

United Arab Emirates- Environment

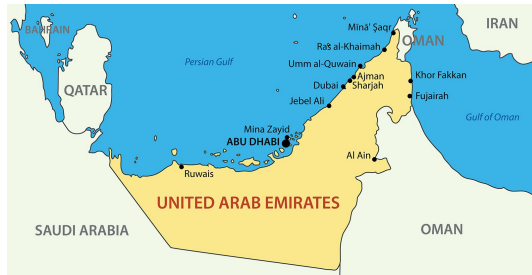
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Industry and Pollution & Global Comparison

General

- Land area: 830,600 sq km
- Water Area: 0 sq km
- Desert, cooler in eastern mountains
- Terrain: flat, barren in coastal plains, sand dunes, mountains in the East
- Natural resources: Petroleum, natural gas
- Natural hazards: Frequent sand/dust storms



Industry & Issues

WATER

- Desalination plants
 - 4 billion bottles/day...low backup supply
 - One of the lowest water availability per capita
 - One resident uses 550 litres/day~170-300 litres/day
 - Potable water demand: 2000, 1 billion. - 2012, 3.7 billion. - 2030, 5 billion (litres/day)
 - Supply does not meet demand
-
- Salinity level: 47,000 parts per million~ avg: 35,000 ppm
 - "Peak Salt"
 - Small size, relative shallowness, slow circulation (Strait of Hormuz), high evaporation rates in the summer
 - Produce massive amounts of Carbon Dioxide
 - Produce heated sludge
 - Ecosystem: Mangroves, coral reefs, sea-grass beds, sea birds



Industry & Issues

AIR

- 30%-40% human activities
- Quarries
- Cement plants
- Public transportation (taxis and buses)
- Road traffic
 - Ozone- eye irritation, asthma, bronchitis, vegetation damage



Stress on Natural Resources

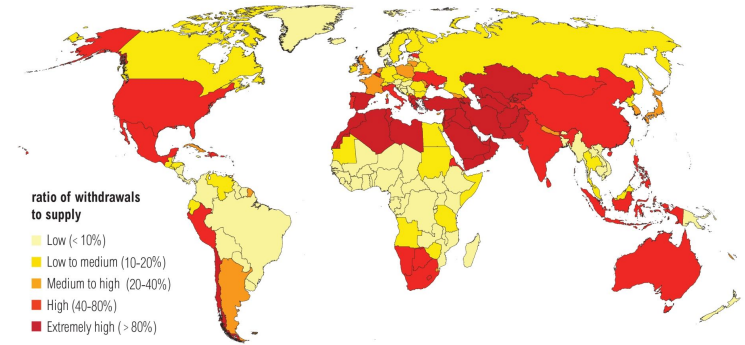
- Fast assembly/construction of skyscrapers (water/electricity)
- Increasing middle class population
- Fast use of natural resources

Tankers and Illegal Activity

- 4000 tankers
- I.e: Drainage to the Jumeirah Suburb



Water Stress by Country: 2040



NOTE: Projections are based on a business-as-usual scenario using SSP2 and RCP8.5.

For more: ow.ly/RiWop

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Global Comparison

Water

Water consumption is one of the highest in the world

Air

One of the largest carbon footprints in the world per capita

Oil

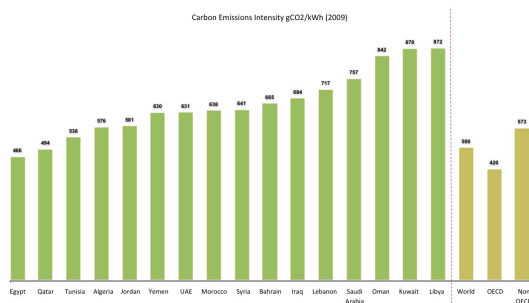
Overall: 50% of oil pollution in water is discharge from land based sources

Water Stress by Country: 2040

RANK	NAME	ALL SECTORS	RANK	NAME	ALL SECTORS
1	Bahrain	5.00	18	Azerbaijan	4.69
1	Kuwait	5.00	19	Morocco	4.68
1	Qatar	5.00	20	Kazakhstan	4.66
1	San Marino	5.00	21	Iraq	4.66
1	Singapore	5.00	22	Armenia	4.60
1	United Arab Emirates	5.00	23	Pakistan	4.48
1	Palestine	5.00	24	Chile	4.45
8	Israel	5.00	25	Syria	4.44
9	Saudi Arabia	4.99	26	Turkmenistan	4.30
10	Oman	4.97	27	Turkey	4.27
11	Lebanon	4.97	28	Greece	4.23
12	Kyrgyzstan	4.93	29	Uzbekistan	4.19
13	Iran	4.91	30	Algeria	4.17
14	Jordan	4.86	31	Afghanistan	4.12
15	Libya	4.77	32	Spain	4.07
16	Yemen	4.74	33	Tunisia	4.06
17	Macedonia	4.70			

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Governmental Regulations and General Efforts

Governmental Regulations

- Federal Environmental Agency and UAE Ministry of Environment and Water
- Various federal laws to protect environment
- License
 - Required
 - Applicants must conduct environmental impact studies
 - Licensees must strictly comply with the terms
- Local laws- function under federal laws
- Penalties such as heavy fines or imprisonment



UNITED ARAB EMIRATES
MINISTRY OF ENVIRONMENT & WATER

Environmental Organizations- EAD

- Environment Agency of Abu Dhabi

- Monitors groundwater use to ensure conservation
- Measures levels of pollutants
- Publishes statistics to inform people and to help create environmental laws
- Revised ambient air quality standards of Abu Dhabi using scientific research
- Greenhouse gas inventory for the Abu Dhabi Emirate
- Abu Dhabi Environment Policy Agenda
- Develops environmental policies and imposes them at the local level
- Conducts inspections, licenses environmental projects



General Efforts to Improve Environment

- New catalytic converter to reduce toxic emissions from cars
- Electronics recycling plant currently being built in Dubai; prevents environment from being contaminated by the various toxic metals from electronics; will be solar-powered
- The UAE plans on investing \$163 billion to develop clean energy sources to replace oil



Participation on a Global Scale

- The UAE is a part of the UNFCCC and various environmental protection treaties
- Climate Change Action Plan- the EAD conducted a close analysis of global warming in Abu Dhabi and proposed a plan to the UNFCCC to reduce it
- Part of Paris Climate Agreement, an international agreement to reduce global warming
 - Submitted INDC for the Paris Agreement and made a commitment to gain 24% of their energy from renewable sources by 2021



← Paris Climate Agreement

UNFCC →



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Energy and the Environment

Oil and Natural Gas

- Large exports of oil
 - 2.2 million barrels shipped
- Ships through the Strait of Hormuz
 - Dolphin Project
- Biodiesels
 - Tadweer, Center of Waste Management
 - Reuse cooking oil, grease, and fat



Solar Energy

- Rashid Solar Park
 - Good because environment
 - Will be the largest, single-site, solar project
 - Generating 5,000 MW by 2030
 - Reduce 6.5 million of carbon dioxide emissions yearly



Nuclear Energy

- Barakah Nuclear Power Plant
 - South Korean firms
 - Still under construction
 - 4 reactors by 2020
 - Reduce around 12 million tons of carbon emissions
 - Jobs



Goals for the Future

- Invest 163 billion dollars into renewables
- 2021
 - 21-27% of electricity from clean energy
- 2050
 - 44% of electricity from clean energy
 - 38% gas
 - 12% clean oil
 - 6% nuclear



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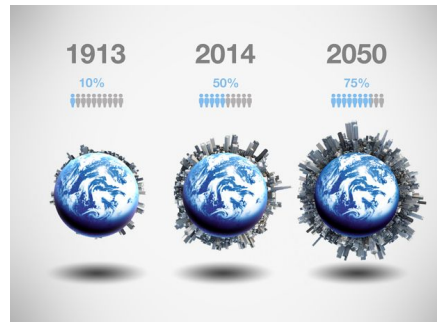
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Environmental Architecture

Dubai Sustainable City



- Dubai Sustainable City Initiative
 - Working towards making Dubai among the most sustainable cities in the world
 - Done through smart building design and sustainable standards
- Shareholder Education
 - Teaching shareholders that sustainable building can be done without raising costs
- The Necessity of Sustainability
 - With a growing population sustainability has become a necessity not only in the UAE, but everywhere

Masdar City

- Low Carbon Development

- Uses a large solar grid for power
- Designed to funnel cool breezes through streets to reduce need for AC

- Buildings

- Incubator Building- Placed next to Masdar Institute to increase green entrepreneurship
- Siemens Building- One of the most sustainable buildings, can cut consumption by 45%
- Masdar Institute- Heavily reduced demands on water, cooling, and potable water intake

- Sustainable Transportation

- Driverless electric taxi system “personal rapid transit”
- All gas-powered automobiles banned in Masdar City
- 0 accidents with PRT system



Other Eco Building Projects

- Helix Tower
 - Surrounded by a layer of vegetation
- World's First 3D Printed Building
 - Most eco-friendly way of building
- Oasis Eco Resort
 - Completely sustainable oasis resort to help people appreciate the environment



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