Demand Management Programme

04
UAE Energy Strategy 2050

05
The National Climate Change Plan 2050

06
The UAE Water Security Strategy 2036

07
UAE General Environment Policy

08
UAE Centennial 2071

09
UAE Green Development Strategy 2030

10
UAE Circular Economy Policy

11
National strategy and action plan for environmental health

12
The National Plan for Sustainable Production and Consumption (2019-2030)

13
National Innovation Strategy

Local Directions:

01
Carbon Emission Reduction Strategy 2030

02
Dubai Green Mobility Initiative 2030

03
Climate Adaptation Strategy in the Emirate of Dubai

04
Energy Demand Management Strategy 2030

05
Dubai Clean Energy Strategy 2050

06
Dubai Integrated Energy Strategy 2030.

07
Smart Dubai Strategy

08
Dubai 2040 Urban Master Plan

1.7 Challenges

Although the objectives and the final target of the study were clear from the start, there were some challenges that required handling during the project, some of which are Lack of infrastructure readiness for Electric and Hydrogen Public Buses in Dubai, the high cost of new green technologies, non-availability of new energy technologies providers in UAE/Dubai, and the rapid change in technologies year on year.

02

RTA's Net-Zero Emissions Public Transportation 2050 Strategy

Introduction

RTA is the first governmental entity in the region that established in 2016 a Green Economy Strategy that has a dedicated framework to monitor and navigate all green economy related projects and activities. The Green economy framework aligns with international, national, and local directions and is established based on the Environmental Management ISO 14001, Energy Management ISO 50001, and Greenhouse Gas Emissions Management ISO 14064. Also, it is supported by Green Economy Policy, Energy Management Policy, and Waste Management Policy.
In 2018, RTA introduced a sustainability governance structure as part of RTA's sustainability framework and policy. The RTA's Sustainability Framework includes 3 pillars: social stewardship, environmental stewardship, and economic prosperity, ensuring its alignment with the United Nations Global Compact (UNGC) principles and the UN 2030 agenda for sustainable development.

Both the Green Economy Framework and the sustainability framework give a focused highlight on climate change mitigation and resilience through a separate focus area under the environmental pillar, in which the RTA is committed to shine the spotlight on the pioneering role Dubai is playing in shaping the global response to climate change, especially in the transportation field.

The RTA's Net-Zero Emissions Public Transportation 2050 Strategy is benchmarked against the best international practices, in line with global trend, and aligned with key federal policies and local policies in Dubai, such as the UAE Carbon Neutral Initiative 2050, UAE Green Agenda 2030, The National Climate Change Plan 2050, the UAE Energy Strategy 2050, The Dubai Integrated Energy strategy 2030, The Dubai Clean Energy Strategy 2050, Dubai Air Quality Strategy, Carbon Emission Abatement Strategy, and many more.

RTA is the first government body in the MENA region to carry out such a comprehensive stratgey for the public transport and its related infrastructure. The plan aids RTA's efforts to predict and shape the future, contributes to climate change reduction, supports the long-term national initiative rolled out by His Highness Sheikh Mohammed Bin Rashid Al Maktoum to encourage a green economy in the UAE, endorse Dubai's vision of becoming the most climate-resilient city in the world, and support RTA's strategic goal of becoming a world leader in seamless and sustainable mobility.

RTA Strategic Plan 2023-2030

Vision

The worl-leader in Seamless Sustainable Mobility

Mission

We provide seamless and safe travel with innovative, sustainable mobility solution and service to make every journey in Dubai a world-class experience

RTA Strategic Plan 2023 - 2030

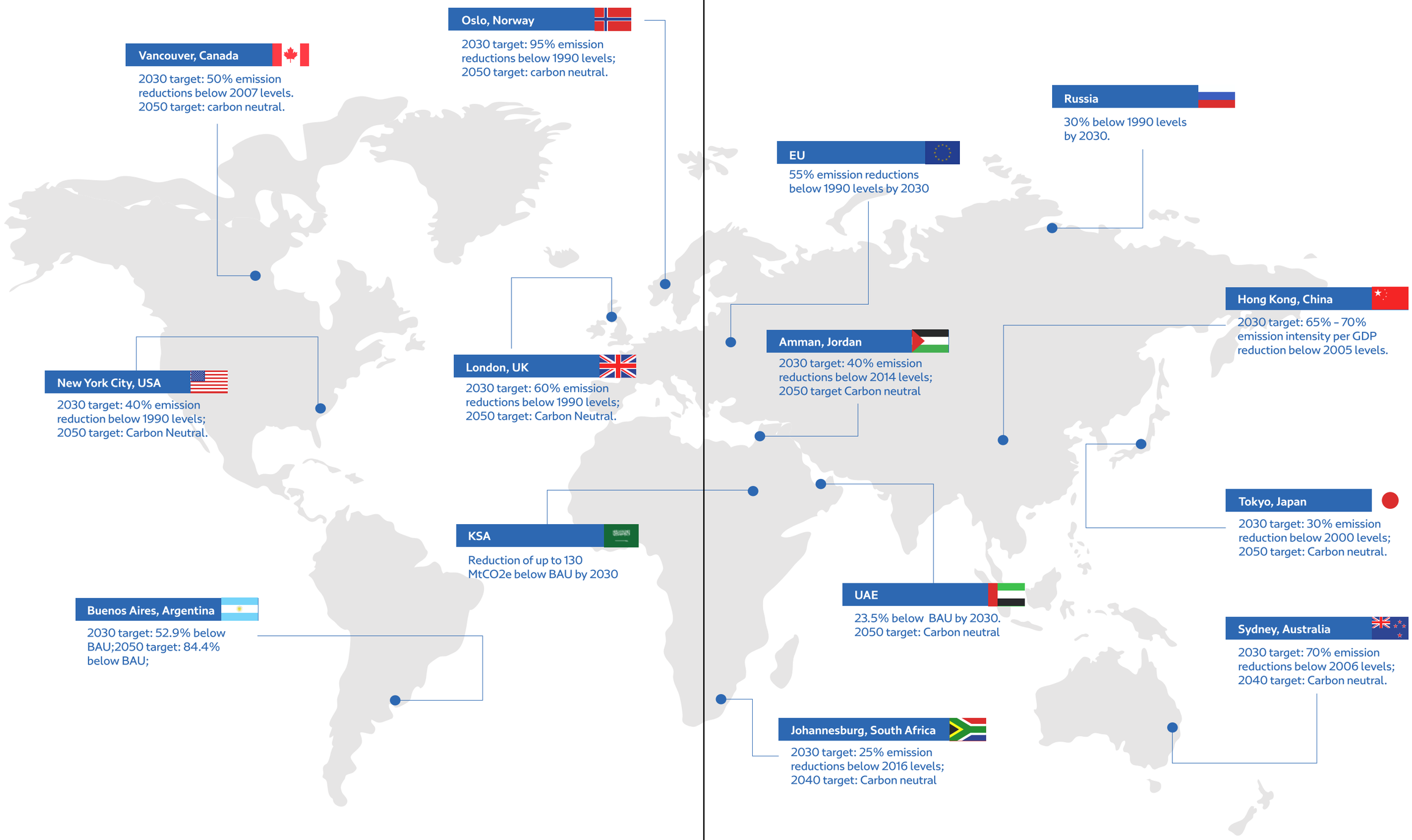
- Seamless and innovative Mobility
- Sustainability
- Health, Safety and Security
- Customer Happiness
- Future-Proof Organization

Coporate Value

- Preserve Reputation
- Strive for Pioneering
- Leadership and Teamwork
- Promote Tolerance and Collaboration
- Be Pioneering and Challenge Conventional Thinking

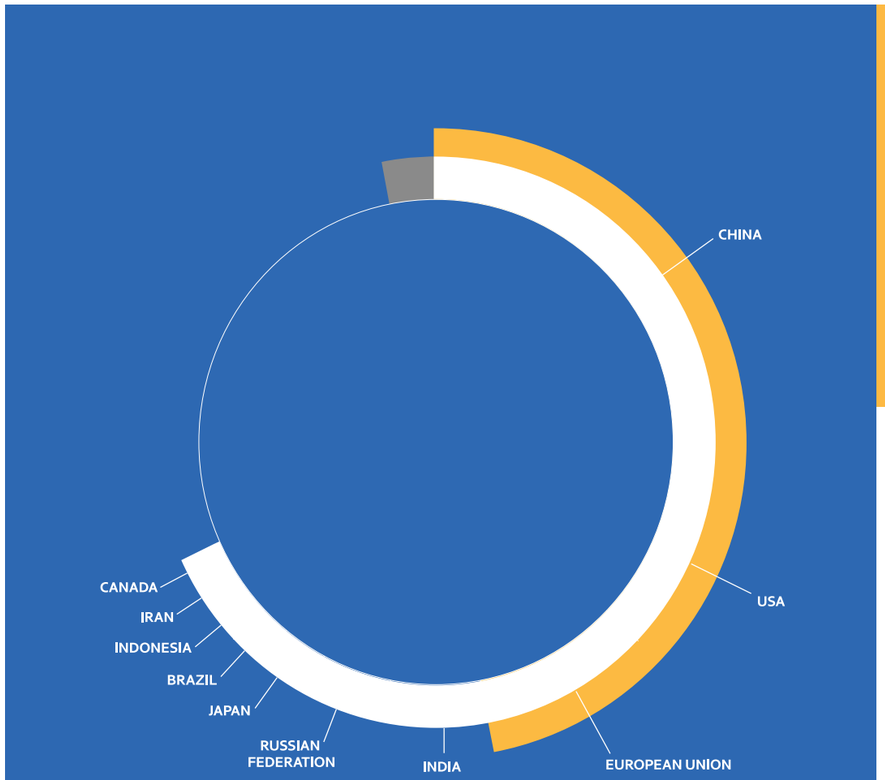
2.2 Benchmarking

The project to develop the strategy included a benchmarking exercise with different countries around the five continents using the climate action tracker website, in which many countries have announced commitments to reduce their emission at country/city level from various sectors by 2050, as shown in the figure below:



However, during the benchmark exercise for the emissions form road transportation, it was noticed that the focus of the countries/cities is decarbonize emissions from private vehicles and no clear plans to decarbonize the emissions from road public transportation.

Globally, the UN report for net-zero coalition showed that ten largest greenhouse gas emitters contribute over two-thirds of global emissions, and 46% the top 3 greenhouse gas emitters contribute 16 times the emissions of the bottom 100 countries, as shown in the following graph.



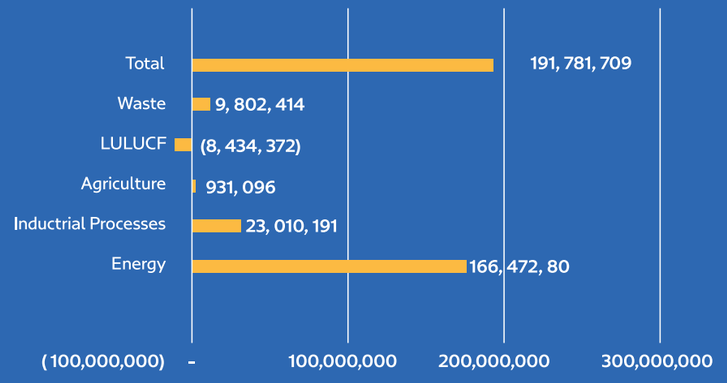
3% Contribution of the 100 least-emitting countries

68% The 10 largest greenhouses gas emitters contribute over two-thirdds of global emissions

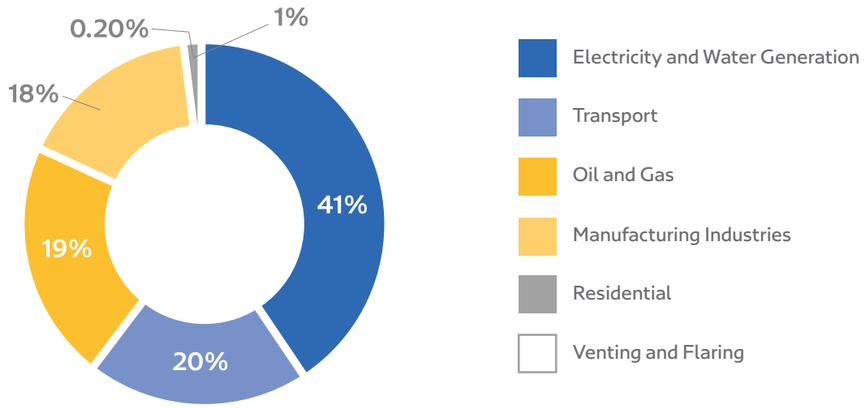
46% The top 3 greenhouses gas emitters contribute 16 times the emissions of the bottom 100 countries

At UAE level, the UAE's 4th National Communication Report showed that the emission from transportation contributes to 20% of the overall emission from the energy sector as shown in the charts below.

UAE GHG Emission 2014 (tCO2e)



UAE Energy Emission Distribution - Energy Sector



While in Dubai, the Carbon Abatement Strategy Report 2021 by the Dubai Supreme Council of Energy informed that the transportation sector in Dubai contributes to 20-25% of the overall emission in the city, while the public transportation contribution is less than 2% of the overall emissions in the city.

2.3 Strategy pillar and Initiatives

The RTA's Net-Zero Emissions Public Transportation 2050 Strategy is developed to minimize the RTA's impact on Climate Change by reducing its carbon footprint from various RTA activities especially for public transportation means and related buildings and facilities, focusing on reducing the RTA's scope 1 emissions. Hence, three main pillars were identified as part of the strategy supported by ten initiatives. The main pillars are: Green Mass Transport, Buildings and Facilities, and Waste Management. And the ten initiatives are: Decarbonization of Public Buses, Decarbonization of Taxis and Limo – DTC, Decarbonization of Taxis and Limo – Other companies, Decarbonization of School Buses, Renewable Energy, Retrofit of Buildings, Energy Efficient New Buildings, Energy Efficient Street Lighting, Municipal Waste Recycling, and Water Recycling. Targets were set to achieve the minimum emissions possible: Converting all fuel operated Public Buses to be Electric & Hydrogen by 2050, Converting all fuel operated Taxis and Limousine in Dubai Taxi Corporation to be Electric & Hydrogen by 2040, Converting all fuel operated Taxis and Limousine in other Taxi companies to be of Electric & Hydrogen by 2040, Converting all fuel operated School Buses (Dubai Taxi Corporation) to be Electric & Hydrogen by 2050, Installation of Solar PV system on 24 buildings and facilities by 2025 and expand implementation based on further feasibility studies, Energy Retrofitting for Existing RTA Buildings and Facilities.

Total of 115 buildings by 2045, Designing and Building all New buildings and Facilities to be Near-Zero Energy Buildings starting from 2025, Retrofitting all existing Street lighting Luminaires (approx. 152,000) to be energy efficient by 2035 and install Energy Efficient Lighting in all new Projects, Recycle and Reuse all the Municipal waste in RTA, no municipal waste to be sent to the landfill by 2030, Recycle and Reuse 40% of the Water consumed in RTA buildings and facilities by 2050.

	Pillar	Initiatives	Description	2020	2025	2030	2035	2040	2045	2050
1	Green Mass Transport	Decarbonization of Public Buses	Converting all fuel operated Public Buses to be Electric & Hydrogen.	0%	0%	10%	20%	40%	80%	100%
2		Decarbonization of Taxis and Limo – DTC	Converting all fuel operated Taxis and Limousine in Dubai Taxi Corporation be Electric & Hydrogen.	3.5%	14%	30%	50%	100%		
3		Decarbonization of Taxis an Limo – Other companies	Converting all fuel operated Taxis and Limousine in Dubai Taxi Corporation be Electric & Hydrogen.	0%	12%	30%	50%	100%		
4		Decarbonization of School Buses	Converting all fuel operated School Buses (Dubai Taxi Corporation) to be Electric & Hydrogen.	0%	0%	10%	30%	50%	80%	100%
5	Buildings and	Renewable Energy	Installation of Solar PV system on 24 buildings and facilities before 2025 expand implementation based on further feasibility studies.	4%	100%	Expanding the scope of application to the rest of RTA's buildings, facilities and infrastucture				
6		Retrofit of Buildings	Energy Retrofitting for Existing RTA Buildings and Facilities, Total of 115 buildings	9%	35%	74%	83%	91%	100%	
7		Energy Efficient New Buildings	Designing and building all New buildings and Facilities to be Near-Zero Energy Buildings	0%	100%	Continuous implementation on all new projects				
8		Energy Efficient Street Lighting	Retrofitting all existing Street lighting Luminairies (approx. 152,000) to be energy efficient and Install Energy Efficient Lighting in all new Projects.	17%	35%	70%	100%	Continuous implementation on all new projects		
9	Waste Management	Municipal Waste Recyling	Recycle and Reuse all the Municipal waste in RTA, no municipal waste to be sent to the landfill.	65%	75%	100%	Continuous implementation			
10		Water Recycling	Recycle and Reuse the water consumed in RTA buildings and facilities	13%	17%	25%	28%	32%	37%	40%

2.4 Key considerations

The strategy was developed with various economic, environmental, operational and technical consideration, in this section some of the main considerations will be clarified:

International, National and Local directions.

RTA's strategic goals and objectives.

Buses and Taxis Lifecycle.

Current and estimated future Buses and Taxis Fuel consumption

Current and estimated future Fuel prices.

Current and future plans for of EV charging stations and Hydrogen Fuel Cell

Partnership with Private Sector for buildings retrofit.

The city plan for clean energy production

Capital and lifecycle cost of Fuel operated buses and Taxis compared to Electric and Hydrogen Buses and Taxis.

Current technologies and the expected

03

Continual Improvement

RTA is committed to addresses, identify, prioritise, and continually improve the processes that having significant energy impact on the overall energy performance across RTA operations. Performance is monitored through the interim audits/inspections, key performance indicators, and compliance evaluation reports are presented to His Excellency the Director General and Chairman of the Board of Directors on regular basis.

The sustainability performance data including energy consumption, energy savings, GHG emissions inventory, carbon offsetting and reduction are disclosed in RTA's annual sustainability report and are verified by a third party as part of ISO 50001 and ISO14064 certification process, and by Independent Assurance body as part of the reliability and accuracy (Assurance Statement) disclosed in the RTA's sustainability reports.

04

Lessons Learnt

The outcomes of the previous experiments that were conducted by RTA including Electric buses, Hydrogen/ Electric/Hybrid taxis, solar projects, LEED certified buildings, and due to having a solid management system for energy and GHG inventory, resulted in more accurate details of estimation for the costs and the environmental and economic benefits of the RTA's Net-Zero Emissions Public Transportation by 2050.

05

Conclusion

The GHG emissions from public transportation in the Dubai represent less than 2% of the overall emissions in the city. All sectors across Dubai/UAE are expected to achieve the carbon neutrality by 2050 which aligns with UAE Carbon Neutral Initiatives 2050, and the UAE commitment in its Nationally Determined Contribution (NDC) report to curb carbon emissions 31 percent by 2030.

Inspired by its vision to be “world leader in seamless and sustainable mobility” RTA established a comprehensive strategy to minimize its emissions aiming to achieve Net-Zero Emissions Public Transportation by 2050 in 3 main areas, namely, Green Mass Transport, Buildings and Facilities, and Waste Management, to achieve Zero Emission Public Transportation by 2050, Near Zero Energy Buildings by 2045, and Zero-Waste Sent to Landfill by 2030.