



## Energy Security and Transition Geopolitics

**Geopolitics of Global Issues {CSU2387}**

### **Summary Report**

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## Certification

This is to certify that the report titled “Energy security and transition geopolitics” has been prepared and submitted by the above-mentioned students as part of the end-term assessment for the course Geopolitics of Global Issues (CSU2387) at Shoolini University.

The work presented in this report is based on the students’ own study, analysis and understanding of the topic. Any sources used for facts, data or ideas have been referred to in the report as per academic norms. The report has not been submitted earlier for any other course, examination or evaluation.

This report was completed under the guidance and supervision of Dr. K.Siddarth Dadhwal.

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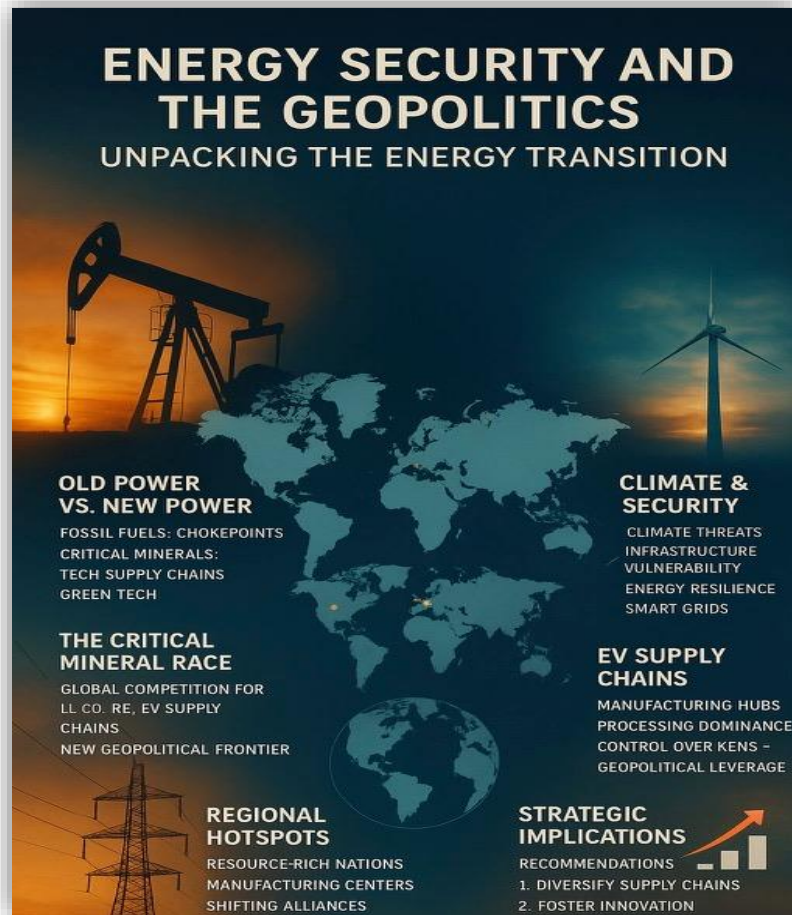


Figure1: Poster on Energy Security and Transition Geopolitics.

## Introduction: Idea Behind the Poster

The poster titled “**Energy Security and the Geopolitics of the Global Energy Transition**” shows how the world is moving from old fossil-fuel systems to new clean-energy systems and how this change is also changing global power. On the left side of the poster, there is an oil pump and power lines at sunset which represent the traditional energy system based on oil, gas and coal. On the right side, there is a wind turbine in a darker blue tone which represents modern renewable energy such as wind and solar power. Between these two images, a world map connects different regions and key phrases like “Old Power vs. New Power,” “The Critical Mineral Race,” “EV Supply Chains,” “Regional Hotspots,” “Climate & Security” and “Strategic Implications.” This design helps the viewer quickly see that energy is not only about technology but also about politics, geography and future risks.

Historically, energy security mainly meant having access to cheap and reliable fossil fuels. After the industrial revolution, coal powered factories, ships and early railways creating the first modern energy system. Later, oil became the most important fuel

because it was easy to transport and ideal for cars, trucks and planes. In the twentieth century, countries with large oil and gas reserves became very powerful. The Middle East, parts of the former Soviet Union and a few other regions played central roles in global politics, because factories, transport and armies all needed steady fuel supplies. Many major events, such as the world wars, the creation of the Organization of the Petroleum Exporting Countries (OPEC) and the 1973 oil crisis showed that control over fossil fuels could decide the fate of economies and governments.

The classic idea of energy security focused on questions such as: Will there be enough oil and gas? Are the shipping routes safe? Can we avoid price shocks and supply cuts? Governments built strategic petroleum reserves, signed long-term contracts and sometimes intervened militarily to protect energy routes. This period created a certain geopolitical map where a few oil-rich countries and major importers like the United States, Europe and Japan were the main actors. However, this system had serious problems. It produced large amounts of greenhouse-gas emissions which increased global temperatures and caused climate change. It also encouraged many conflicts, created economic imbalances and exposed poor populations to pollution and instability.

In the twenty-first century, this picture has started to change. Climate science clearly links burning fossil fuels with rising temperatures, extreme weather and long-term environmental damage. International agreements, especially the Paris Agreement call for a major reduction in emissions and a shift towards low-carbon energy. At the same time, rapid improvements in technology have made solar power, wind power and batteries cheaper and more efficient. As a result, more and more countries now invest in renewable energy, electric vehicles and smart grids to reduce their dependence on oil and gas and to improve environmental performance.

However, the move towards clean energy does not remove geopolitics but it simply changes its form. Instead of fighting mainly over oil fields and pipelines, states now compete over access to critical minerals, battery factories, technology standards and climate-resilient infrastructure. The poster captures this new reality by combining visual elements of old and new energy and by grouping key ideas around different sides of the world map. On one side, the viewer sees themes such as fossil-fuel chokepoints and regional hotspots and on the other, the focus shifts to EV supply chains, climate threats and strategic recommendations. This structure guided the present summary report which follows the same logic.

The aim of this report is to explain in simple and clear language about how the themes displayed in the poster relate to the broader idea of energy security and what they mean for geopolitics. The report first discusses the core issues highlighted in the poster and their implications for international relations. It then presents some concluding observations and suggests future measures including the possible role of global institutions in managing a just and secure energy transition.

## The Issue and Its Geopolitical Implications

### **1. Old Power vs. New Power**

The phrase “Old Power vs. New Power” on the left side of the poster summarises the main transformation taking place. Old power refers to the fossil-fuel system based on oil, gas and coal with major shipping routes, pipeline networks and a small number of key exporting countries. New power refers to a system built around renewable energy, electricity networks, digital technologies and advanced materials.

Under the old system, those who controlled oil and gas reserves or the main transport routes had a strong hand in global politics. Oil-rich states could influence prices by increasing or cutting production. Major importers felt vulnerable to supply interruptions caused by wars, sanctions or domestic crises in producing countries. For example: many European states became highly dependent on pipeline gas from a single supplier and had to think carefully about their political relations with that supplier.

The rise of new power changes but does not completely remove these patterns. Renewable resources such as sun and wind are more widely spread and many countries can produce their own electricity from local sources. This can reduce dependence on imported fuels and give countries more control over their energy choices. However, the new system relies on different bottlenecks. It needs large amounts of specific minerals, advanced manufacturing capabilities and digital infrastructure for managing electricity flows. These new elements bring new forms of dependence and competition. A state that dominates battery manufacturing or solar-panel production can shape market prices, set technical standards and gain leverage over others.

The shift from old to new power therefore creates winners and losers. Traditional oil and gas exporters may face declining revenue and have to diversify their economies while countries that invest early in clean-energy industries may gain jobs, influence and strategic partnerships. The poster’s central image of the world map between the oil pump and the wind turbine reflects this tension between the fading fossil-fuel system and the emerging low-carbon order.

Another reason this change from old power to new power is important is that everyday life still depends on stable energy. Even today, if fuel prices rise or there is a power cut, it immediately affects transport, jobs, school work and health services. In many countries, protests have started when petrol or electricity suddenly became too expensive which shows how closely energy and politics are linked. For this reason, governments cannot simply switch to renewables without planning; they must manage the old and new systems together for many years. This explains why the poster keeps the oil pump and the wind turbine in the same frame because both types of energy will exist side by side during the transition.

## **2. The Critical Mineral Race**

The heading “The Critical Mineral Race” on the lower left of the poster underlines that clean energy still depends on physical resources. Technologies like lithium-ion batteries, permanent magnets for wind turbines, solar-panel cells and electronic power systems require minerals such as lithium, cobalt, nickel, copper and rare earth elements. These minerals are not evenly spread around the world. Instead, a few countries have large reserves while processing and refining capacity is concentrated in a small number of industrial centres.

This creates a new layer of energy geopolitics. Importing countries that want to expand their use of electric vehicles or renewable power need secure and long-term access to these materials. They may compete with each other to sign mining contracts, invest in foreign projects or develop strategic partnerships with resource-rich countries. At the same time, producer countries are aware of their importance and may introduce policies such as export taxes, local-processing rules or state participation in mining companies to capture more value.

There are also social and environmental concerns. In some mining regions, especially because of the weak governance, there have been reports of poor working conditions, child labour and serious pollution of land and water. This puts pressure on companies and governments to adopt responsible-sourcing standards, transparency rules and better monitoring of supply chains. It also links the energy transition to questions of global justice: who benefits and who bears the costs of the new energy system?

Because of these dynamics, some analysts speak of a “mineral race” similar to earlier races for oil and gas but with more complex ethical dimensions. The poster’s reference to a “new geopolitical frontier” in this section points to the idea that control over these minerals and their processing will be a central feature of international politics in the coming decades.

For a country like India, the critical mineral race has special meaning. India has large energy demand but very limited domestic reserves of lithium and cobalt so it has to import most of the materials needed for batteries. This makes India sensitive to price changes or export controls in the countries that mine and process these minerals. To reduce this risk, India is trying to sign long-term supply agreements, explore new deposits at home and promote battery recycling so that part of the demand can be met from used products rather than only from fresh mining. These steps show how national energy security and mineral policy are now closely connected.

## **3. EV Supply Chains and Technology Competition**

The right side of the poster includes the theme “EV Supply Chains” which points to the role of electric vehicles in the energy transition. Electric vehicles reduce oil demand but the batteries inside them connect the car industry to the critical-minerals system.



Battery production is highly concentrated in certain regions and many countries rely on imported cells or components for their own vehicle industries.

This creates strategic competition. Governments now offer subsidies and regulations to build domestic battery plants, to attract investment and to reduce reliance on foreign suppliers. Trade rules, industrial policy and technological innovation in areas such as next-generation batteries and recycling all have geopolitical effects because they decide who will control key parts of the future transport system.

India is also trying to position itself in these global EV supply chains. The government has announced incentives for setting up battery-manufacturing units and for assembling electric vehicles within the country. Several Indian companies are exploring partnerships with foreign firms to bring advanced battery technology and to build gigafactories domestically. At the same time, policies that support charging-station networks and public-transport electrification aim to create a reliable local market for these new products. If these plans succeed, India can reduce its oil-import bill and create new industrial jobs but if they fail, it may remain dependent on imported vehicles and battery packs from a few foreign suppliers.

#### **4. Climate Security and Infrastructure Vulnerability**

Another set of phrases on the poster are “Climate & Security,” “Infrastructure Vulnerability,” and “Energy Resilience” which emphasises how climate change affects all kinds of energy systems. Extreme weather such as storms, droughts and heatwaves can damage fossil-fuel infrastructure like refineries and pipelines but it can also disrupt hydropower, solar output and electricity grids. When power systems fail, the consequences can include economic losses, social unrest and cross-border tensions especially when neighbouring countries share rivers or grids.

Because of these risks, states increasingly think of energy policy as part of national security. Investments in stronger grids, backup capacity, storage and diversification are not only technical decisions but also strategic choices that shape alliances and dependencies. For example: a country that relies heavily on imported gas may speed up wind and solar projects to reduce vulnerability to supply disruptions while also seeking new partners for electricity-interconnection projects.

Recent events in India give clear examples of how climate and energy security are linked. Heatwaves in several states have pushed electricity demand to record highs and at the same time reducing the efficiency of thermal power plants and transmission lines. Heavy rains and floods have damaged substations, roads and railway lines that are needed to transport fuel and repair equipment. In hilly regions, landslides have affected both hydropower stations and the grid lines connected to them. These experiences make it clear that planning for future energy systems in India must include careful study of climate risks so that new projects are built in safer locations and with stronger designs.

## **5. Regional Hotspots and Shifting Alliances**

The poster section on “Regional Hotspots” suggests that the geopolitics of the energy transition plays out differently across the world. Regions that are rich in minerals or with strong manufacturing bases may gain influence while some traditional fossil-fuel exporters face the challenge of diversifying their economies. At the same time, areas that are highly exposed to climate impacts but have limited financial resources may struggle to adapt their energy systems while increasing inequality between countries.

These differences influence alliances. Importing countries seek stable partners for long-term supplies of minerals and clean-energy equipment. Producer countries negotiate from positions of strength but must also manage environmental and social pressures at home. International organisations and financial institutions are increasingly involved in funding clean-energy projects, setting standards and encouraging cooperation but there is still competition over who will set the rules of the emerging energy order.

In this changing environment, alliances are becoming more flexible. Countries may cooperate with one group of partners on fossil fuels, with another group on minerals, and with yet another on research and development. For example: a state might buy oil from traditional suppliers, seek lithium from South American or African producers and join technology platforms with advanced industrial economies. This mix of relationships can improve security by spreading risks but it also makes diplomacy more complex because decisions in one area can influence trust and bargaining power in another.

## **Concluding Observations and Future Measures**

### **1. Making the Energy Transition More Secure**

The poster's final theme "Strategic Implications" invites reflection on what governments and global institutions should do in response to these changes. To improve energy security in a fair way, countries need to combine several approaches. First, they should diversify both fossil-fuel and mineral supplies so that no single route or country becomes a critical point of failure. Second, they need to invest in innovation especially in battery technologies that use fewer scarce minerals and in recycling systems that recover materials from used products.

Third, states must strengthen the resilience of their energy infrastructure against climate risks by upgrading grids, building storage and planning for extreme events. Fourth, they should ensure that the transition is socially just supporting workers and communities that currently depend on fossil-fuel industries and improving labour and environmental standards in mining and manufacturing.

### **2. What India Can Do**

India's situation shows both the challenges and opportunities of the global energy transition. On one hand, the country's fast-growing population and economy mean that demand for electricity, transport fuels and industrial energy will continue to rise for many years. On the other hand, India has strong potential for solar and wind power as well as experience with large-scale infrastructure projects. To make its energy transition more secure, India can continue to expand renewable-energy parks especially in states with good solar and wind resources while also investing in grid-level storage and flexible backup power.

Another important area is transport. By promoting electric buses, two-wheelers and urban metro systems, India can lower oil use in cities and reduce air pollution at the same time. Clear and stable policies along with support for domestic manufacturing of EV components, it can encourage private companies to invest in this sector. India can also focus on improving energy efficiency in buildings and industry which reduces overall demand and makes it easier to meet climate goals. Finally, targeted training programmes can help workers in coal and oil-related industries to move into new jobs in renewable-energy construction, operation and maintenance ensuring that the transition is socially fair as well as environmentally sound.

### **3. Role of Global Institutions**

Global institutions have an important role in managing the geopolitics of the energy transition. Organisations such as the United Nations, the International Energy Agency, the World Bank and regional development banks can help create common rules for responsible mining, transparent supply chains and climate-resilient infrastructure. They

can also channel finance and technology to developing countries so that the benefits of the new energy system are more evenly shared.

At the same time, international forums can provide spaces for dialogue when tensions arise over resources, trade or technology controls. If used well, these mechanisms can reduce the risk that competition over critical minerals or clean-energy markets turns into open conflict. The poster suggests that the way states handle these strategic choices today will shape not just energy systems but the broader pattern of cooperation and rivalry in world politics for decades to come.

## **Conclusion**

The poster and this report show that energy security today is about much more than oil. Countries now have to think about critical minerals, battery factories, electric vehicles, climate risks and fair rules for mining and trade. The shift from fossil fuels to clean energy creates new chances for cooperation but also new types of competition. If national governments and global institutions work together, invest in clean technology and protect both people and the environment then the energy transition can lead to a safer, more stable and more sustainable world for everyone.

## CONCLUSION

The shift from fossil fuels to renewable energy is changing not only how the world produces power but also how countries think about security, development and global influence. For many years, nations with large oil and gas reserves enjoyed strong political and economic power but today the picture is more complex because energy systems now depend on technology, minerals and international cooperation. This means that energy policy, foreign policy and climate policy are now closely linked and decisions in one area quickly affect the others.

Oil-exporting countries and organizations like OPEC+ still matter but they no longer assume that high demand will last forever. Many of these states are trying to reduce their dependence on fossil-fuel income by investing in tourism, services, manufacturing and clean energy projects. At the same time, countries that supply lithium, cobalt, nickel, copper and rare earth elements have become more important because these minerals are essential for batteries, electric vehicles and renewable-energy equipment. As a result, power is slowly shifting from traditional oil giants to nations that control critical minerals and advanced technologies.

This new situation creates fresh security risks. Production and processing of key minerals are heavily concentrated in a few countries and some major powers dominate battery manufacturing and clean-energy supply chains. If these supply chains are disrupted by conflicts, export bans or trade disputes then other countries could face shortages and price spikes that threaten their energy transition plans. In mining regions, weak regulation can lead to child labor, unsafe conditions and serious ecological damage which shows that a “green” transition is not automatically fair or sustainable.

To handle these challenges, governments need to take strong and practical steps for the future. One important measure is to diversify suppliers so that no country relies on a single source for vital minerals or components. Building some domestic capacity for mining, processing and recycling can also make energy systems more resilient in the long run. Investment in new battery chemistries, alternative storage technologies and smart-grid solutions can reduce pressure on sensitive minerals and help balance renewable-energy generation even when the sun is not shining or the wind is not blowing. Countries also need to upgrade their infrastructure to cope with climate risks such as floods, droughts, heatwaves and storms which can damage both fossil-fuel and renewable-energy assets.

Another major priority is to ensure that the energy transition is socially just. Workers and communities that depend on coal, oil and gas industries should not be left behind as new technologies expand. Governments can support these groups by offering retraining programs, targeted investments and social-welfare schemes so that they can find decent work in growing sectors like renewables, grid modernization or energy-efficient construction. In mineral-rich regions, authorities must enforce strict environmental rules, protect indigenous and local rights and demand transparent business practices from companies. Only when people see clear benefits and fair treatment will they fully support the transition to a cleaner energy system.

Global institutions have an essential role in guiding and supporting this process. Organizations such as the United Nations, the World Bank and other international bodies can help design common standards for responsible mining, safe working conditions and transparent supply chains for minerals and clean-energy technologies. They can provide climate finance, technical advice and capacity-building to developing countries so that these states can adopt renewable energy without falling into new forms of dependency or debt. Multilateral agreements including the Paris Climate Accord offers a shared platform where countries can set targets, monitor progress and cooperate on technology transfer and adaption measures.

These institutions can also reduce tensions by encouraging dialogue on sensitive issues such as cyber-security of energy grids, cross-border electricity trade and rules for emerging sectors like green hydrogen and digital energy markets. By bringing together governments, experts, businesses and civil-society groups, they create spaces where different interests can be negotiated peacefully rather than through confrontation. In this way, global institutions act as both referees and partners helping countries to manage competition while still working toward common climate and development goals.

Overall, the future of energy geopolitics will be shaped by how wisely countries use this period of transition. If states focus only on narrow national gain, new rivalries over minerals, technologies and digital systems may replace old conflicts over oil. But if they invest in innovation, protect vulnerable communities and cooperate through strong global institutions, the energy transition can support a cleaner environment, more stable economies and a fairer world order. In that sense, energy policy becomes not just a technical issue but a key path toward shared security and sustainable development for all.

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