

Q. Explain the various risks that need to be mitigated effectively for robust energy security in the country.

Introduction

By 2022, our country pursue atmanirbhar in energy by focussing on clean energy technologies

Technologies

Energy Security

↳ 85% of oil and half of its gas imported - import dependent.

Clean Energy Technology

↳ Require critical minerals called Rare Earth metals.

↳ Some critical minerals are Lithium, cobalt, nickel

↳ Rare Earth materials ⇒ 17 Elements

↳ Some REM found in India & ~~another~~ Dysprosium, terbium and Europium.

↳ light REM and Heavy REM

↳ 100% REE from china

↳ REE are Unique Magnetic, luminescent and electrochemical properties

Challenges

↳ Rare Earth Reserves are geopolitically sensitive

UPSC

Answer Questions in NOT MORE THAN the Word Limit specified for each in the Parenthesis.
Content of the Question is more important than length.
(Specimen Answer Booklet - For Practice Purpose Only)

↳ Existing Production is Controlled by Geo strategic competitors.

eg. China's influence in cobalt mining in Democratic Republic of Congo. through BRI initiative

↳ Mine Production is tied up in offtake agreements.

Suggestion

↳ Khanij Bidesh India limited (KABIL) in ODA mandate to secure mineral supply for the domestic market.

KABIL should preemptively sign offtake agreement with Global mineral suppliers.

↳ KABIL should leverage Government-to-Government Partnership - with Geostrategic partners

↳ External Affairs Ministry establish clean Energy supply chains.

↳ Support technologies that utilize domestically available materials. eg. Sodium-ion Battery

↳ Develop policies on Urban Mining aimed at Recycling mineral inputs.

Conclusion

India must act immediately and decisively to mitigate these risks to its Energy Security