

The Mishkat Interactive Centre for Atomic and Renewable Energy is a science discovery experience in Riyadh developed to inspire the next generation of Saudi Arabian energy innovators. Visitors are introduced to the experience by a dramatic ultra-widescreen CGI video that sets up the many varieties of energy production available to the Kingdom of Saudi Arabia, and challenges them to take part in its development.

The video, produced by English and Co, is pretty spectacular. You really need to be there to appreciate it (bearing in mind it runs in Arabic) but here's the script as a taster...

Mishkat Immersion Video

The sun. A massive ball of superheated gas, releasing energy in the form of light out into the space around it...

And sustaining life on our small planet 149 million kilometres distant.

We call it the Blue Planet, because it's mostly covered in water. And so far it seems that there's nowhere else quite like it: a planet with a protective atmosphere that helps support an abundance of living organisms.

Every second of every day, the energy in sunlight is captured in the earth's plants in a process we call photosynthesis. This releases oxygen from water and carbon dioxide – so we can breathe.

Our own lives depend on the energy released by the sun – and it gives our planet other types of energy too.

Our Kingdom was once partially covered by water – an ocean filled with plants and living creatures of every size and type.

Over many millions of years, generations of these organisms and planktons died and fell to the bottom of the sea – where they were covered in sand and mud.

Over time, heat and pressure broke the organic matter down into what we know as oil and gas.

One part of the world was blessed with more oil and gas than any other...

Our homeland: Saudi Arabia, the birthplace of Islam.

Up to the beginning of the last century, the Arabia peninsula had always been seen as a region of sun, wind, and sand.

Then, in 1938, something extraordinary happened. Under the guidance of King Abdul Aziz, the desert kingdom of Saudi Arabia began to produce crude oil commercially...

And within a few years became the world's biggest provider of the modern world's most precious energy resources – oil.

Oil and gas drive our power stations – which in turn generate the electricity we use for lighting, air conditioning, cooling and cooking.

Oil and gas power our desalination plants, drawing salt water from the sea and converting it into drinking water. That's why water is available in one of the world's driest countries.

We move around our country and cities in cars that run on oil's most familiar product: petrol.

And oil and gas even give us the plastics used in the manufacture of products that are part of everybody's daily lives - such as computers, games and telephones.

The world depends on oil and gas. So why should a country so rich in these resources invest in expanding its energy portfolio to include alternative sources of energy?

The more people there are in the world – and here in Saudi Arabia - the more challenges we face. World populations are increasingly concentrated in towns and cities.

Cities are economically important: they help create growth and prosperity. But to function efficiently and safely they need reliable supplies of water, electricity, fuel, heat and cooling. They require complex infrastructures.

Meanwhile, we've come to expect more from life – not just in our standard of living, but in the quality of our lives. This places enormous demands on the cost and availability of education, transportation and healthcare services.

The use of alternative sustainable and reliable resources for generating power and producing desalinated water reduces dependency on hydrocarbon resources, which in turn extends the life of these resources and keeps them as a source of income for a longer period of time for our future generations.

Some energy sources are based on finite resources, like oil. Some are renewable – and will always be available. And some are uniquely suited to the geology and climate of Saudi Arabia.

For our Kingdom – and our people – the possibilities are both promising and thrilling...

One of the most exciting alternatives is nuclear power – which uses controlled nuclear reactions to create atomic energy.

Nuclear power takes advantage of the unique properties of uranium-235 – a metal isotope occurring naturally in the ground that can sustain what we call a fission chain reaction, heating water to produce steam, which is then used to generate electricity.

One kilogram of Uranium can be used to release more energy than two million kilograms of oil. This is why several countries around the world – like France and Belgium - depend on nuclear energy as a reliable alternative source for producing electricity.

However operating nuclear power plants requires advanced and complex technologies for the safe control of nuclear reactions.

The sun has always provided us with energy – and now we're on the verge of capturing and storing that power on a scale that will enable it to become a viable alternative energy source for our country.

Solar energy can be used to generate electricity in two ways.

Photovoltaic cells use light to generate electricity directly – powering various instruments and equipment, and – on a larger scale – feeding the electricity grid.

Concentrated Solar Power systems use lenses or mirrors and tracking systems to focus sunlight into a small area – heating liquid to make steam which turns a turbine and generates electricity.

Wind power is another form of renewable energy that uses a turbine. The rotary motion of the wind turbine's blades generate electricity by turning a shaft, mounted in a pod that constantly adjusts to the direction of the wind.

As we go deep into the Earth the temperature of the rocks increases. Some of the heat is left over from the formation of the planet itself, and some is generated by the radioactive decay of minerals.

We call this energy geothermal - a sustainable alternative source of energy that's been in use for thousands of years, for bathing in hot springs and heating. Now we believe we can use the high temperatures in the Earth to heat water and produce the steam needed to turn turbines and generate electricity.

Another potential energy source is the tides in the oceans. These are created by the gravitational pull of the Sun and Moon, combined with the rotation of the Earth. We can use a range of dams, barrages, turbines and generators to produce electricity in this way.

With all these promising alternative sources of energy, there's much to learn...
Much to look forward to...

And a lot to be proud of. 80 years ago, King Abdul Aziz had the vision to start exploiting our oil reserves. Today, King Abdullah bin Abdul Aziz is leading us into a future where energy comes not just from oil and gas – but from atomic and renewable sources as well.

The powerhouse of King Abdullah's vision is a new scientific city, headquartered at the Western gateway to Riyadh – the King Abdullah City for Atomic and Renewable Energy.

The city will contribute to the sustainable development of the Kingdom by utilizing science, research and the technologies of atomic and renewable energy to raise the standards of living and quality of life of Saudi Arabia's citizens. King Abdullah City...

Is part of your future. In tomorrow's Saudi Arabia, you can play a part in developing safe and endlessly sustainable energy supplies...

You can participate in developing efficient technologies to produce energy by exploiting a mix of hydrocarbon, atomic & renewable energy...

And you can contribute directly to the Kingdom of Saudi Arabia's leading role as the energy supplier to the world – ultimately becoming the Kingdom of Sustainable Energy.

Welcome to your future...