OSP Introduction
Opportunities Overview
2023
Overview of Program Governance

Chaired by HRH Crown Prince Mohammed Bin Salman

Chaired by HRH Minister of Energy Prince Abdulaziz bin Salman
OSP aims to sustain hydrocarbons as a competitive source of energy from an environmental and economic standpoint.

Extensive study was conducted with local and international stakeholders:

- **100+** Global external experts, scientists and researchers
- **10** international universities and research entities
- **20+** Research labs
- **20+** High impact research topics

Program has 3 objectives:

1. Better understand the implications of global trends on energy Ecosystem
2. Identify opportunities to support the global energy landscape evolution
3. Position Saudi Arabia to drive a reliable energy mix

46 opportunities prioritized across three sectors (materials, transportation, utilities) and different geographies.
Three strategic pillars formed the basis of the program

**Development:**
Unlock demand in emerging markets by removing barriers to energy access through infrastructure investments; grow under-developed industries by providing investments & expertise

**Innovation:**
Accelerate technology advancements to provide new forms of energy and applications for hydrocarbons and unlock product supply and demand

**Sustainability:**
Meet global energy needs with a secure energy mix that is both environmentally & economically efficient, including hydrocarbons
46 of 80+ opportunities prioritized

80+ identified opportunities across 3 sectors

- Transportation (45 opportunities)
- Utilities (15 opportunities)
- Materials (25 opportunities)

Prioritization criteria

- Incremental demand potential
- Financing need
- Associated risks
- Kingdom ability to implement

46 prioritized opportunities across 3 sectors

- Transportation (15 opportunities)
- Utilities (8 opportunities)
- Materials (23 opportunities)
OSP identified ~50 opportunities across 3 sectors, with 23 opportunities in the materials sector.
Five key enablers identified and to be developed for effective implementation

- Identify business opportunities and develop business plans
- Facilitate equity financing locally or internationally
- Identify and plan implementation of infrastructure projects
- Facilitate financing locally or through international partners
- Upgrade Saudi standards & regulations to promote the program’s opportunities
- Promote fair policies and track policy changes
- Shape viewpoint for local and international policymakers
- Create awareness and promote fair discussion on relevant topics (e.g., ICE sustainability, plastics sustainability) based on a transparent and fact-based communication
- Ensure Kingdom’s view is represented in relevant forums globally
- Fund and promote research in strategic areas identified
- Invest in targeted technologies
- Align Kingdom R&D activities and external relationships

Business Investments
Infrastructure Investments
Regulatory Advocacy
Awareness & Communication
Innovation & Technology Management
50+ stakeholders identified to be engaged for collaboration & opportunity implementation

<table>
<thead>
<tr>
<th>KSA Ministries &amp; Gov. Authorities</th>
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<tr>
<td>Research Institutes</td>
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<tr>
<td>Development Banks and Investment Funds</td>
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<tr>
<td>Local &amp; International companies</td>
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<tr>
<td>Local Projects</td>
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<tr>
<td>Other International Organizations</td>
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Utilities
**Opportunity overview:** OSP wants to foster investment in new floating power plants in underserved countries

### Situation

- Several African and Asian countries face frequent electricity shortages and have unmet electricity demand
- Generally, they have **limited ability to expand capacity** through capital projects
- Power generation systems mounted on ships are a short/mid-term solution to bridge power gap

### OSP Opportunity objective

- Invest in marine powerships in Sub-Saharan Africa and South Asia to accelerate electrification efforts in target countries with shortages

### Advantages to end user

- Enhances quality of life through **sustainable energy access**
- Improves **productivity** through ending electricity shortages
- Potential to be upgraded with **mobile desalination for clean water**

*Source: Sustainable Energy for All; Lit. search*
Opportunity overview: OSP wants to support new power distributed generation and mini grids projects

<table>
<thead>
<tr>
<th>Situation</th>
<th>OSP Opportunity objective</th>
<th>Advantages to end user</th>
</tr>
</thead>
<tbody>
<tr>
<td>Several regions and rural areas in Africa lack electricity access or face shortages due to lack of grid connection</td>
<td>Accelerate electrification efforts through investments in oil-powered mini-grids and off-grid power generation and associated infrastructure in emerging markets</td>
<td>Enhances quality of life through sustainable energy access (e.g., uninterrupted services such as healthcare and related emergency services)</td>
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<tr>
<td>Insufficient energy access diminishes quality of life, and even causes many deaths annually (e.g. use of traditional biomass cooking)</td>
<td></td>
<td>Increases productivity and income (e.g., decreases cost of doing business)</td>
</tr>
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Source: Lit. search
Opportunity overview:
OSP is interested in Agricultural Productivity in Africa

The Opportunity:
- Increase the agriculture productivity in Africa through increasing the availability and affordability of tractors

Mechanization in Africa would generate significant uplift in productivity
There is very significant potential to increase agricultural productivity in Africa through use of tractors

Several factors have historically hindered the advancement of mechanization in agriculture:
- Relatively low availability of tractors and tractor rental opportunities
- Affordability of owning tractors for farmers
- Low access to financing

Enables improved agricultural yields / productivity and efficiency
Enhances food security / domestic self-sufficiency through import substitution
Improves nutrition quality
Enhances farmer income

Advantages to end user
Situation
OSP Opportunity objective
### Opportunity overview: OSP is leading the efforts to implement “clean fuels solutions for cooking” in Asia and Africa

### Situation
- 65+% of the world population has access to clean cooking, while **Africa is lagging behind** (29%)
- Traditional biomass has **several burdens on households** (Incl. health and time) and the environment
- **Investment gap**: estimated annual finance gap of ~100x required

### OSP Opportunity objective
- Reduce **CO2 emissions** caused by traditional cooking methods through **providing access to clean cooking solutions** (LPG & Renewables)
- **Boost the economy** & create opportunities in target countries (e.g., job opportunities)
- **Drive & accelerate infrastructure development** in target countries
- **Scaling up international cooperation** to prevent and mitigate the impacts of climate change and support creating a sustainable future

### Advantages to end user
- Enhances quality of life through sustainable energy access
- **Implements wellbeing and health** of household members
- **Increases cooking efficiency** by reducing amount of fuel used
- **Mitigates environmental impact**

*Source: Lit. search*
Transportation
<table>
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<th>Program opportunities</th>
<th>Transportation Sector</th>
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<tr>
<td><strong>Infrastructure</strong></td>
<td><strong>Roads Infrastructure</strong></td>
</tr>
<tr>
<td><strong>Road</strong></td>
<td><strong>ICE Competitiveness</strong></td>
</tr>
<tr>
<td><strong>Aviation</strong></td>
<td><strong>Low-cost Carriers</strong></td>
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<tr>
<td><strong>Marine</strong></td>
<td><strong>HFO Scrubbers</strong></td>
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### Infrastructure Opportunities: OSP’s transportation sector includes four infrastructure development opportunities targeting emerging markets

<table>
<thead>
<tr>
<th>UN’s Sustainable Development Goals</th>
<th>OSP opportunity description</th>
<th>Advantages for end-user</th>
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<tbody>
<tr>
<td>Seaport infrastructure</td>
<td>Facilitate investment in seaport infrastructure (terminals, operation systems, cargo-handling facilities, etc.) in emerging markets (e.g., Africa and Asia)</td>
<td>Access to well established seaport infrastructure to meet increasing demand. Increases globalization and development and facilitates trade.</td>
</tr>
<tr>
<td>Road infrastructure</td>
<td>Facilitate investment in developing road infrastructure (mainly highways) in emerging markets (e.g., Africa and Asia).</td>
<td>Increases connectivity and mobility (urban and intercity). Provides businesses fast and reliable freight transport, and reduces cost.</td>
</tr>
<tr>
<td>Airport infrastructure</td>
<td>Facilitate investment in airport infrastructure (incl. new airports and expansions) in emerging markets (e.g., Africa and Asia).</td>
<td>Access to airport infrastructure to meet increasing aviation demand Increases globalization and development and facilitates trade, tourism, and business</td>
</tr>
<tr>
<td>Air cargo terminals infrastructure</td>
<td>Facilitate investment in developing air cargo infrastructure such as terminals, warehouses, and truck gates in Asian countries.</td>
<td>Unlocks air cargo growth. Decreases infrastructural bottlenecks and low connectivity.</td>
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### ICE competitiveness: Accelerate and enhance the impact and adoption of Internal Combustion Engine technological optimizations

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<tr>
<td><strong>EVs are receiving material subsidies/ regulatory advantages</strong> that are boosting their penetration irrespective of their <strong>actual economic/environmental competitiveness vs. ICE vehicles.</strong></td>
<td><strong>Increase technology adoptions through increased credibility and Kingdom relations.</strong></td>
<td><strong>Maintain a low TCO for ICE vehicles, making them more desirable to most customers.</strong></td>
</tr>
<tr>
<td><strong>Global emissions regulations can be met with development of improved ICEVs and fair regulations (i.e., Well to Wheel).</strong></td>
<td><strong>Work with industry and regulators to promote of ICEV technologies through science and fair policies.</strong></td>
<td><strong>Cleaner and more efficient ICE engines.</strong></td>
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<td></td>
<td><strong>Invest in R&amp;D for ICE competitiveness to further increase fuel efficiency (FE).</strong></td>
<td><strong>Compliance with fuel efficiency regulations.</strong></td>
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**Low-cost ICE: Increase availability and adoption of low-cost cars in emerging markets**

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<td>Many countries have put restrictions on used-car imports. <strong>Regulations</strong> are increasingly supporting sales of new, fuel-efficient cars.</td>
<td>The Kingdom can partner with a car OEM in form of a JV and facilitate investment in the development and production of a highly competitive low-cost car.</td>
<td>Enable people in target markets to get access to affordable and competitive car models.</td>
</tr>
<tr>
<td>As income level increases in emerging markets, the <strong>low-cost car segment is expected to grow significantly</strong></td>
<td></td>
<td>Increase environmental performance/Fuel Efficiency vs. used/older cars.</td>
</tr>
<tr>
<td>Car OEMs with a limited low-cost car portfolio can invest in development and production of a highly competitive model</td>
<td></td>
<td>Potential to establish facilities to locally produce or assemble low-cost ICE car or ICE car parts which will have an oil uplift for the kingdom.</td>
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Accelerate deployment of **Ride-hailing & Last-mile delivery** in underserved markets and ensure the deployment of an ICE-fleet

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<td>Multiple ride-hailing platforms exist in most geographies – <strong>Africa currently has lowest penetration rate of 74%</strong></td>
<td>Facilitate <strong>investment</strong> in the <strong>expansion</strong> of existing ride-hailing and last-mile delivery companies or <strong>launch</strong> a new company.</td>
<td><strong>Increases mobility demand</strong> in developing countries.</td>
</tr>
<tr>
<td><strong>Ride-hailing in Africa</strong> have a <strong>high forecasted growth</strong> compared to other regions, with <strong>1.4% CAGR between 2022 and 2026.</strong></td>
<td><strong>OSP’s goal is to support the deployment of ICE fleets across developing countries to capture the increasing gasoline/diesel demand.</strong></td>
<td><strong>Supports rapid urbanization and population growth.</strong></td>
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<td><strong>Support travel, tourism &amp; business.</strong></td>
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<td><strong>Creates jobs</strong> in underdeveloped markets.</td>
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Launch intracity and intercity **bus transportation** services in underserved markets & ensure the deployment of an ICE-fleet

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<tr>
<td>Rising population and urbanization are increasing the demand for mobility services in Africa.</td>
<td><strong>Facilitate investment</strong> in bus transportation services through partnership/acquisition or launching a subsidiary.</td>
<td><strong>Increase connectivity</strong> and mobility in Africa.</td>
</tr>
<tr>
<td><strong>Bus</strong> represents the preferred mobility solution in major Sub-Saharan African cities.</td>
<td><strong>OSP’s</strong> goal is to support the deployment of bus transportation across developing countries to capture the increasing diesel demand.</td>
<td><strong>Reduce traffic congestion.</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Support rapid urbanization</strong> and population growth.</td>
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<td></td>
<td></td>
<td><strong>Benefit communities</strong> financially.</td>
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<td><strong>Increases safety.</strong></td>
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Facilitate investments in (acquire or launch) a low-cost carrier (LCC)

**Situation**

Many emerging markets are witnessing high economic growth (e.g., Africa and Asia; GDP per capita growth ~4-6% p.a. by 2030).

Middle class is expanding and hence the demand for aviation is increasing by 4.3% per annum.

Low-cost carriers are a key enabler to capture and stimulate latent demand due to their low-price offerings.

**Opportunity**

Facilitate investment in (acquire or launch) a low-cost carrier (LCC) in emerging markets (Africa and Asia).

Facilitate investment in existing low-cost carriers with potential for expansion to fund growth through the acquisition of new aircraft and routes, and create partnerships between local LCCs to enable expertise/knowledge sharing to accelerate growth.

**Advantages**

Increase affordability to meet the increasing aviation demand of cost-sensitive customers.

Increases globalization and development.

Facilitates trade, tourism, and business.
Support the adoption of **HFO scrubber** technology through innovative financing solutions

**Situation**

The International Maritime Organization (IMO) announced a 0.5% sulfur cap for marine fuels by 2020.

**Three solutions are available** for ship owners to comply:
- Use low sulfur fuels
- Use HFO in combination with scrubbers
- Switch to alternatives (e.g., LNG, biofuels)

**Advantages**

- **Enable ship owners to run on cheaper HFO**
- **Enhance charter rates** for scrubber installed ships
- **Offer long-term fuel compliance through a future-proof technology**

**Opportunity**

**R&D:** Support R&D efforts to optimize CAPEX and operational performance of HFO scrubber technology.

**Regulatory:** Promote and adopt regulations that support the use and installation of HFO scrubbers.

**Investment:** Support the adoption of scrubber technology through innovative financing solutions for scrubbers.

**COMPLIANCE ISSUES**

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## Jet fuel competitiveness: Propose/develop optimized jet fuel (cleaner, less pollutant, and with higher energy content)

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<tr>
<td></td>
<td><strong>Investment</strong>: facilitate Investment in developing an <strong>optimized jet fuel</strong> that is cleaner, less pollutant, and with higher energy content.</td>
<td><strong>Reduced emissions</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Regulatory</strong>: Support regulations that support R&amp;D in <strong>oil-based jet fuel</strong> to make it cleaner.</td>
<td><strong>Increased energy security.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>LCAF</strong>: Adopt low-carbon aviation fuel that will offer a minimum 10% GHG emissions reduction compared to conventional jet fuel.</td>
<td><strong>Increased energy efficiency.</strong></td>
</tr>
</tbody>
</table>
Fast-track development of commercial supersonic aviation technology

**Situation**

Supersonic aviation consumes more energy per seat-km (3x of subsonic commercial aircraft), and there is significant potential demand for supersonic travel due to reduced travel times on long flights.

The supersonic jet market size is expected to grow to $27.53 billion in 2027 at a CAGR of 4.0%. The increase in air passenger traffic is expected to propel the growth of the supersonic jet market going forward.

**Opportunity**

Facilitate investment in supersonic aircraft companies to accelerate the growth and development of supersonic technologies.

**Advantages**

The most obvious advantage of supersonic transport is that it is supersonic.

A plane that can break the sound barrier can cut travel times drastically, as once you've passed the sound barrier there is no reason why it can’t go Mach 2, Mach 3, or even faster.
THANK YOU