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The Future of the Oil Industry in a 'Well Below 2 Degree' World A company-level agent-based simulation

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Agenda





1. Introduction







Aim: simple model of upstream oil market to explore investment decisions under different scenarios



Explore company pathways that are possible under different oil demand scenarios



Understand potential effects of decisionmaking under uncertainty



Model the upstream oil market in a way that is both relatively simple and informative

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2. Methods







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Operations module builds an oil supply curve from company asset base for each month



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Data source: IEA (2018)





London Investment decision module: companies decide how to spend their cash based on strategy and beliefs



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Imperial College London Data on assets and ownership was collected from public sources and calibrated top-down



The data set is considered accurate enough for modelling high-level developments over the medium term



3. Results

Imperial College ŘÌ Environment London **Research Council** Model price output is comparable to IEA predictions, although clear differences remain



Data source: IEA (2020)

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Natural





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Imperial College London Profit & investment lower in LD scenario for both NOCs and IOCs; investment slower to fall

Profits (% difference between scenarios)









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Investment (% difference between scenarios)

Imperial College London No large difference between scenarios

in current reserves remaining in 2040









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4. Conclusion

Imperial College London The new oil market model sheds light on company outcomes – although questions remain



This presentation introduces a new model of the upstream oil industry, capable of simulating the behaviour and tracking the financial outcomes of individual oil companies.



Oil demand, and the extent to which companies anticipate changes in oil demand in their investments, greatly affect their ability to compete in the market.



Many open questions and potential improvements and extensions to the model remain.



Imperial College London High-level projections of possible pathways are important when future is deeply uncertain





Thank you!

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