



Illustration of island resorts © The Red Sea Development Company

A new standard in the sustainable development of human habitat: The Red Sea Project

ILF

ILF has a record of 50+ years' experience in engineering and consultancy, especially on the Arab Peninsula. ILF is nominated by the Red Sea Development Company as one of three key consultants in this project and has been awarded with the technical advisory mandate to support the procurement of the utilities systems under a Public Private Partnership structure.

Tourism is a major economic activity in most of the nations worldwide. Increasing international tourist arrivals – currently limited by the travel restrictions due to the Covid-

19 pandemic – made the tourism industry a continuously growing market with excellent forecasts.

The Kingdom of Saudi Arabia (KSA) so far is a well-established and due to the religious pilgrimage of the Hadj a popular destination. However, the tourism industry was of minor economic significance with a 3.5 percent share of the gross domestic product (GDP) in 2016. Embedded in the Vision 2030, the National Transformation Program 2018 plans to diversify the economy from being a single oil-based one. One pillar of the economic diversification is the expan-

sion of the tourism industry in KSA. The program describes how tourism is expected to become a major industry sector in KSA with a total value added to grow by SAR 4.9 billion (approximately EUR 1.15 billion) to a total of SAR 17.5 billion by end of 2020. The government's ambitions aim at marketing KSA as a tourist destination regionally and globally through the development of advanced tourism and leisure infrastructure. To realize this and further growth beyond 2020 the government plans significant investments in tourism facilities and the national heritage sector. One of the planned investment is The Red Sea Project.

Vision

The Red Sea Project is one of three mega-projects in the tourism sector announced by Crown Prince Mohammad bin Salman bin Abdulaziz Al-Saud in 2017. It will create a luxury tourism destination aiming to enhance Saudi Arabia's footprint on the global tourism map.

The project site is located on 28,000 square kilometers on an archipelago at the Western coast of Saudi Arabia between the cities of Umluj and Al Wajh. It consists of 200 kilometers coastline and more than 90 islands which so far have been undeveloped. It offers dormant volcanoes, desert areas, mountainous regions, natural treasures and a rich variety of wildlife both on land and in the sea. This magnificent location makes the Red Sea Project one of the world's most exquisite tourism destinations in a marine environment.

Till 2022 the project involves the construction of 14 luxury and hyper-luxury hotels across five islands as well as two inland resorts with mountain retreats and desert hideaways. Together they provide more than 3,000 hotel rooms (Phase I). The infrastructure will be complemented by a new air-

port, a marina, numerous leisure and lifestyle facilities, as well as supporting logistics and utilities, including 75km of roads. The project is expected to be fully completed by 2030 (Phase II) with more than 8,000 hotel rooms in nearly 50 hotels on 22 developed islands and 6 inland sites then.

The Red Sea Project is favored with an invariably good accessibility: 250 million people can reach the destination within three hours; it allows 80 percent of the world's population to travel there within a maximum of an eight-hour flight.

Key Facts

The project is run by the Red Sea Development Company, a 2018 established, closed joint stock company which is wholly owned by the Public Investment Fund of the Government of Saudi Arabia. The major task of the company is to spearhead the development of The Red Sea Project.

From an estimated investment of SAR 10 billion of tenders, so far SAR 2.7 billion have been awarded through construction and service contracts. Besides the commercial components of the project - such as hospitality, residential, retail and entertainment - namely the concessions for utility infrastructure, power generation, transportation and other hard infrastructure provide opportunities for investors and service providers.

The Red Sea Project will open new possibilities of added value, create jobs for around 35,000 people directly and an equivalent number of jobs in the wider community as well as cultivate entrepreneurial activity in a rural area without any notable industry structures so far. The Red Sea Project will set a new standard in sustainable development of living areas and landscape planning as it will protect and enhance the destination's pristine natural environment. Following the project's master plan, 75 percent of the destination's islands shall remain undeveloped in order to save nine designated sites of significant ecological value.



Illustration of Airport © The Red Sea Development Company

Activities of the first phase of development focus on enabling the infrastructure to support future construction work and is well underway. A marine infrastructure contract awarded in July 2019 includes the construction of a 3.3 km crossing to Shurayrah (the main hub) which connects the hub island to the shore. The development has begun at the Coastal Village, which will be home of around 14,000 people working at the destination. Currently the construction site envisages to provide the basic infrastructure: a base camp oversees the installation of temporary roads and jetties. Also under development is a residential complex for the construction labour force and a management village to coordinate the development work.

Project Challenges

The particularity of this destination is the unique environment, the holistic approach in the development of human habitat and the very high demand on the environmental compatibility in the luxury segment of the tourism industry.

Considering the mere scope of the project, it is one of the most ambitious tourism development projects ever. The demand and level of sustainability in operating the destination will make it outstanding.

The destination will be underpinned by an extensive smart digital destination management system. Besides a total ban on single use plastics and zero waste-to-landfill, the project claims to be 100 percent carbon neutral and completely relies on renewable energy supply. This demand is met by the design under following parameters:

Phase 1

POWER

Peak demand:
197 MW (undiversified)
Generation:
410 MW
Generation split:
365 MW Solar (PV)
45 MW Wind
103 MW Emerg. Gen.
1,065 MWh Batteries
Plant location:
South utility center/OSG

WATER

Peak demand:
28,036 m³/d
SWRO production:
30,000 m³/d
Demand split:
Potable wat.: 21,000 m³/d
Irrig. top-up: 9,000 m³/d
Generation:
100% SWRO
SWRO plant location:
South utility center

SEWAGE

Peak flow Main STP:
16,833 m³/d
Main STP design load:
20,000 m³/d; Constr.WL
TSE production / re-use:
11,000 m³/d; irrigation
STP location:
South utility center
Total sewage flow all Islands (OSG):
1,397 m³/d

SOLID WASTE

Total waste generation:
89 t/d
Generation split:
31 t/d recyclables
29 t/d organic w.
29 t/d residual w.
WMC process:
All: MRF
Org.: Composting
Residual: Incineration
WMC location:
South utility center

Phase 1+2

Peak demand:
336 MW (undiversified)
Generation:
700 MW
Generation split:
630 MW Solar (PV)
70 MW Wind
181 MW Emerg. Gen.
1,910 MWh Batteries
Plant location:
South & North utility centers/OSG

Peak demand:
46,600 m³/d
SWRO production:
50,000 m³/d
Demand split:
Potable wat.: 34,000 m³/d
Irrig. top-up: 16,000 m³/d
Generation:
100% SWRO
SWRO plant location:
South utility center
Breem Island

Peak flow Main STP:
16,833 m³/d
Main STP design load:
20,000 m³/d; Constr.WL
TSE production / re-use:
11,000 m³/d; irrigation
STP location:
South utility center
Total sewage flow all Islands (OSG):
11,721 m³/d

Total waste generation:
178 t/d
Generation split:
60 t/d recyclables
59 t/d organic w.
59 t/d residual w.
WMC process:
All: MRF
Org.: Composting
Residual: Incineration
WMC location:
South utility center

Table of estimated consumption / quantities © ILF

Site for staff housing © The Red Sea Development Company



In particular, the Red Sea Project will mitigate carbon dioxide emissions, waste production, light and noise pollution aiming to maintain the destination at a level which is equivalent to a marine protected area.

The project is utility self-sufficient and comprises an energy island which is not connected to the grid. The largest battery storage system to date, has a capacity of more than 1 GWh. The energy demand is met 100 percent by renewable energy through photovoltaic and wind power. Also the potable water is produced on-site and the waste water is treated in one circuit in order to generate the maximum efficiency and climate protection. Another set of facilities will enable an integrated solid waste recycling and treatment.

Summary

This project requires a tremendous amount of energy and resources already during the construction phase. The vision of this project entails a maximum of climate protection and energy efficiency. This will set new standards for sustainable development of human habitat and creates a new category of luxury tourism destinations.



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