Natural Gas and Coal Supply Chains
Moving Towards Sustainability

Dr Sun Xiansheng
Secretary General, IEF Riyadh
Contents

• Current reality: Where we are today
• Global energy trends and projections
• Sustainable Solutions
• Three Key Challenges
LNG Producer & Consumer Trends

LNG exports

- Middle East
- N America
- Russia
- Africa
- Australia
- Other

LNG imports

- China
- Other Asia
- India
- OECD Asia
- Europe
- Other

Source: BP Outlook, 2018
Coal and Natural Gas Remain Relevant in 2040 in main IEA and OPEC 2016 outlooks

World Primary Energy Fuel Shares in 2015 and Outlook for 2040

- 2015:
  - Coal: 28% (IEA, CPS, NPS, SDS, Ref)
  - Oil: 32% (IEA, CPS, NPS, SDS, Ref)
  - Gas: 22% (IEA, CPS, NPS, SDS, Ref)
  - Nuclear: 10% (IEA, CPS, NPS, SDS, Ref)
  - Hydro: 2% (IEA, CPS, NPS, SDS, Ref)
  - Biomass: 2% (IEA, CPS, NPS, SDS, Ref)
  - Other renewables: 2% (IEA, CPS, NPS, SDS, Ref)

- 2040:
  - Coal: 26% (IEA, CPS, NPS, SDS, Ref)
  - Oil: 27% (IEA, CPS, NPS, SDS, Ref)
  - Gas: 25% (IEA, CPS, NPS, SDS, Ref)
  - Nuclear: 13% (IEA, CPS, NPS, SDS, Ref)
  - Hydro: 5% (IEA, CPS, NPS, SDS, Ref)
  - Biomass: 6% (IEA, CPS, NPS, SDS, Ref)
  - Other renewables: 6% (IEA, CPS, NPS, SDS, Ref)
Sustainable Solutions - Coal

- Economic Development
- Lifecycle Management
- Community Well-Being
- Business Conduct
- Working Conditions
- Environmental Responsibility

Responsible Mining
Sustainable Solutions - Coal

Key Technologies

- Coal “Washing” Efficiency Measures
- Gasification (IGCC)
- CCUS
Sustainable Solutions - Gas

Key Technologies

- Innovative Emissions Detection
- Low Carbon Liquefaction
- Power to Gas Technology
Policy and Technology Cooperation is key
Depth and breadth of dialogue and cooperation decide pace of change

Indicative Extra Long-term Projections

Based on extrapolation of 2017 IEA, OPEC Long-Term Projections
3 Key Challenges

1. High Capital Costs
2. Slowing Transition
3. Overcoming Technology Plateau
Key Dialogue Meetings

1. The 6th IEF-IGU Ministerial Gas Forum on 21-22 November 2018 in Barcelona, Spain

2. The 9th IEA-IEF-OPEC Symposium on Energy Outlooks on 27 February 2019 in Riyadh, Saudi Arabia

3. The 8th Asian Ministerial Energy Roundtable on 9-10 September 2019 in Abu Dhabi, UAE and

4. The 17th IEF Ministerial Meeting in China in 2020