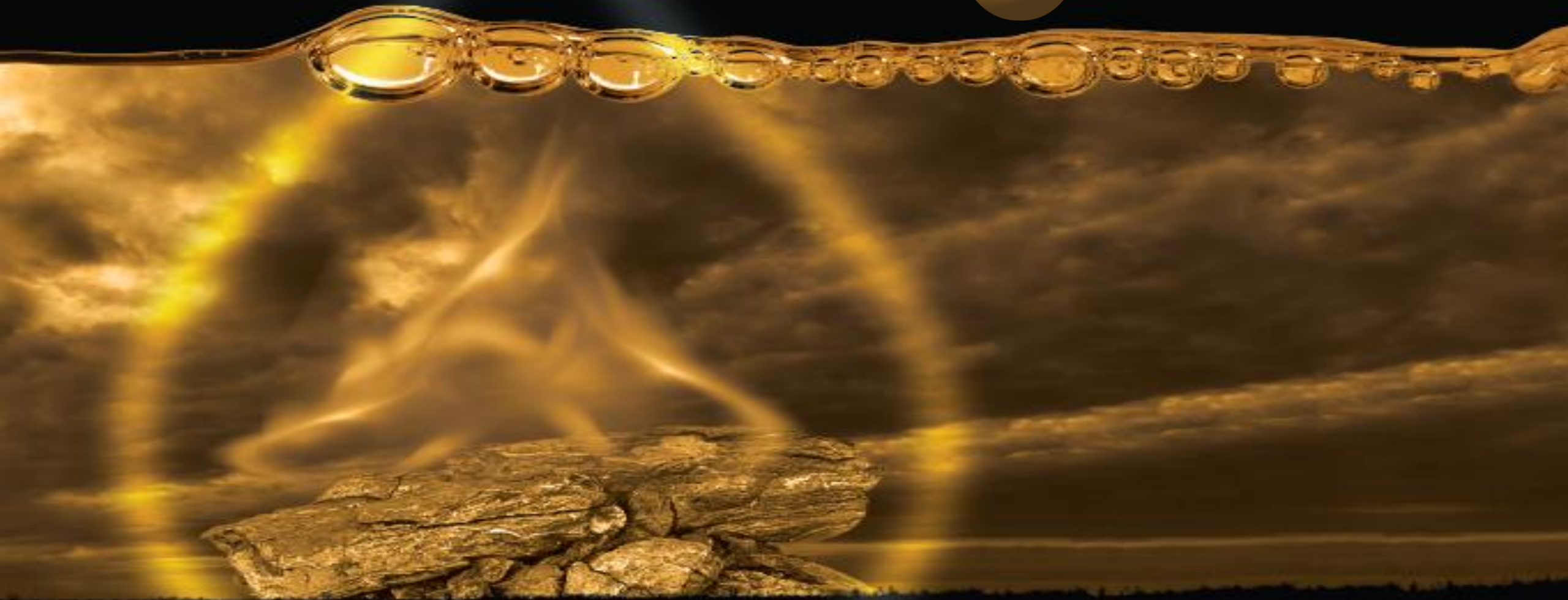




SACOS

الشركة السعودية العربية للصخر الزيتي
Saudi Arabian Corporation for Oil Shale Ltd.



November, 2019

SACOS

Who We Are !



We are the **Saudi Arabian Corporation for Oil Shale (SACOS)** a limited liability company, registered and located in Amman-Jordan since 2011. We are specialized in the unconventional oil exploration and production including the oil shale surface retorting.

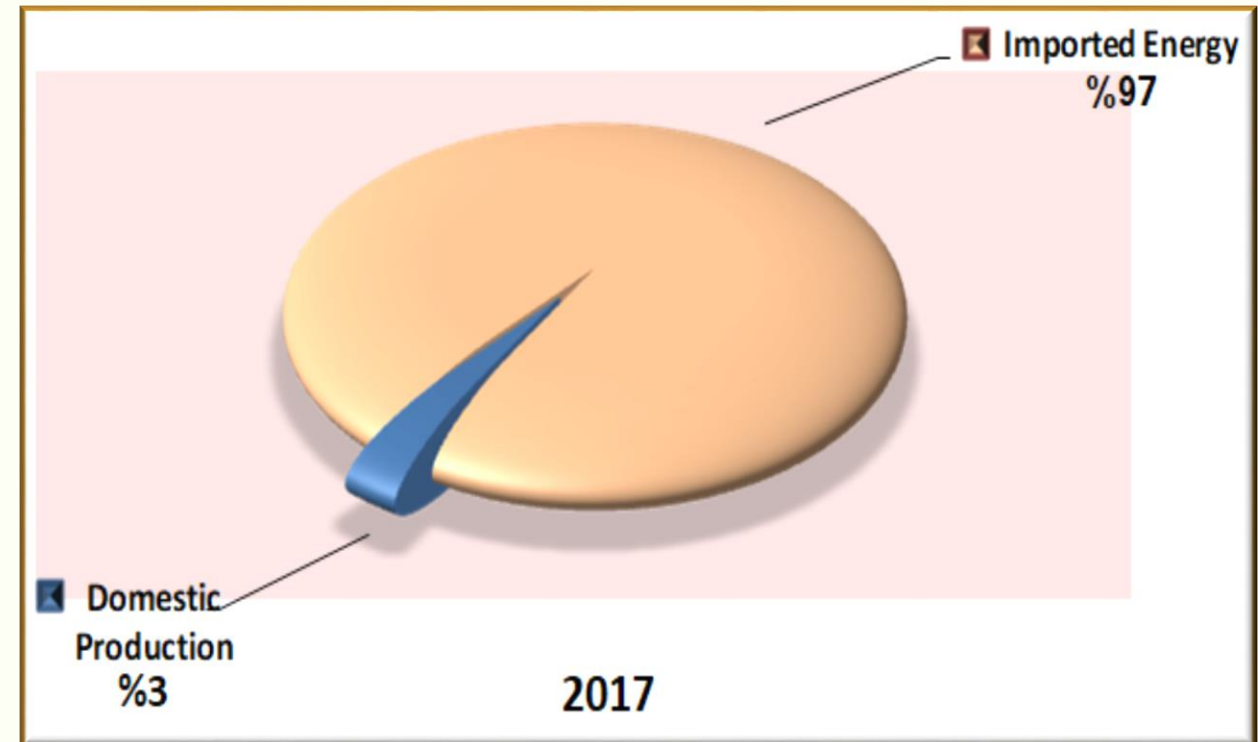
We are one of Sami Holding's subsidiaries, a group of companies working in different countries and in diverse fields (Mining, Water, Oil & Gas and Energy).

We are currently in the pre-development phase of our 40-year **concession agreement** with the Jordanian Government for the exploration and exploitation of the Jordanian oil shale in Attarat area.

Why Oil Shale ?



- Abundant un-exploited organic rich resource
- Jordan is completely dependent on imported energy, the Kingdom imports ~97% of its total energy needs
- Oil shale is the only identified fossil fuel resource in Jordan considered as a potential alternative local energy source
- Represents a significant step in diversifying the energy sources as mandated by the national energy strategy



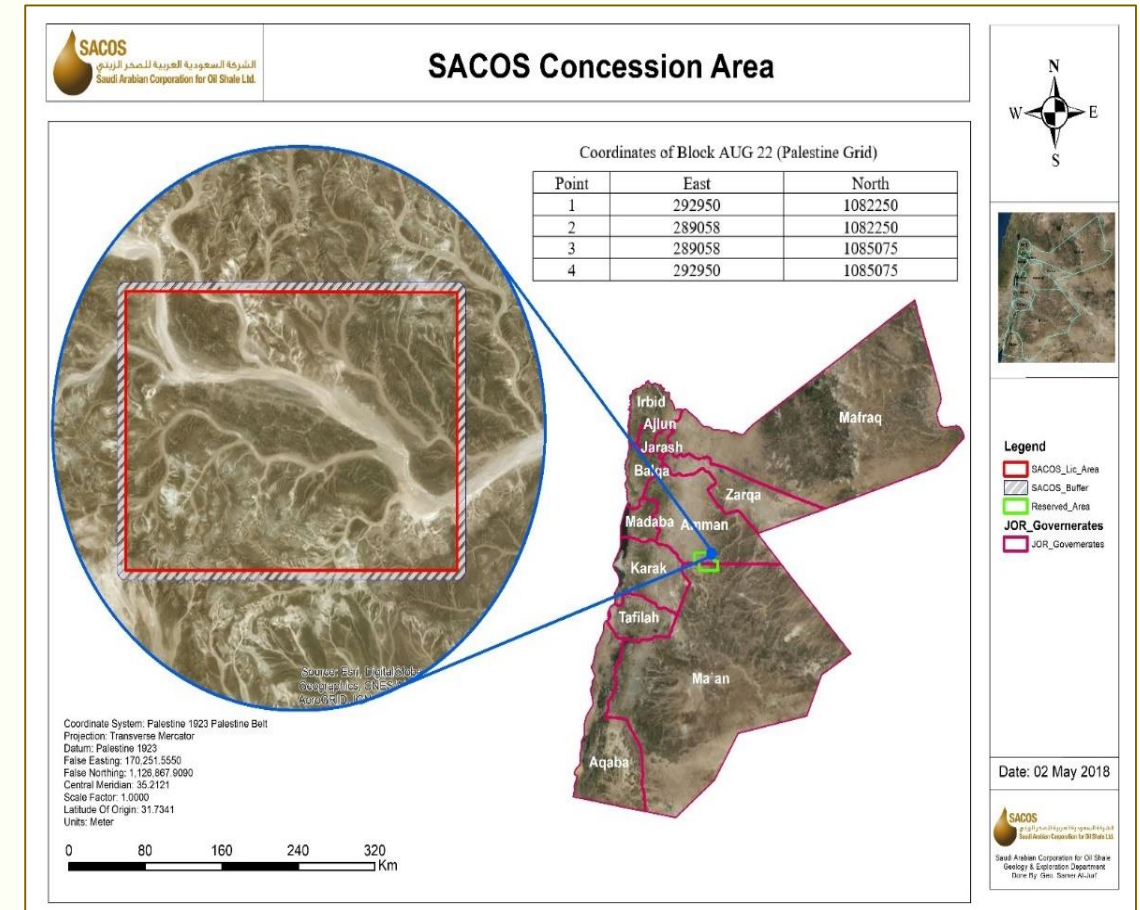
Concession Area & Project



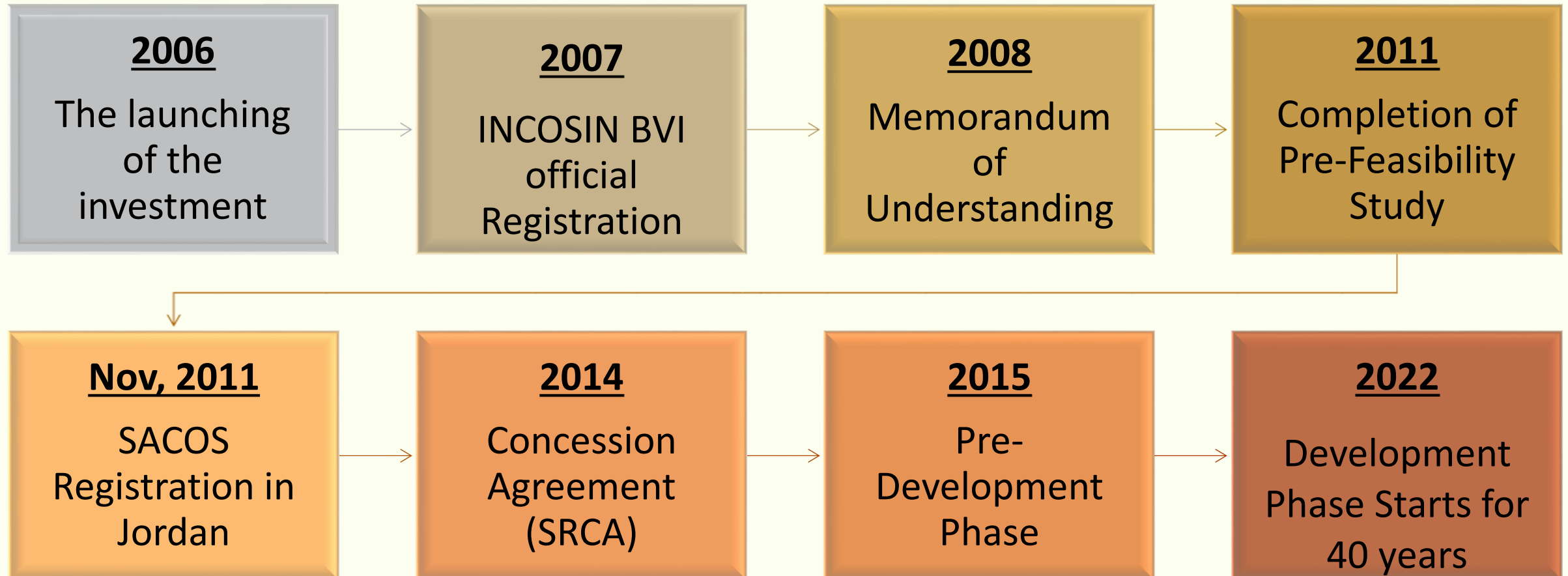
Attarat project is the current running project of SACOS, which is expected to be concluded in the production and selling of shale oil.

The project has already been started and several activities (studies, drilling campaign and researches) have been completed by SACOS, toward achieving project requirements.

The concession area is located in the central region of Jordan, approximately 100 km south east of Amman, while its reserve is estimated with >700 million tons, 350 million bbl shale oil, and 8.42 % average oil content.



Path to Commerciality



Project Highlights



- SACOS completed all the tasks of the exploration program which are:
 - Exploration drilling of **68** boreholes with a total drilling length of ~ **8800** m
 - Thorough testing of ~ **3000** oil shale samples
 - Detailed geological mapping and topographical survey
 - Gamma logging of **42** boreholes
 - Calculation of measured resource
 - Preliminary Env. Impact Assessment



Project Highlights



- Assaying & analyses of ~ **50,000** total analyzed parameters
- Petrographic and paleontological Study.
- Core logging, data entry, data validation and data archiving
- Geotechnical study
- Hydrological and hydrogeological studies
- Development of a new surface retorting process
- Shale oil production from bench scale units
- Detailed shale oil analysis



Benefits to Jordan



➤ ENERGY INDEPENDENCE AND SECURITY

- Decrease in the Government's over-reliance on imported energy.
- Contribution to the increase in dependence on local oil shale energy sources.
- Reduced vulnerability to geopolitical pressures.

➤ ECONOMIC GROWTH

- Economic expansion and diversification.
- Potential to increase local competition as foreign energy dependence is reduced.
- Increased opportunities for existing and potential local businesses.

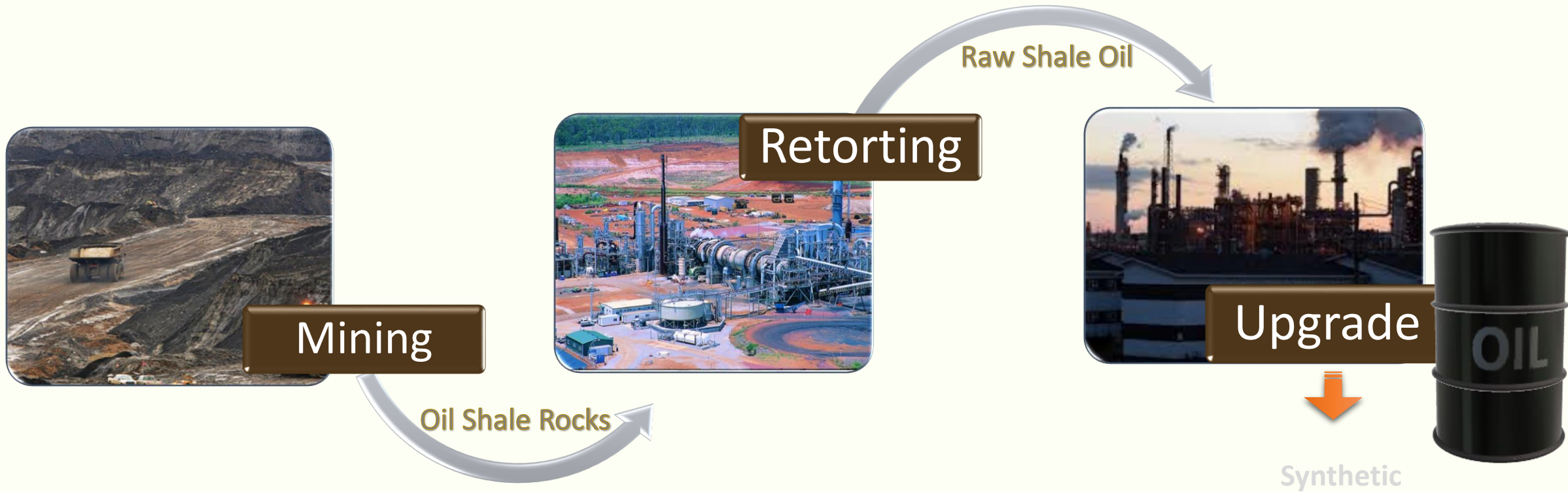
➤ JOB CREATION AND SKILLS TRANSFER

- Creation of tens of thousands of direct and indirect job opportunities, giving the priority right of employment to Jordanian nationals.
- Educational growth, skills development and opportunities to educate and train a sustainable workforce.

➤ SUSTAINABLE DEVELOPMENT

- Commitment to capacity building in the areas of SACOS operations.
- Pledge to run sustainable development projects for local communities.

Surface Retorting Main Components



Oil Shale Commerciality Challenges



1) Raw shale oil characteristics with the high Sulfur content, high Nitrogen content and high unsaturated hydrocarbon composition

- ❑ Complex upgrading process

- ✓ SACOS is exploring with crude oil valuation and oil trading consultants all possible options for the raw shale oil processability

2) Low oil barrel prices

- ❑ Relatively low RoR in comparison with the investment risk

- ✓ SACOS is working on optimizing the shale oil extraction process to reduce the oil CoP



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