NovusCrete

Sustainable Saltwater Concrete

3 Nov, 2024

Introduction to OSP

OSP aims to support a sustainable energy mix that includes the environmentally and economically advantageous applications of hydrocarbons

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

وزارة الطاقة
MINISTRY OF ENERGY

كفاءة
المركز السعودي لكفاءة الطاقة
Saudi Energy Efficiency Center

وزارة المالية
Ministry of Finance

المركز الصناعي
Industrial Center

اللجنة الوطنية لآلية التنمية النظيفة
Clean Development Mechanism
Designated National Authority

المواصفات السعودية
Saudi Standards
SASO

KACST
مدينة الملك عبدالعزيز للعلوم والتقنية

KAPSARC
مركز الملك عبدالله للدراسات والبحوث البترولية
King Abdullah Petroleum Studies and Research Center

جامعة الملك عبدالله للعلوم والتقنية
King Abdullah University of Science and Technology

National Industrial Development and Logistics Program

Program has **3 objectives**

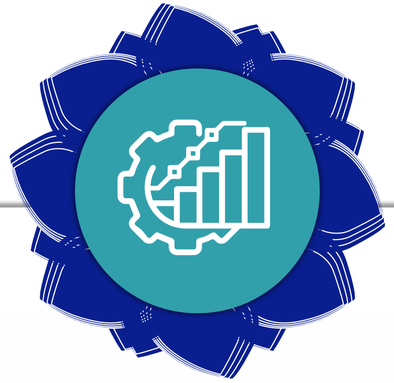
Better understand the **implications of global trends** on the energy ecosystem.

Identify opportunities to support the global energy landscape evolution.

Provide a reliable energy mix.

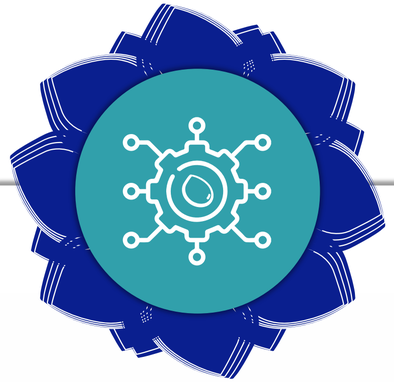
46 opportunities prioritized across three sectors (materials, transportation, utilities) and different geographies.

Three strategic pillars form the basis of the Program



Development:

Support in removing barriers to energy access through infrastructure investments; by creating economic development & opportunity.



Innovation:

Accelerate technology to provide sustainable and advanced applications for hydrocarbons.

Sustainability:

Meet global energy needs through a secure energy mix that includes hydrocarbons while ensuring **environmental and economic** efficiencies.

50+ stakeholders identified to be engaged for collaboration & opportunity implementation

KSA Ministries & Gov. Authorities

وزارة الطاقة MINISTRY OF ENERGY
وزارة الصناعة والثروة المعدنية Ministry of Industry and Mineral Resources
وزارة المالية Ministry of Finance
وزارة النقل TRANSPORT MINISTRY
وزارة التجارة Ministry of Commerce
وزارة الاقتصاد والتخطيط MINISTRY OF ECONOMY & PLANNING
وزارة الشؤون البلدية والقروية Ministry of Municipal & Rural Affairs
وزارة البيئة والمياه والزراعة Ministry of Environment Water & Agriculture
مركز مـوان MWAN National Center for Waste Management
كفاءة المركز السعودي لكفاءة الطاقة Saudi Energy Efficiency Center
اللجنة الوطنية لآلية التنمية النظيفة Clean Development Mechanism Designated National Authority
SEDA هيئة تنمية الصادرات السعودية Saudi Export Development Authority
National Industrial Development and Logistics Program
هيئة المحتوى المحلي والمشتريات الحكومية Local Content & Government Procurement Authority
المواصفات السعودية Saudi Standards SASO
المؤسسة العامة لتحلية المياه المالحة Saline Water Conversion Corporation (SWCC)

Research Institutes

KAPSARC مركز الملك عبدالله للدراسات والبحوث البترولية King Abdullah Petroleum Studies and Research Center
KACST مدينة الملك عبدالعزيز للعلوم والتقنية
جامعة الملك عبدالله للعلوم والتقنية King Abdullah University of Science and Technology
King Fahd University of Petroleum & Minerals
جامعة الملك سعود King Saud University
Newcastle University
TEXAS A&M UNIVERSITY

Development Banks and Investment Funds

Public Investment Fund
صندوق التنمية الوطني NATIONAL DEVELOPMENT FUND
SFD الصندوق السعودي للتنمية Saudi Fund for Development
الصندوق الصناعي
IsDB البنك الإسلامي للتنمية Islamic Development Bank
itfc International Islamic Trade Finance Corporation
OPEC FUND for International Development
African Development Bank
WORLD BANK GROUP

Local & International companies

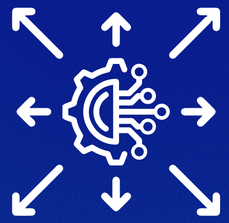
سابك sabic
سرك SIRC الشركة السعودية لإعادة التدوير Saudi Investment Recycling Company
أرامكو السعودية saudi aramco
سابتكو SAPTCO
الشركة السعودية للكهرباء Saudi Electricity Company
CHEP
nwc المياه الوطنية
NOV
Bahri البحري
Gerflor theflooringroup

Local Projects

Red Sea Global
صندوق الاستثمارات العامة Public Investment Fund | مشاريع PROJECTS
روشن ROSHN
الهيئة الملكية لمحافظة العلا Royal Commission for AlUla
Diriyah Gate Development Authority
NEOM نيوم
AMAALA

Other International Organizations

ISO International Organization for Standardization
G20 SAUDI ARABIA 2020
ALLIANCE TO END PLASTIC WASTE
ICAO · OACI · ИКАО · 国际民航组织 · ايكاو
ASTM INTERNATIONAL



Challenges & Opportunities

Concrete: the second most consumed commodity by humanity

Water Scarcity

1 trillion cubic meter of fresh water is used for concrete production. B&C is the second most consumer of fresh water after agriculture

Losing our beaches

The insatiable demand of the global building boom has unleashed an illegal market in sand. Gangs are now stealing pristine beaches to supply B&C markets

Waste Management

60% of all landfill material is from the B&C industry mostly in the form of waste aggregates

Largest emitter of CO_2

Portland cement and B&C industry considered one of the largest emitter of GHG with littlie to no innovation the past 100 years to address this issue

Desalination in Saudi Arabia: Water Scarcity, Rising Demand, and Sustainability

Fun Fact: The amount of water produced by desalination plants in Saudi Arabia is so huge, it could circle the Earth more than 10 times if lined up in water bottles end-to-end!

- Saudi Arabia is experiencing a surge in demand for desalination due to the new Giga Construction Projects.
- These Giga Projects must be established and completed in the most sustainable and eco-friendly way.
- Utilizing seawater in construction aligns with one of the missions of Saudi Arabia's Vision 2030 to reduce emissions.

Utilizing Local Sand Dunes for Sustainable Future

Saudi Arabia is known for its vast deserts and abundant sands, yet this resource is often underutilized.

- Saudi Arabia new Giga projects will lead to the import of millions of tons of sand dunes.
- Importing sand dunes is expensive and environmentally impactful.
- Utilizing local sand dunes would be more cost-effective and environmentally friendly.

Construction Waste Recycling:
Utilizing Recycled Coarse Aggregates for New Building Projects

More than 4 billion tons of concrete aggregates are consumed each year worldwide.

- Construction waste overloads landfills, heightening environmental concerns.
- Reliance on imports due to waste mismanagement raises costs.
- Recycled aggregates in concrete offer new reuse possibilities, addressing excess waste effectively.
- Utilizing RCAs can help achieve net zero by cutting material demand and landfill waste.

GFRP & other polymer materials are poised to broaden the horizon of innovation in concrete

GFRP offers cost competitiveness, accelerated construction speed, and reduced structural loads, making it a great alternative for sustainable construction projects.

- Steel rebar prone to corrosion and heavy, complicating structures and logistics.
- Steel rebar's high production energy emits carbon, import reliance risks costs and supply chains.
- GFRP excels in corrosion resistance, ensuring lasting durability.
- GFRP's lightness eases transport, cuts costs in construction.

Introducing NovusCrete

The New Roman concrete

Salt Water

KSA is one of the most water scares countries in the world yet it's becoming the largest consumer of B&C material. Using Salt water will make LCA attractive in KSA more any other place in the world

Sand Dunes

KSA is rich with sand that can be modified to micro silica aggregate grades

Upcycling waste

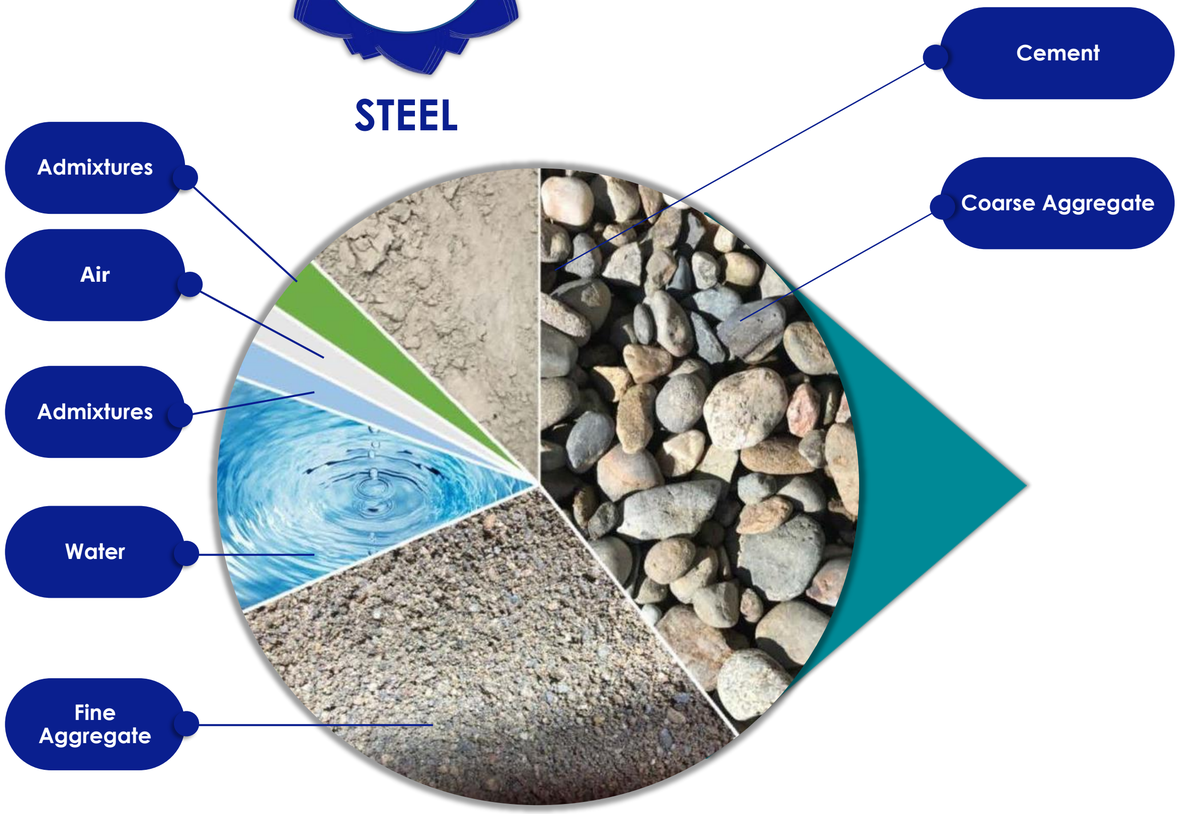
RCA & high chloride cement can be upcycled to make more sustainable concrete

Petcock coarse aggregates

Light weigh aggregates can extend the life of the buildings yet store pure carbon reducing environmental foot print

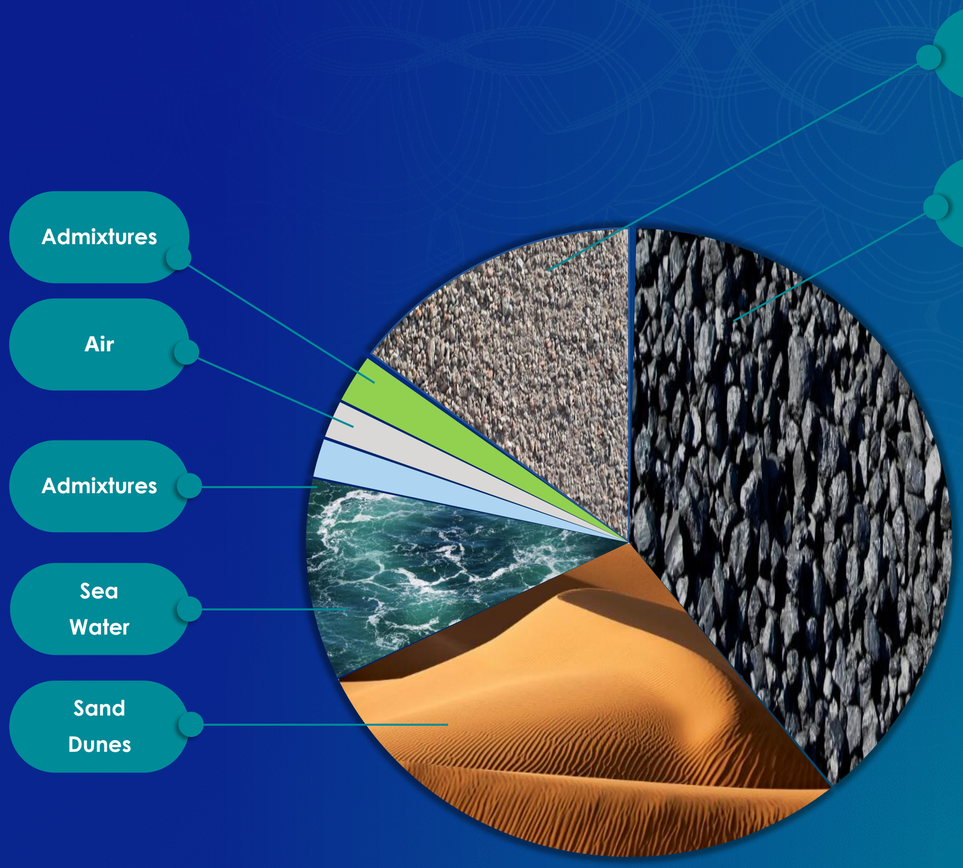
The pilot project will drive the utilization of GFRPs

STEEL



PP FIBER

GFRP



Novus-Crete; Sustainable Concrete Consortium

Objective

To develop a sustainable saltwater concrete utilizing locally available sources including; hydrocarbon materials, recycled aggregates, and sand dunes.

Contact Us

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Thank you
OSP
تأمين مستقبل مستدام
Securing a Sustainable Future