



2019, “Eco Ports” certificate by the European Sea Ports Organization (ESPO), making it one of only thirty-four Eco Ports in Europe and the first green port in the Caspian region



<http://www.portofbaku.com>



# Proactive Steps in Becoming The First Green Port in The Caspian Region

April 5. 2022  
Shekvetili/ Georgia

Black and Caspian Sea Ports and Shipping 2022



# Green Port of Baku

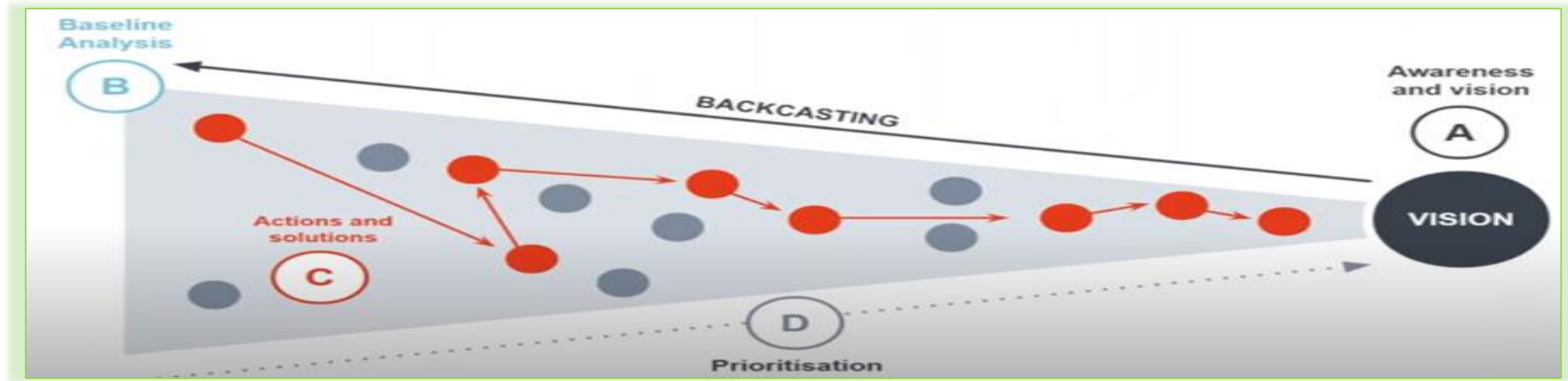
## Strategic Roadmap for Full decarbonization by 2035



Port of Baku aims to be the leading green port operator in terms of efficiency and sustainability to achieve the lowest ecological footprint and environmental impact to the region.

### Strategy

Development of a green port program to achieve continuous environmental, social and economic benefits via the following guiding principles.





2019, "Eco Ports" certificate by the European Sea Ports Organization (ESPO), making it one of only thirty-four Eco Ports in Europe and the first green port in the Caspian region

As the first "Green Port" of the Caspian basin recognized by the European Sea Ports Organization, our vision is to adopt the policies and practices that support sustainability to achieve the lowest ecological footprint and environmental impact to the region.

The Port of Baku Green Port Policy has the following six fundamental objectives:



**Air**

Reduce harmful emissions into the air from port operations



**Soil and Sediment**

Remove, treat or render suitable for beneficial reuse, contaminated soils and sediments in the port area.



**Water**

Improve water quality around the Alat Basin



**Wildlife**

Protect, maintain or restore aquatic ecosystems and marine habitats around the port.



**Community Engagement**

Interact with and educate the community regarding port operations and environmental programs.



**Sustainability**

Implement sustainable practices in design and construction, operations and administrative practices throughout the port.



# Port of Baku

## Climate Action Plan Ongoing Projects

### Water Quality Existing facilities for waste water treatment

- A storm water drainage and treatment system
- A Sewage Water Treatment Plant (SWTP)
- An Oily Waste Water Treatment Plant (OWWTP)
- In addition: Waste collection vessels



### Storm Water Drainage and Water System

- Storm water is collected in all run-off areas and treated via oil/water separators equipped with sediment traps to prevent particulates (e.g. that could be released in handling of dry bulk) from reaching the surface water.
- Designed to trap sand, suspended and floating substances from surface and industrial wastewater.



### Sewage Water Treatment Plant

- To treat sewerage from vessels and from land-based port operations.
- 5 modules and a sand filter
- Capacity: 500 m3 per day to cater for 2500 people with potential to add new modules as and when required



### Oily Waste Water Treatment Plant

(under commissioning  
Operational date will be December 2022)

#### Source

- Oil-contaminated ballast water
- Washing of warehouses
- Treated water: 0.05 mg/l is stricter than the MARPOL requirement 15 mg/l

#### Capacity

- Total capacity of 3 tanks is 900 m3



### Reducing Air Pollutants

- Continuously monitoring carbon monoxide, sulfur dioxide, nitric oxide, hydrogen sulfide, benzene, toluene, ethyl benzene, methaxylol, ortho-xylene, PM 2.5, PM 10) levels has been within the norm.
- The portable devices provided by Ministry of Ecology and Natural Resources and exhaust gas analyser in the framework of JICA "Mini Grant Projects"



### Green Operation Building project

#### Technology used

- Water management - rainwater recovery
- Green cladding and facade of building
- Fresh air monitoring and ventilation
- Building management systems & building Alarm Control and Acknowledgement



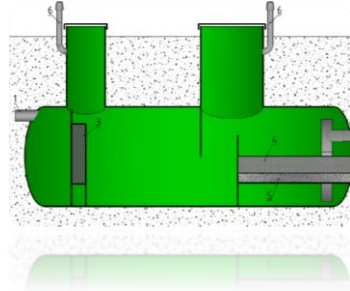
# Port of Baku

## Climate Action Plan Ongoing Projects-in photos

Water Quality  
Existing facilities for  
waste water treatment



Storm Water Drainage  
and Water System



Sewage Water  
Treatment Plant



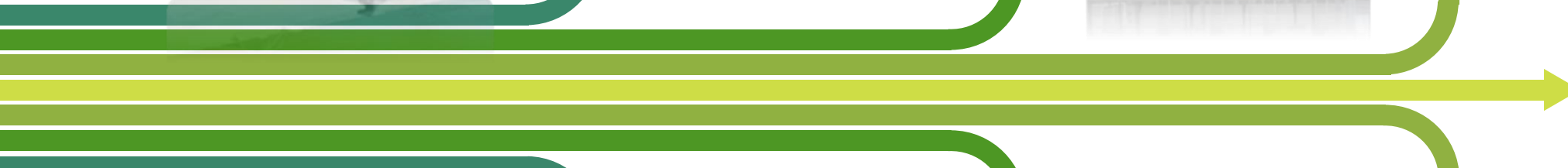
Oily Waste Water Treatment Plant



Reducing Air Pollutants



Green Operation  
Building project





# Reducing Air Pollutants



Area the sample taken	Name of the pollutant, mg/m <sup>3</sup>										
	Benzol	Toluol	Etil-benzol	Meta-ksilol	Orto-ksilol	Dem qazı	Azot-4 oksid	Kükürd qazı	Hidrogen-sulfid	PM 2.5	PM 10.0
1 8-ci körpü "Silk Way" gemisi	0.325	0.228	0.012	0.117	0.061	2.2	0.06	0.029	0.002	0.010	0.045
2 Ck 8 carqo ərazisi	0.266	0.099	0.005	0.081	0.023	2.0	0.07	0.038	0.001	0.013	0.037
3 8-ci körpü şərqə 1 km	0.405	0.047	0.007	0.088	0	2.3	0.08	0.041	0.003	0.009	0.028
4 8-ci körpü qərbə 1 km	0.291	0.118	0.011	0.116	0.067	3.4	0.06	0.037	0.003	0.023	0.033
5 Ck 8 carqo ərazisi 1 km	0.335	0.120	0.006	0.033	0.089	3.0	0.04	0.052	0.04	0.018	0.019
6 Ck 8 carqo ərazisi 1km	0.460	0.076	0.015	0	0.052	3.2	0.02	0.049	0.006	0.019	0.012
Permissible limit	1.5	0.6	0.02	0.2	0.2	5.0	0.085	0.5	0.008	0.025	0.050



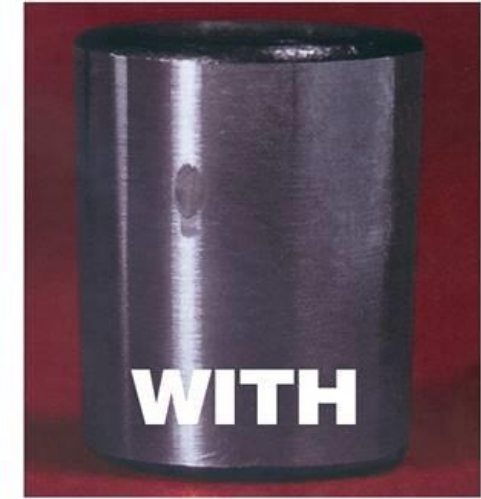
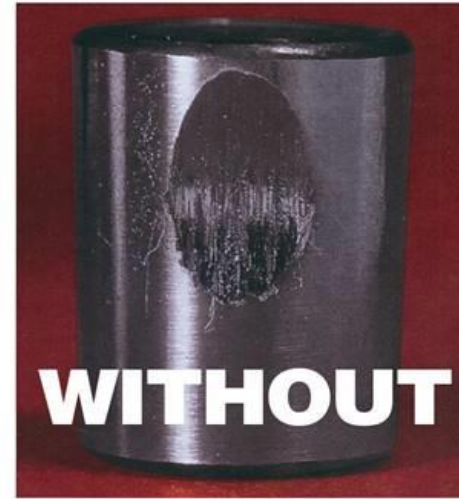
the portable devices provided by Ministry of Ecology and Natural Resources and exhaust gas analyser in the framework of JICA "Mini Grant Projects"



Continuously monitoring carbon monoxide, sulfur dioxide, nitric oxide, hydrogen sulfide, benzene, toluene, ethyl benzene, methaxylol,ortho-xylene, PM 2.5, PM 10) levels has been within the norm.



# Reducing Air Pollutants



- 💡 an additive to the fuel which allows to reduce the fuel consumption and minimize emissions. pouring directly into fuel tank, then filling with fuel
- 💡 is effective for all diesel vehicle, marine, stationary and generator engines.
- 💡 addition of this catalyst decreases emission of sulphur oxides 7 times, additional 200 miles per fill-up in trucks (up to 25% increase in milage),



- 💡 “radically lowered the bearing temperatures, keeping the grinders operating efficiently
- 💡 is also being used in the hydraulic lube network and in stand-alone applications on timing systems in bearings in the massive grinders.





# Reducing Air Pollutants



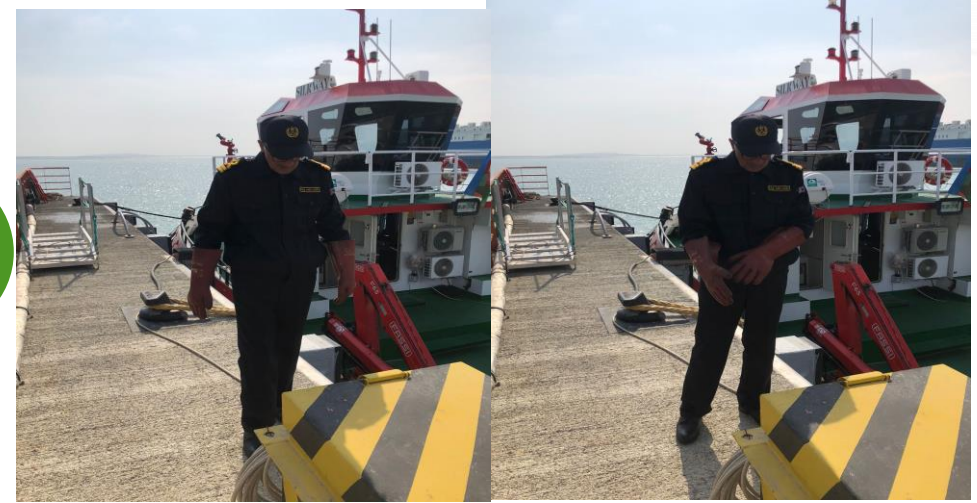
measures taken for ref containers



usage of electrical plugs instead the diesel



# Reducing Air Pollutants



Cold ironing is also referred as “shore power” . The term cold ironing comes from the act of shutting down all onboard combustion, resulting in the vessel going “cold” and connecting to electrical power supplied at the dock.

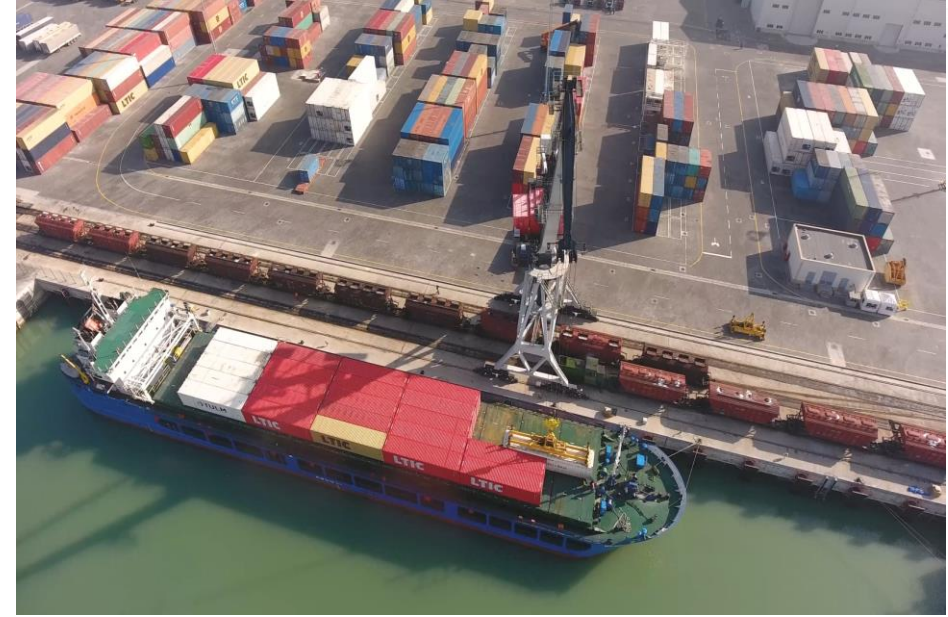


This process eliminates virtually all emissions from a ship while it is in port. Other environmental impacts like noise and vibration are significantly reduced too.



A total of 26 cold ironing junction boxes in General Cargo, RORO, Ferry and Service berths

# Reducing Air Pollutants



## Ardelt Cranes: Energy Saving Design

💡 Intelligent energy management system with recovery;  
Savings of up to 30% can be achieved compared with electric systems with no recovery.

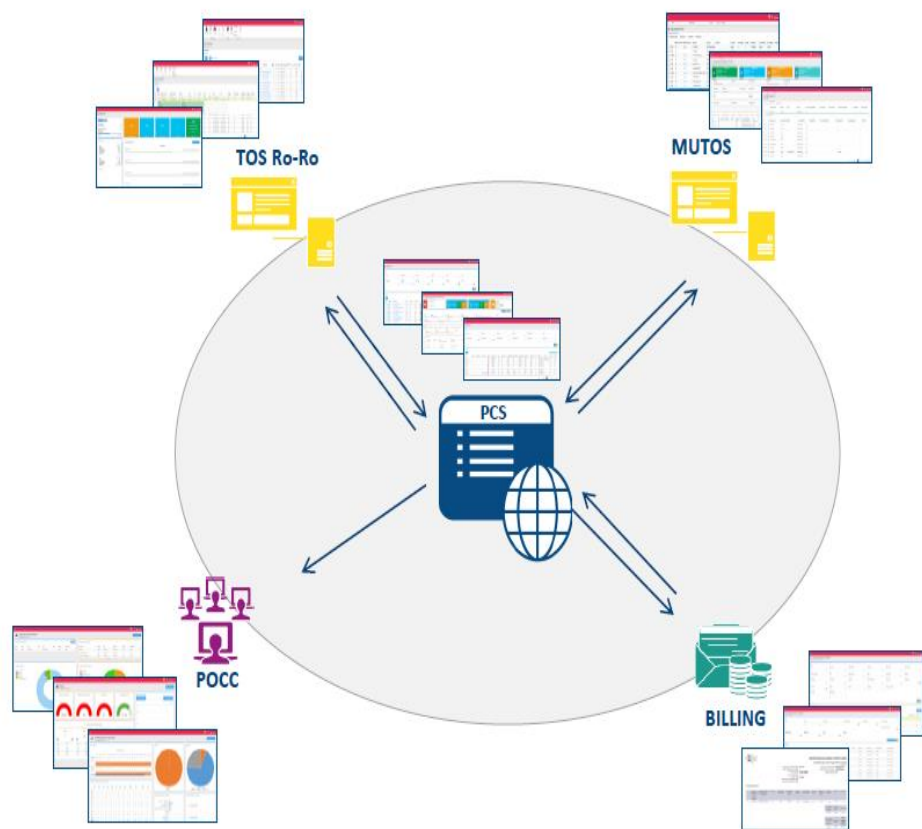


💡 Boom tip remains at the same height and close to the load, achieving horizontal load path. The lifting mechanism does not perform any additional, unwanted movements.  
Saves lifting-mechanism energy



# Digitisation of work processes

A COMPLETE SOLUTION FOR THE PORT OF BAKU



PMIS PoB | 2020

## Developed Modules

Integrated web based solution developed with new technologies for multi port/terminal usage.

Main Modules:

- **Port Community System (PCS),**
- **Terminal Operating System for Ro-Ro (TOS Ro-Ro)**
- **Terminal Operating System for Multiuser Terminal (MUTOS)**
- **Billing Module (BLL)**
- **Port operational Control room (POCC)**

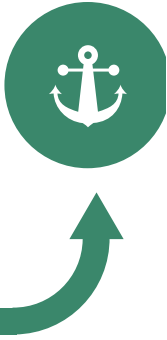


# Potential Future Projects



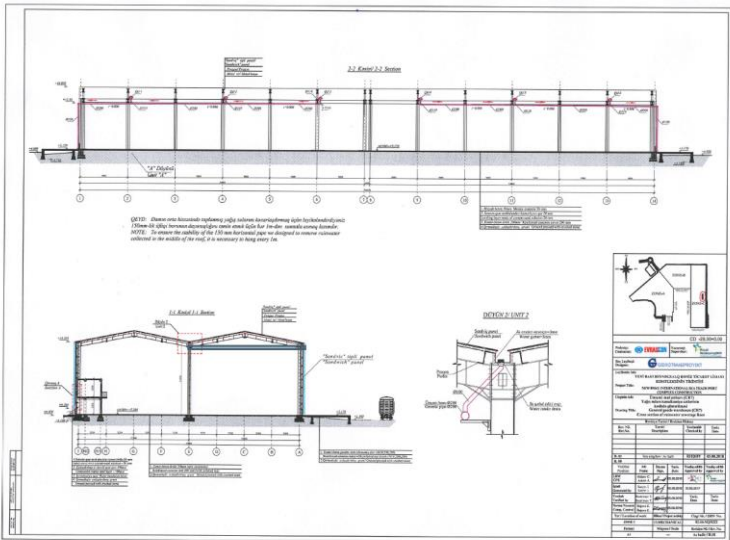
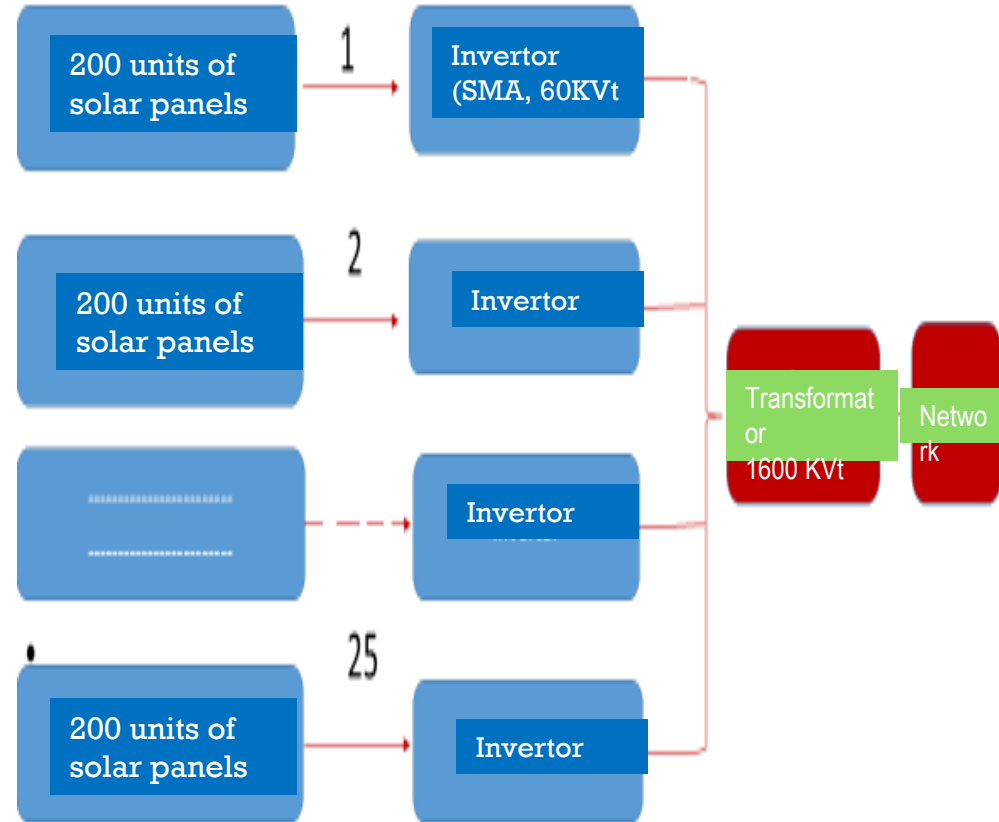
## Renewable energy Fuels and alternative power systems

- 10-12 MW of installed power might be needed to cover the port energy demand by 2035
- Potential production of green NH<sub>3</sub> (ammonia) with actions for the PoB to conduct a feasibility study on this option in details in the future



## SOLAR PANELS ON WAREHOUSES

Area: 10 000 m<sup>2</sup>  
Number of solar panels: 5040 units



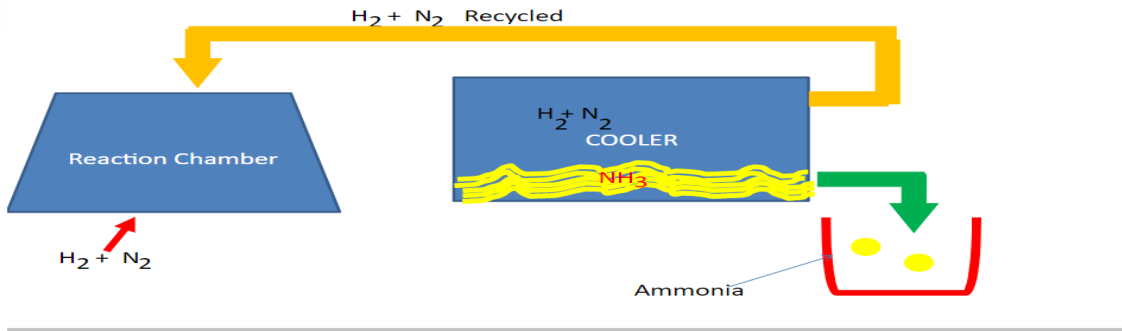
- 10-12 MW of installed power might be needed to cover the port energy demand by 2035
- Potential production of green NH<sub>3</sub> (ammonia) with actions for the PoB to conduct a feasibility study on this option in details in the future



# Carbon Projects renewable energy in the context of the Port



## The Haber Process



💡 to make ammonia from water and Nitrogen (Conventional Haber -Bosch process to create ammonia. supplying power for electrolysis.)

💡 Ammonia is made from graywater, which is the effluents from residential sinks, showers, and floor drains. The treated effluent from sewage plants could be used as well.



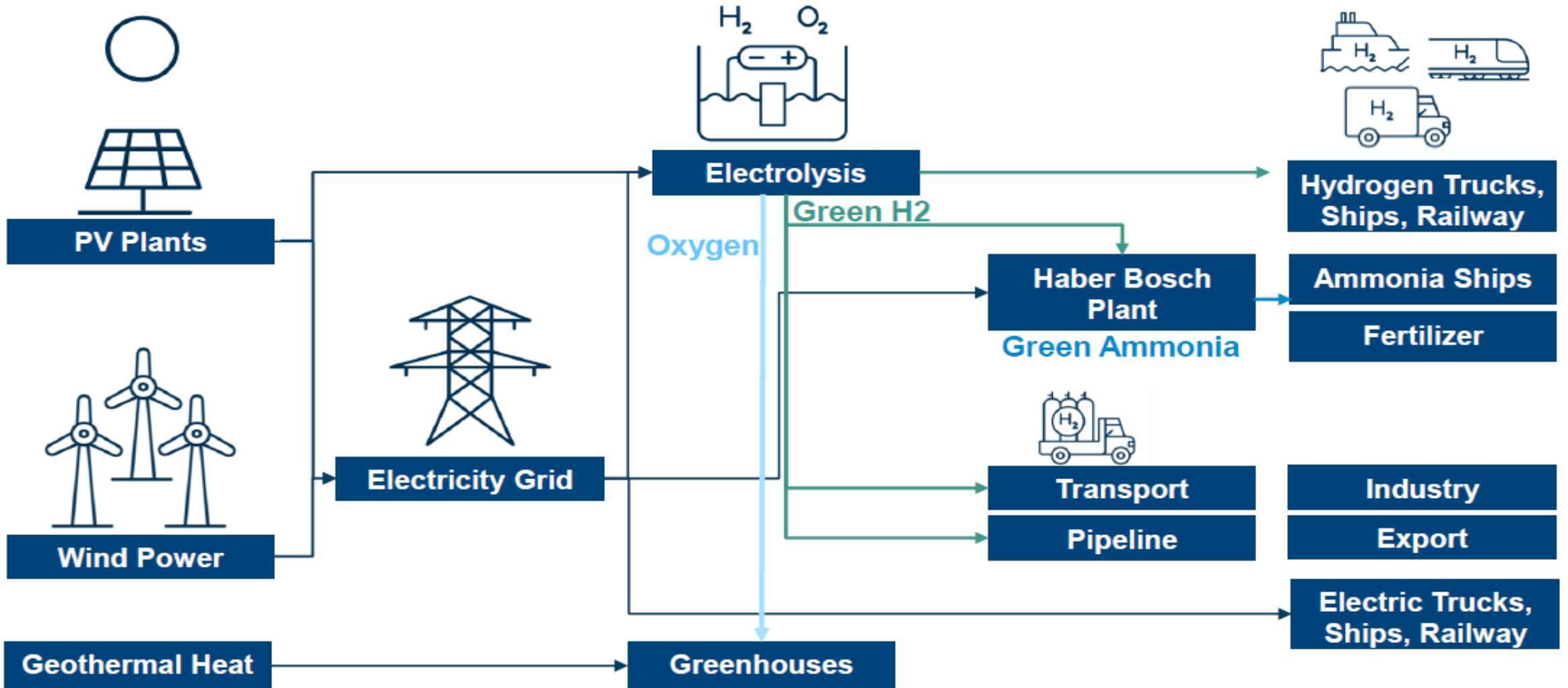
- 💡 Using wind power to strip water of its hydrogen produces no carbon dioxide. It does, though, produce pure medical grade oxygen, a valuable and marketable product
- 💡 One turbine can produce 3300 dollar worth of ammonia per day with the only feedstock for the process being water.
- Projected Wind Turbines – T1, T2, T3, T4, T5, T6
- Each turbine's power capacity: 2.5-3.5MW;
- All Wind Turbines: 15-21MW
- Meteorological mast should be in Wind Turbines area.

# Carbon Projects

## Making use of renewable energy in the context of the Port



### Energy System Port of Baku



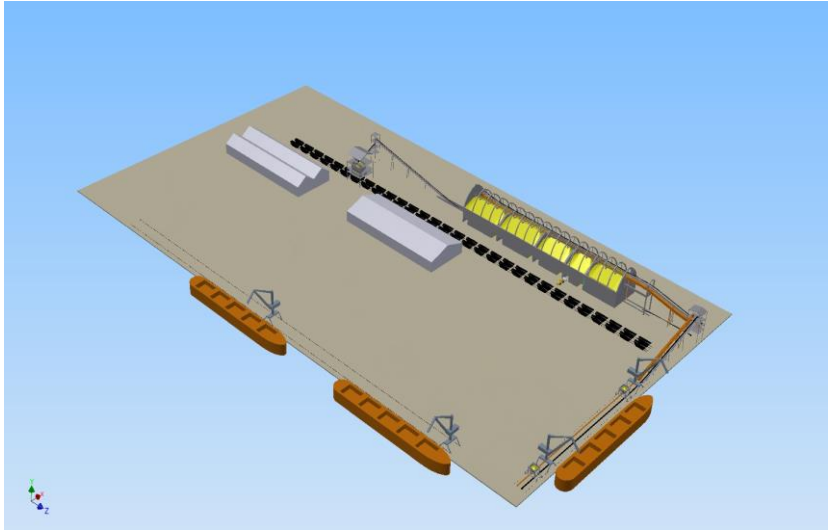
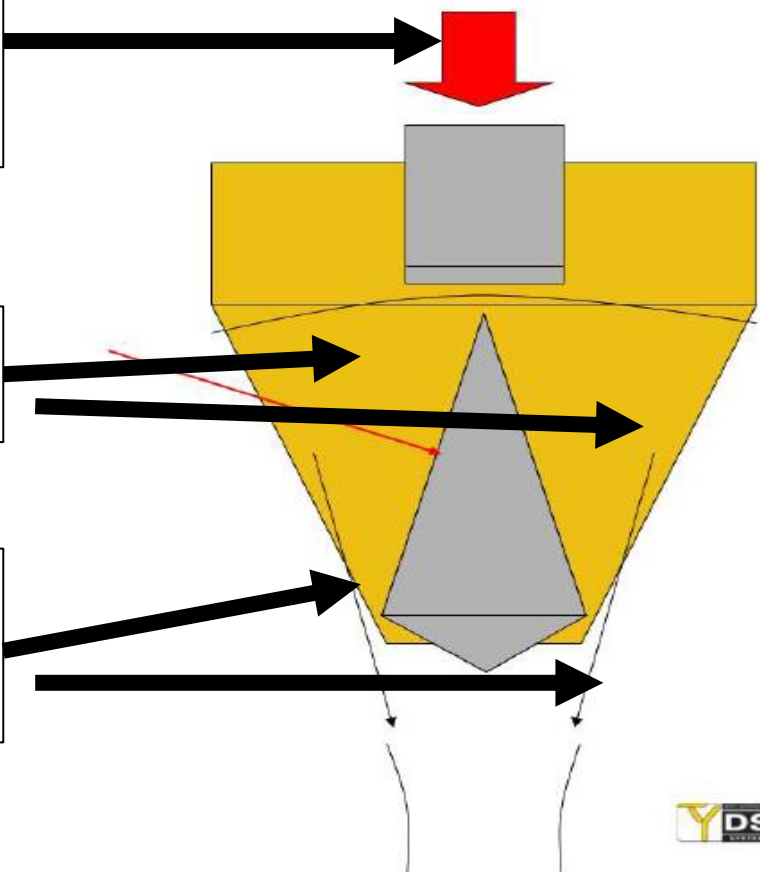
# Dust Suppression Hopper (DSH) system in the fertilizer terminal



Material enters from discharge of tripper car which fills the chute end with a pipe-shaped outlet

Material is transmitting to the reverse-cone-shaped structure (yellow)

Material is to exit in a straight line form rather than spreading. This allow to avoid dust.





- No dust extraction system required
- Reduce maintenance and cleaning costs
- 



- Increase capacity – less air = more product



- Safer working environment for your staff



- Reduce the risk of dust explosions



# Green Planning Creation of green zones



Green zones created : north and west of the port, along the coastline and around the shunting yard.

The Green Zones to:

- enable soil enrichment
- moderation of the microclimate in the area to have more positive impact on the surrounding semi-desert landscape.



Development of “Action on planting 100.000 trees” for implementation in Alat area by 2025



Biodiversity near **Port of Baku Islands**  
**Gil Island** is an ambitious project to create a  
unique nature paradise near the **Port of Baku**



SATELLITE IMAGES OF PORT OF BAKU  
AND GIL ISLAND

Biodiversity near Port of Baku Gil Island is  
an ambitious project to create a unique  
nature paradise



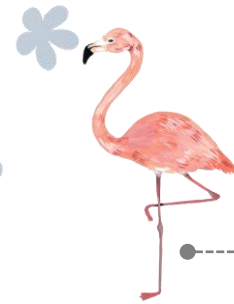
# Protection of biodiversity of Flamingos near the Port of Baku



## Gil Island

Positive approach through innovative concept based on experiences gained in the Netherlands, a delta country with extensive experience in water-management and water-engineering both on- and offshore.

The concept involves creating small islands around the main island with natural shores and shallow water areas, that function as Caspian seal resting areas, spawning areas for fish (e.a. Sturgeon) and wading/feeding places for birds (e.a. Flamingos).



Flamingos

Sturgeons

Gazelles

Seals

- ***An overarching umbrella project: integrated green eco-system showcase (pilot)***
  - floodwater redirection to be used in irrigation, which in turn can serve deforestation
  - Development of “Action on planting 100.000 trees” for implementation in Alat area by 2025
  - waste water treatment which results in cleaned water and this water can be used for irrigation, ammonia production, etc.
  - hot houses to use the compost from the wastewater treatment





European Union

- EuropeAID/FWC "Support to the enhancement of operational capabilities of the new Port of Baku",
- EuropeAid/TA "EU Support to the enhancement of operational capabilities of the new Port of Baku"

The Organization of for Security and Cooperation in Europe

OSCE project on green ports and connectivity, for security and economic growth in the Caspian Sea region

The World Bank

- Technical Assistance: Creating a Framework for the Digitalization of the Logistics Corridor between the South Caucasus and Central Asia

The European Bank for Reconstruction and Development

Baku Port Development-Project  
Civil works, equipment and technical assistance to Port of Baku.  
The project aims to: (i) improve structures and equipment at the Port's ferry terminal; (ii) restructure organization of the port; and (iii) review tariff structures.



# ENVIRONMENTAL MANAGEMENT: PERFORMANCE & PROJECTS

Our Sustainability Policy established in 2019, directs us to integrate environmental, community and financial concerns into planning and performance.

- 💡 ISO 14001:2015 (Environmental Management System) **Certified**
- 💡 ISO 9001:2015 (Quality Management System) **Certified**
- 💡 OHSAS 18001: 2007 **Certified**
- 💡 Eco Port **Certified** (*The Port of Baku is the first and only Caspian Eco Port. 2019, “Eco Ports” certificate by the European Sea Ports Organization (ESPO), making it one of only thirty-four Eco Ports in Europe and the first green port in the Caspian region.*)
- 💡 Port Environmental Review System certification (PERS, certificate assessed by Lloyds register)

