

Panel discussion

Bremilow , Ekerm, Schmidt, Soone, Kok, Purga

Thankin all the participant, we did not expect the attendance

Dr Maher Hijazen talks

Facts: interest in oil shale due price of oil shale

Jordan is no more getting the low price oil from neighbors, the share of energy from budget, Escalated from 2.5 percent to 25 percent last year. The burden on the economy is high, the near surface reserves are more than 40 billion tons but the total reserves are not estimated but with the help of shell might be done

Energy is strategic issue and renewable is important, gas from Egypt is cheap but not permanent. The political well is there, starting from the king, on various levels of the governmental officials. Our policy is to attract many companies as much as we can, we don not try to rely on any technology. Any commercial agreement has reserve the right of the country. Other terms are negotiable. We have developed a process for utilizing oil shale. We have to do in stages as Shell has said yesterday in the lecture. The government is not ready to risk the failure in oil shale industry. The government is not ready to contribute to the financial support for any project at this stage. We feel that the technology is not mature yet to start. A demonstration projection is needed and feasibility study has to be conducted before to risk any project. Use it or lose that is the government policy.

The panel is here to start the discussions. What are the economy of oil shale. We have not heard about the cost, also we have not heard about the refining of oil shale. We have seen excellent presentation but; we have not heard about the oil since it is not a crude oil. Water is needed, how can that be saved and it. Why will Jordan, since we have sort of feeling that one day we will succeed while other fails. How can we avoid the failures, what the problems and associated difficulties? Some stages we need to go through and difficulties associated tax royalty and what Is the benefit for the government, we have no idea about a physical agreement, physical systems. Question, what are the financial incentives for these investors, what are these environmental problems and how to go about it. Is there a need to establish a center of excellence for oil shale? Some expertise in every where should be gathered together to develop such a center, where to go in applied researches, where we should concentrate of our efforts. We should discuss these with expertise in the panel.

Iann (Shell Company)

to answer some of these questions

Giving my reflections, I have found great enthusiasm on oil shale; it is great to see the top of the country talking about the subject. I take is a very positive outcome from the conference. You have posed many questions. My presentation yesterday, many questions are on that chart. We do not believe that there is quick answers to these questions. We need to get hold of other stakeholders, public; we need to start as group or individual and we need to educate people that are a long-term technology. It is very important for the government to understand the process. In Canada, a decision was taken to more forward in the business, and the aim to that industry. Other countries are taking leading steps in that directions. If you want to encourage people to invest.

Professor Kok (Turkey)

I would like to say, in the next 25 years the reserves will be in shortage and the price will shoot up more than 100 dollars, the Europeans have taken steps to work in this issue. There is huge amount of money in Europe to invest in this direction now. For developing countries should turn faces to utilize oil shale. It is very important, in order to sustain industrialization, they have to look to oil shale utilizations. Fluidized bed is a good technology, characterization of oil shale, research should be directed towards these directions. Depleting reserves of oil , the oil shale is an alternative for the developing counties. For the following six years

Mr. Purga (Estonia)

Our company is producing the oil. All these questions on the table, these can be simplified, get in few products and just make a big start, not only a big companies only can make and invest and pilot productions, small companies still alive after 25 yeas and doing good business. So take some measure and try to adapt for Jordan oil shale. Using much older technology is not a big mistake or not valid. In Estonia, we can sell our product with out distillations, in Jordan; there is no way to sell. Forget about gas now, just produce oil and sell. Ash disposal is important and then look for the gas production, not to burn the oil shale as rock, I suggest do the way that gas and then use it in boilers. From business point if you compare the electricity obtained from burning and compare with gas production, then is better to produce gas. Give a birth to a start.

Professor Ekerm (Turkey)

I have learned from this conference and never missed a single second , I congratulate Jordan on that. In 1983 I did an article , he said in twenty years time from , oil shale, no body is caring about killing in Iraq , we should not look for solutions in months but we should look further a head, all politicians do that a short sighted people. Jim has give an excellent lecture and we should read and read it. The road is not clear for oil shale. Capacity of 40 thousand plant, then 40 dollars a barrel. If the oil prices pushes higher and higher then we should talk with different produces. If you take about the market , they will come and buy the market. Start with small scale and stick to the complex. The Jordan government is doing the right start and they should commit and do more in that directions. I was so proud of their company whose fifty million are very successful. Stakeholders are small in these situations. How these people come up, they are firm, worked, and continued the work and they came up to this level.

Professor Soone (Estonia)

Many thanks for the conference, this confer has bee a successful to Jordan. Investors in oil shale, we put the question , why Jordan will succeed? what mistakes are at the back doors, the main thing is the knowledge , here in all fields, in Jordan, starting with a pilot plant and as soon as possible, first experience, these steps are important, we can not say the best rate but we have to look to these technologies , but it must be developed. Water reuse and energy, it is important to start special educations to look in the basic courses of chemistry and have special programs and we have to start teaching people in the university about oil shale. This practice will be quite on the high people. Center of excellence must be developed in Jordan; you can use the Estonian experience. I have to point out that the international community, I put a question what is the next step what is the next conference. In Estonia, we have a

symposium in every four years, next June we have a one and I invite to take part in that. Joining forces international in the next time and future.

Mr. Jim Schmidt (Australia)

I spent three years running a plant in Australia, my heart is on oil shale, but this conference is for me is tremendous, some people tries to continue to work on oil shale , those days when a barrel was ten dollars but now it is different. The words that people said before me, we would not have oil and other things in future, I just an ordinary man, we are prisoners , but as yanish, and the professor has said and the oil shale has been driven by demand and developing counties, the demand drive pension, similarly south Africa, need is mother of invention. There are competitive business, oil shale bushiness, when you mining, environmentally, cost, getting red of ash that is not a simple problem, very dusty, you need water to do that task, might be other ways of doing that. The prices are big enough, drive more cars when every one is rich. In Colorado, some show if the oil supply price drop that requirement drops is high , and the synthetic industry. Work deliberately, oil shale is , I agree an industry running, you need money. I invested money, we felt, we spent two hundred millions dollars, we are still wrong. Push, push is hooty to make mistakes. It is very easy for accidents to happen. You have to be very concise, Chine have built their technology, they have built twenty for seven million US dollars, to produce certain amount of oil . a lot of tension from green peace. A lost of cost to run as they want where to bring this money form. We need a critical approach , look if the government want, if money is not put then , you have to be careful moving forward, with these technologies, but the future, get some money is fine a center of excellence is fine, Jordan has been a pattern for long, the young staff, it is a will challenge, this conference is being very realistic,

Dr. Hijazen: once again

Pose questions to the audience to reflect their opinion about the conference and technical issue, Was this conf a success, where the conference should be held, what should be the theme? , where is the room, what did answer for you , again, possible improvement, is it a success, a failure?

Akroosh

Thanks, to all. Put Jordan on the road of oil shales

A question to Murphy, do you agree about the oil reserves, what are the prices, presented in your slides about retorts , was it based on industrial or what

Ian answers

The general feeling, is the easy oil is gone, technology has to change, that is why all companies are coming up because there is a growing interest all over the world, prices, reserves, technology is need and is a challenge

Purga

What kind of heat do you have, mechanical characteristics of Estonian oil shale. Sixty percent of fines, then the technology is decided. If I could have in my business lump size then very simple to run and earn money. Fine particles must be used and something should be done. You have good possible more than half a big size form Jordan oil shale. We are based on real business

Professor: Kamal Alarji, KAADB

The panelist have highlight the most, we must set up a center of excellence, the conference should be conclude to setup such a center here or somewhere in the world. Money, five or ten percent should be taken or tax must be paid from companies to such center. The environment must be talked about , we have to take this issue in parallel with oil shale development. The center must be equipped fully

Hazim rammni, NRA

During the last tow days, how can we judge the right technology for oil shale, how oil shale can be commercialized , and how to do that , companies, the right maturity etc.

Purga,

How can you compare the present technologies, the answers is very simple, what make sense, you should have a check list for companies, and then understand each other very well. Do not look too many items but those very crucial to you. Form the check list, the answers for your questions.

Jim

For technology there is certain prices, the technology; around, have put us round, no matter what you do, do it for screening purposes. You have to study and select, understand yourself, the limitation of the technology.

Dr. Saddiq Emeish

Comment from china, as far is black water is concern, we can use air for cooling system, catalyst has to be developed, feasibility has to be evaluated by experiments , experiments has to be done in our university. We are living in a hot area, the military situation is inflammable. We got to have an alternative.

How long to get oil shale on business?

Jim

Good idea, possible achievable it will be difficult to do here, a process, get hold of environmental problems and other issues, then three four years will be ok. Twenty retorts are in China are build

Dr. Maher

We estimate, an project aggressive we need five years as ministry of energy has estimated that with optimisms form now

Iraq

Thanks for all for organizing this conference, I had opportunity to work in NRA, several studies has gone done the drain, we need results, so many of these studies had been conducted, we need actual operations

Maher,

If you to contribute financially, we are expecting the companies to contribute the money

Munther Besieso

Thank for the organizing , establishing international center, similar world energy congress. It is a good idea to establish such a center

Laila Abu Hijja

We do not need centers we have university and developed local expertise.

Maher,

We need help from others.

Falak Saraf, HCST

Thank you for organizing national center , we have NERC to HCST is already there, the HCST finding three researches on that topic, starting this year, we initiate the national net of oil shale.

Jordan University

We should look for securing oil shale alternatives,

Maher

We have new law for developing.

Dr. Omar

Developing center is required to buy equipment for such a center; a large amount of money is needed,

Maher,

There will be some of that sort and duplications in several universities

Maher,

No right tech is available for Jordan oil shale, to be tailored not on the shelf. Exploiting and developing oil shale is a long term. It takes years. Let us keep the hopes there, although, it is technically viable, still commercial not available on large scale. Developing technology, you need reserves for that. Staged approach is favorable.

Maher

I hope to meet in future