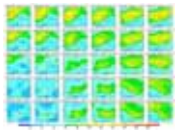
WEATHER FIELD

LAND (AND AIR) ART GENERATOR INITIATIVE

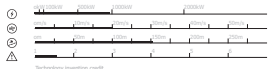
WeatherField is a shape-shifting energy generation park along a strip of sandy beach in Abu Dhabi between Yas and Saadiyat Islands. The park is an open public space and is capable of harvesting the abundant renewable energy resource of wind within the Middle East context. The public park offers a variety of ways to engage with climate and renewable energy, as an economic sponsor, as a visual or physical experience, and as information.

Unlike current renewable energy fields where technologies are publicly inaccessible, static, and always on, WeatherField offers a range of public engagement dependent upon wind, sun, and moisture. Energy generation becomes a public performance, dynamic, reactive, and interactive. The park is active when weather events are active, and calm when weather is calm, in each instance offering the public a compatible experiences.

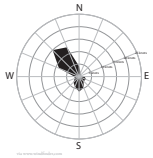


Wind speed patterns from a 5x6 SOM mapping of 30 years of April 1-30, UTC GCAT analysis over the greater Persian Gulf region. Each tile shows the wind pattern associated with that node (coloring indicates speed in m/s) along with the frequency of occurrence for the pattern.

AIR-BORNE GENERATORS



Technology invention credit



via www.windfinder.com

WIND: A LOCALLY ABUNDANT RENEWABLE ENERGY RESOURCE.

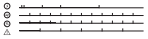
A Shamal is a northwesterly wind blowing over Iraq and the Persian Gulf states (including Saudi Arabia and Kuwait), often strong during the day, but decreasing at night.

According to folklore, the first major shamal occurring around May 25 is known as the Al-Haffar, or driller, since it drills huge depressions in desert sand dunes. The second, arriving in early June, coincides with the dates star, Thoraya (Pleiades), and is therefore named Barih Thoraya. During this event, which is more violent than the others, fishermen usually remain in port because ancient folklore tells them that the wind devours ships. Near the end of June, the last shamal arrives, known as the Al-Dabaran. It is violent and continues for several days. Local residents keep doors and windows firmly shut as this shamal includes an all-penetrating fine dust which gets into everything.

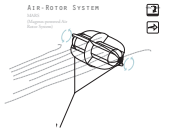
YAWT (VERTICAL-AXIS WIND TURBINE)

The Savonius wind turbine was the first of the vertical-axis wind turbines developed by Sigurd J. Savonius in 1922 (Finland)

HAWT (HORIZONTAL-AXIS WIND TURBINE)



The first turbine that resembled the horizontal-axis wind turbine was developed in Yalta USSR in 1931

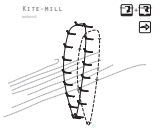


AIR-ROTOR SYSTEM

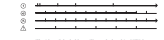
The Magnus effect in balloons was developed in 1979 by Enel Ferguson who later adapted the performance of the balloon to produce electricity in 2006 (Canada)

AIRBORNE WIND-TURBINE

Flying/airborne turbines have been experimented with since water-chute designs in the 1920's, newer pioneering designs include Bryan Roberts experiments at Sky WindPower Corp (USA)

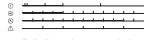


KITE-MILL



The Kite-Mill was first described in 1979 by Douglas Selsam, today development is being coordinated at the Delft University (The Netherlands) by Wubbo Ockles.

REEL-KITE

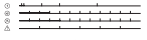


Flow control using a reel system to generate electricity (Vortex Kite) was conceived by Massimo Ippolito (Italy), today the company RotoGen is leading development in this system.

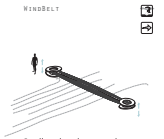
WORKING KITE (KARAKAS)

The 'working' or 'body' kite (employing a working cellular kite) was conceived by Dr. Manfred Hanenkilo (Germany) Engineering firm, whose development is still occuring.

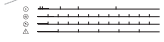
GUST-PUMP (GEAR/HYDRAULIC)



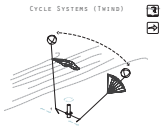
Being developed on two fronts 1. Gust based (USA) WWE group 2. Hydraulic based (France) Pierre Bonhomme



WINDBELT

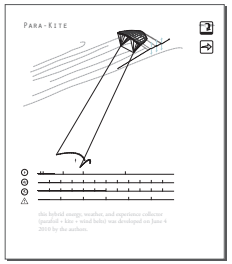


Initially developed by Shawn Frayne, Humdinger Wind (USA) early 2000s



CYCLE SYSTEMS (TWIND)

Being developed by Twind company in Italy (2009)



PARA-KITE

this hybrid energy, weather, and experience collector (paraKite + kite + wind turbo) was developed on June 4 2010 by the authors.

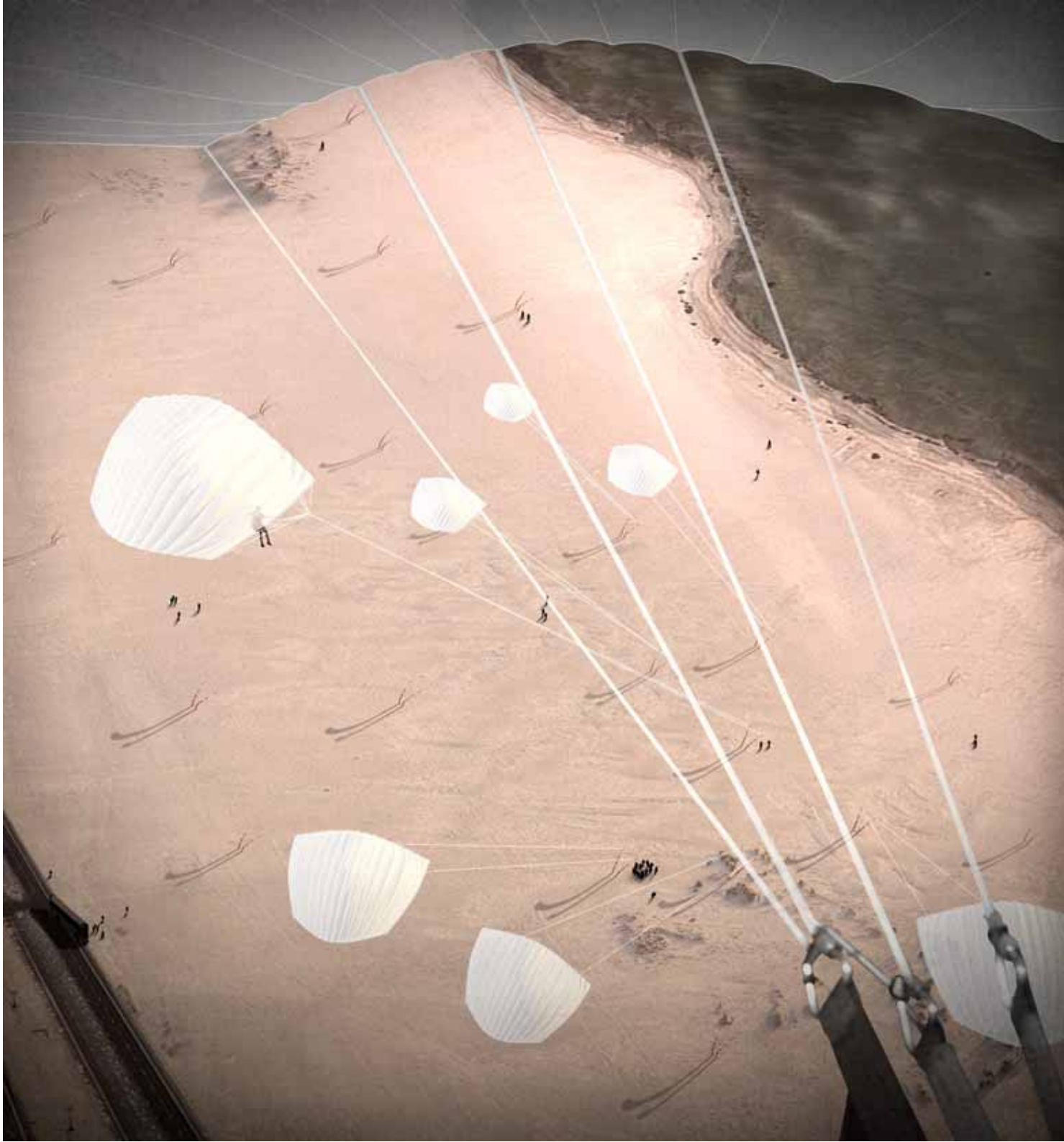
AIR-BORNE ART

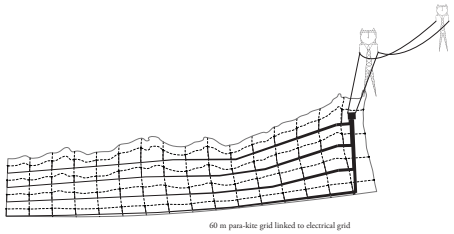
Vik Muniz "Pictures of Clouds", Brazil

Long Beach Kite Festival, USA

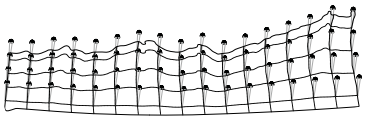
Para-trooper Training, UK

Starling Flock, Denmark

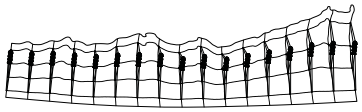




60 m para-kite grid linked to electrical grid



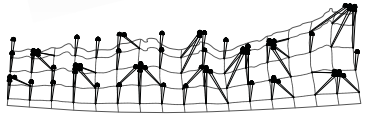
unidirectional wind, normal speed, clear day
ideal energy production condition. 70% of the time



aligned clusters. Unidirectional strong wind. projections at night

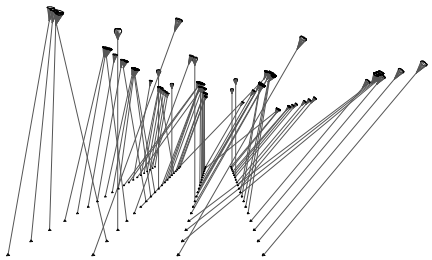
Shamal winds. Storm position.

Post Shamal fog. Temporary installation
with seed bombing.

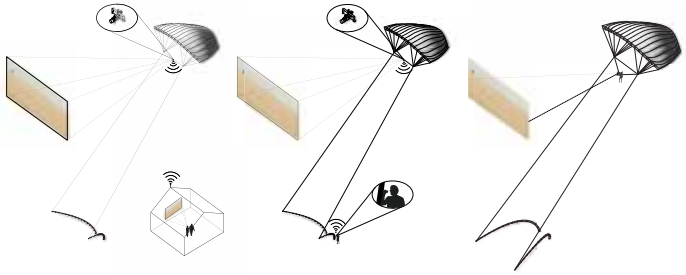


clusters + individual riding parafoils
aerial experience

150 m



PUBLIC EXPERIENCE



The Entrepreneur
From a residential home, a sponsoring resident may have free electricity and a free view of the Gulf.

The Tourist
On the park's site, a visitor may have the view using am embedded 'periscope' in each post.

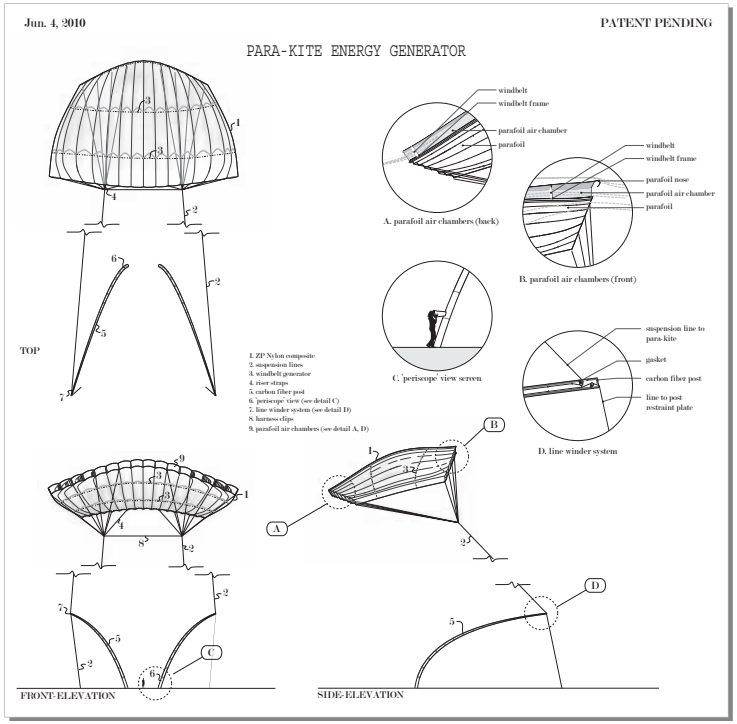
The Adventurer
An adventurous visitor may be harnessed to a para-kite to witness the view first-hand.

WEATHER EVENTS

Fog-catcher
The para-kite orientation harvests water from fog, creating a microclimate under the canopy.

Breeze-glider
The para-kite generates electricity while it grazes the sky.

Shamal-rider
Windspeeds of 20 m/s (shamal gusts) yield maximum energy generation.



SHAMAL SANDSTORM

SHAMAL FOG

Weatherfields regional network

OIL FIELD, PERSIAN GULF

CRUDE OIL REFINERY

GAS FIELD, SAUDI ARABIA

SAUDI ARABIAN REFINERY

GAS FIELD, SAUDI ARABIA

WeatherFields Regional Network
WeatherField is a catalyst for a regional energy plan in the Middle East. The WeatherField at Yas Island is the initial phase development to spawn a large-scale re-consideration of energy in the Gulf region. With such an abundance of wind, there is considerable potential for the Gulf to be the largest renewable energy field in the world and a model for future regional planning.

Just as oil and gas operations have sought out invisible subterranean (geological) conditions for the harvest of dirty energy, the Weather Fields will seek out meteorological conditions for the harvest of clean energy. In order to symbolically transition from an oil-dependent energy state to a weather-dependent energy state, WeatherFields co-opt existing oil / gas field sites.

The regional plan proposes the decommissioning of a 20th century industrial energy fields across the Persian Gulf and its transformation into a network of 21st century public energy art parks.

PERSIAN WEATHERFIELDS NETWORK

NOW

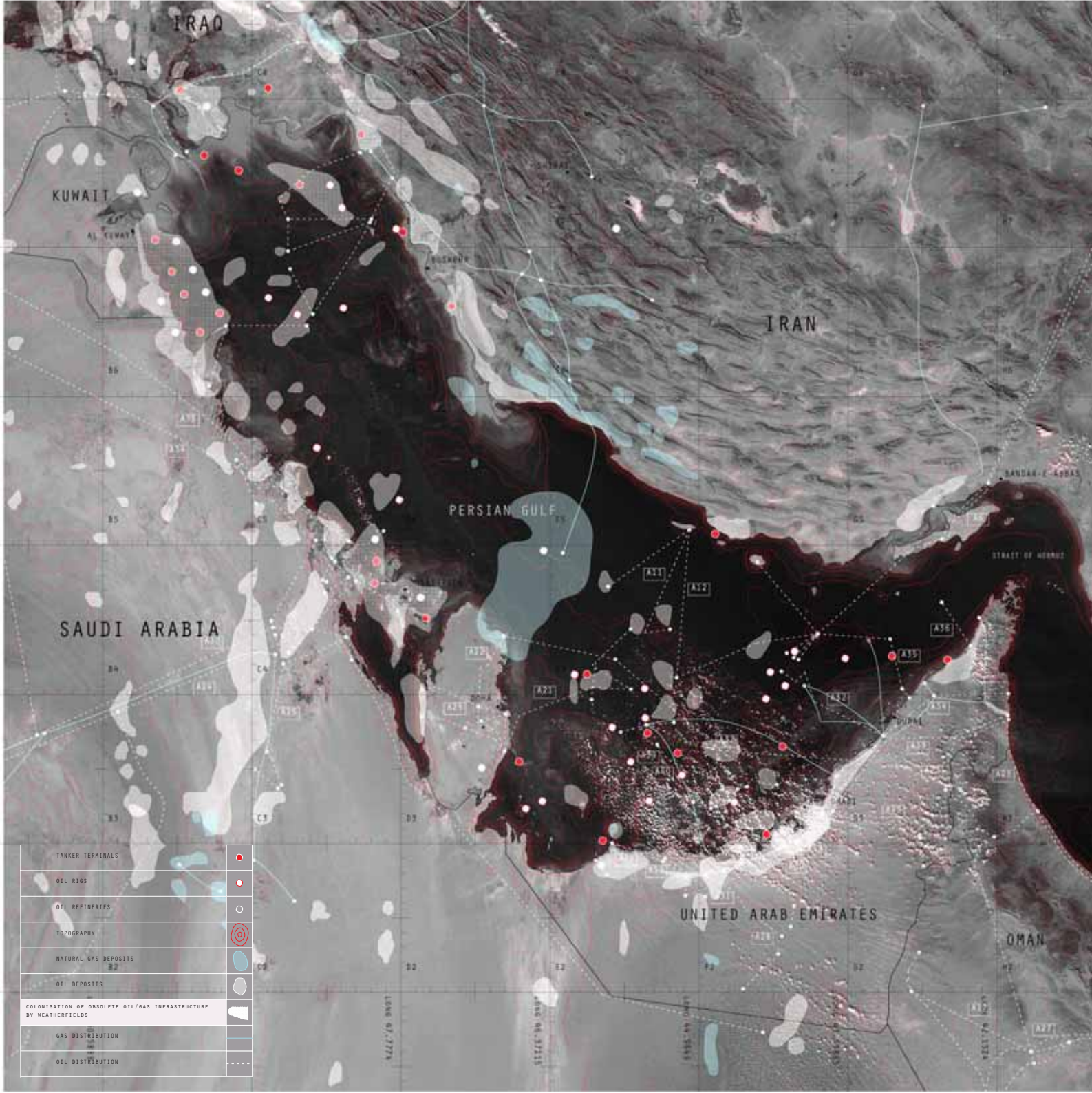
CRUDE OIL REFINERY

+5 YEARS

REFINERY + WEATHER FIELD

+15 YEARS

WEATHER FIELD + ARTPARKS?



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