IITB-Monash Research Academy

Indian Institute of Technology Bombay | MONASH University

An Indian-Australian research partnership

Project Title:	**Energy security risk and asset pricing**	
Project Number	**HSS1039**	
Monash Main Supervisor (Name, Email Id, Phone)	Prof. Paresh Narayan	*Full name, Email*
Monash Co-supervisor(s) (Name, Email Id, Phone)	Prof. Bernard Njindan Iyke	
Monash Head of Dept/Centre (Name,Email)	Professor Chong woo choe <chongwoo.choe@monash.edu>	*Full name, email*
Monash Department:	Centre for Global Business	
Monash ADGR (Name,Email)	Professor Russell Smyth <Russell.smyth@monash.edu>	*Full name, email*
IITB Main Supervisor (Name, Email Id, Phone)	Prof. Puja Padhi	*Full name, Email*
IITB Co-supervisor(s) (Name, Email Id, Phone)	NA	*Full name, Email*
IITB Head of Dept (Name, Email, Phone)	Prof. Kushal Deb	*Full name, email*
IITB Department:	HSS, IITB	

Research Clusters:

Highlight which of the Academy's CLUSTERS this project will address?
*(Please nominate JUST **one.** For more information, see www.iitbmonash.org)*

1	*Material Science/Engineering (including Nano, Metallurgy)*
2	*Energy, Green Chem, Chemistry, Catalysis, Reaction Eng*
3	*Math, CFD, Modelling, Manufacturing*
4	*CSE, IT, Optimisation, Data, Sensors, Systems, Signal Processing, Control*
5	*Earth Sciences and Civil Engineering (Geo, Water, Climate)*
6	*Bio, Stem Cells, Bio Chem, Pharma, Food*
7	*Semi-Conductors, Optics, Photonics, Networks, Telecomm, Power Eng*
8	*HSS, Design, Management*

Research Themes:

Highlight which of the Academy's Theme(s) this project will address?
(Feel free to nominate more than one. For more information, see www.iitbmonash.org)

1	*Artificial Intelligence and Advanced Computational Modelling*
2	*Circular Economy*
3	*Clean Energy*
4	*Health Sciences*
5	*Smart Materials*
6	*Sustainable Societies*
7	*Infrastructure*
8	*Humanities and Social Science*

The research problem

Define the problem

Energy security risk has increased over the years. The rise in geopolitical conflicts and risks, the rise in the frequency and magnitude of natural disasters, and the increase in global population have all put pressures on energy production and demand and hence increased energy security risk. Energy remains a fundamental determinant of economic development, as has been highlighted in several policy documents, including being the focus of the seventh goalof Sustainable Development Goals declaration by the United Nations. Businesses and communities depend on energy for their day-to-day operations and activities, and this has put pressures on the sources of energy, which are mostly non-renewable. Therefore, promoting energyefficiency and security in order to reduce environmental degradation and sustain energy production and consumption remains a key priority of policymakers and businesses across the globe. Studies infer that an increase in energy efficiency and security may improve firm outcomes, such as profitability, cashflow, and overall performance. Also, evidence suggests that investors consider energy security when picking stocks, which means that energy security risk should be priced in the stock market. However, this is not clear in the literature.

Project aims

Define the aims of the project

Develop innovative measures of energy security, has time-series data that capture the evolving of energy security risk over time. Develop a framework for modelling the effects of energy security risk on firm performance and identifying the channels through which energy security influence a firm's price and cost structures.

How skills/experience of the IITB and the Monash supervisor(s) support the proposed project

Highlight the purpose of the collaboration and/or the complementary skills/experience that you bring to the project. Do you have any joint or independent publications in the area of the proposed project?

The two Monash supervisors are very skilled and experienced in the areas of climate change and energy finance. Their research focus is in these two areas of finance. Professor Paresh Narayan is a highly cited researcher in Finance and Economics, who has supervised several PhDs and funded research projects. Dr Bernard Njindan Iyke is an experienced researcher with the skills to supervise PhDs and projects.

What is expected of the student when at IITB and when at Monash?

Highlight how the project will gain from the students stay at IITB and at Monash

The student is expected to complete recommended postgraduate courses and to complete two essays of his/her thesis.

Expected outcomes

Highlight the expected outcomes of the project

A global new dataset on energy security risks that accounts for its effects on wages, employment, productivity, consumption, investment, inflation, exchange rates, output, etc. A framework for modelling the effects of energy security on firm performance.

Empirical tests of various asset pricing models to identify channels through which the effects of energy security risks transmit to pricing behavior.

How will the project address the Goals of the above Themes?

Describe how the project will address the goals of one or more of the 6 Themes listed above.

The project focuses on green energy them by modelling energy security risk.

Potential RPCs from IITB and Monash

Provide names of the potential research progress committee members (RPCs) and describe why they are most suited for the proposed project

Monash: Professor Paresh Narayan; Dr Bernard Njindan Iyke

IITB: A/Professor Puja Padhi and Prof Sebastian

Capabilities and Degrees Required

List the ideal set of capabilities that a student should have for this project. Feel free to be as specific or as general as you like. These capabilities will be input into the online application form and students who opt for this project will be required to show that they can demonstrate these capabilities.

The student should have a solid background in economics/finance/econometrics/engineering and strong statistical modelling skills. The student is expected to be proficient in computing/software coding.

Select up to **(4)** keywords from the Academy's approved keyword list **(available at http://www.iitbmonash.org/becoming-a-research-supervisor/)** relating to this project to make it easier for the students to apply.

Climate, Finance and Economics