

MINERAL ECONOMICS AND BUSINESS

Prof. Bibhuti Bhusan Mandal

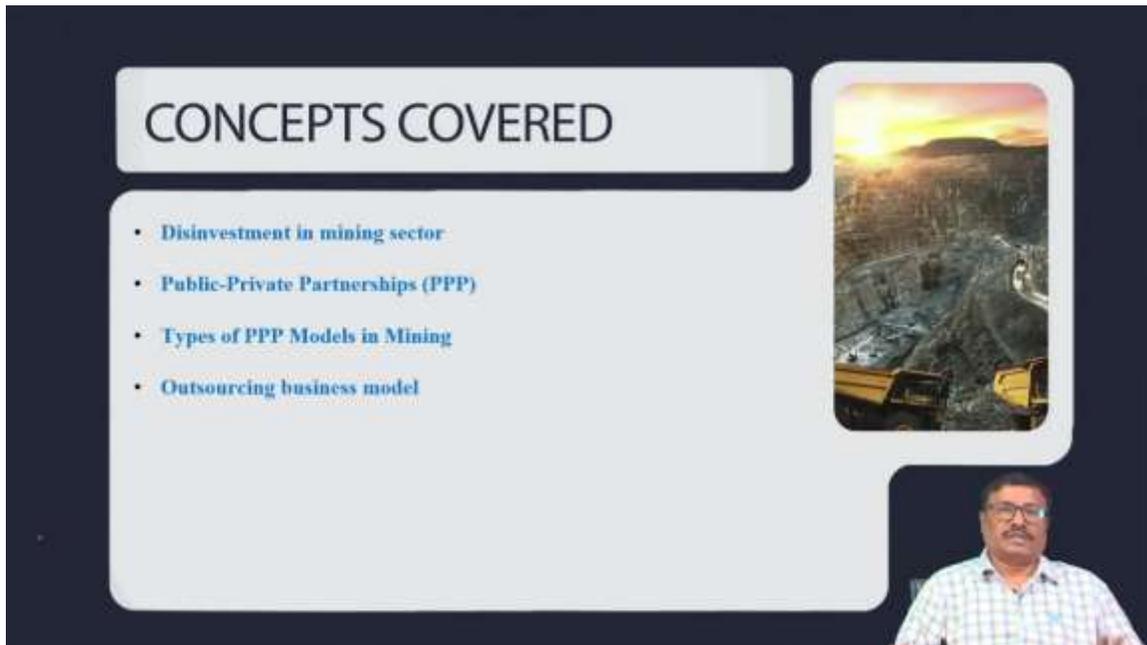
Department of Mining Engineering

IIT Kharagpur

Week 12

Lecture 59 : Current strategies in mining business

Hello, welcome everybody. In the last two lectures, I talked about the national mineral policy in two parts. And today, I have selected certain topics which I have reasons to believe are basically the effect of the implementation of the national mineral policy. They are basically the different strategies that are adopted by the mining business in India, which is growing day by day in number. So, our topic today will be the current strategies in the mining business, especially in our country.



The slide features a dark blue background. At the top left, a white rounded rectangle contains the title 'CONCEPTS COVERED'. Below it, a larger white rounded rectangle contains a bulleted list of four topics. To the right of the list is a vertical rectangular image showing an aerial view of a mining operation at sunset. In the bottom right corner, there is a small inset photo of the professor, Prof. Bibhuti Bhusan Mandal, wearing a checkered shirt and glasses.

CONCEPTS COVERED

- Disinvestment in mining sector
- Public-Private Partnerships (PPP)
- Types of PPP Models in Mining
- Outsourcing business model

The topics that will cover the concepts are disinvestment, which is very important, public-private partnership, types of PPP model, and outsourcing. So, disinvestment, public-private partnership, and outsourcing—these three topics will be covered in this lecture. Disinvestment, by this time, refers to the process of selling or liquidating the government's stake in any public sector enterprise. Like, say, you have 100 percent

ownership of a company—a mining company. And, as part of this disinvestment procedure, we are selling.



Disinvestment in mining sector

- Disinvestment refers to the process of selling or liquidating government stakes in public sector enterprises (PSEs) to private entities, institutional investors, or the general public.
- The mining sector in India has historically been dominated by public sector enterprises. Disinvestment aims to enhance efficiency, promote private sector participation, and attract foreign investment.
- **Disinvestment in the Indian mining industry** has been pursued for several reasons, **primarily aimed at promoting efficiency, improving competitiveness, and attracting private investment.** Some key reasons for disinvestment in the Indian mining sector are discussed in the following slides.

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So, we started, even long back, by selling only 2 percent or 3 percent of public sectors. So, the people, the companies which had cash problems. So, from there, you can earn—you can get money to run the business. In the long run, our idea was to, if possible, wherever necessary, complete this disinvestment also. That means slowly, the government stake will be reduced, government control will be reduced, and we will encourage the private sector partner's involvement to grow day by day.

So, this will not only encourage the private sector as it is, but also institutional investors outside the government and the general public. That means the shares go to the market shareholders. So, the mining sector has historically been dominated by public sector enterprises, especially just after independence. Later on, when we could understand that to become more competitive and be a part of the open market economy, we needed to go for more private sector participation. So, the disinvestment aims to enhance efficiency, promote private sector participation, and attract more foreign investment. So, this has been pursued for several reasons.

We definitely want to promote efficiency, improve competitiveness, and attract private investment. So, we will go further and see what the different aspects of this investment are. This is basically aimed at improving efficiency and productivity. The government may opt for disinvestment to introduce market discipline and efficiency into state-owned mining enterprises, which are protected by the government. So, people who have a sense of job security and all these things, but continuously decline in efficiency—disinvestment and decentralization are very important.



Disinvestment in mining sector

- **Efficiency and Productivity:** The government may opt for disinvestment to **introduce market discipline and efficiency** into state-owned mining enterprises. **Private sector participation often brings in expertise, technology, and management practices that can enhance productivity and operational efficiency.**
- **Financial Constraints:** State-owned mining companies in India have **historically faced financial challenges, including high debt burdens and inefficiencies.** Disinvestment can help alleviate financial pressure on the government by reducing the need for continuous capital infusion into these enterprises.
- **Resource Allocation:** **Disinvestment allows the government to reallocate resources from non-strategic sectors like mining to priority areas such as healthcare, education, and infrastructure development.** Selling off state-owned mining assets can generate revenue that can be reinvested in critical sectors for economic growth.



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The private sector will definitely bring in expertise because they are more open, more connected to the world, and bring the latest technology to be more competitive in the market. They also bring the latest management practices that can enhance productivity and improve operational efficiency. There are, of course, financial constraints which are very important. In the 80s and 90s, state-owned mining companies also had serious financial trouble. So, we have always faced financial challenges. When you are not doing well, the government has to infuse capital—bring money from somewhere else—and give it to the mining company to run it. Second, we used to take debt from different banks or financial institutions, which was very difficult to pay back. We also suffered from inefficiencies and could not change in tune with global changes. So, this disinvestment can help alleviate financial pressure. It can reduce the financial pressure on the

government by reducing the need for continuous capital infusion, as I was saying, into these enterprises.

Disinvestment will definitely bring funds to the government because we are selling certain stakes and we get money. So, this can be reallocated from non-strategic sectors like mining to priority areas where, for example, you want to invest more in healthcare, education, or infrastructure and development that year. So, you can disinvest in the mining sector, for example, bring that money, and reinvest it in some other places where the government thinks more support is required. So, selling government stakes will definitely generate revenue that can be reinvested in critical areas which are necessary and which the government thinks are critical for the economic growth of the country. This investment, in general, as I said repeatedly, encourages private investment.

Disinvestment in mining sector

- **Encouraging Private Investment:** Disinvestment sends positive signals to private investors about the **government's commitment to economic liberalization and market-driven policies**. This can stimulate private investment in the mining sector, leading to increased competition, innovation, and job creation.
- **Policy Reforms:** Disinvestment initiatives are often part of broader policy reforms aimed at **deregulating and liberalizing the economy**. By reducing the government's presence in the mining sector, policymakers seek to create a **more conducive environment for private sector participation and market-driven growth**.

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So, this is in tune with the government's commitment, as we have seen in the National Mineral Policy or the government's commitment to economic liberalization and market-driven policies. This will definitely stimulate private investment in the mining sector. It will lead to increased competition, more innovation, and more job creation. Now, these disinvestment initiatives are often part of broader policy reforms. What are these broader policy reforms like?

Deregulation and liberalization of the economy. This is the broader. So, disinvestment is one strategy. So, by reducing the government's presence in the mining sector, the

policymakers seek to create a more conducive environment for private sector participation and growth that is market-driven. The disinvestment in the mining sector is in tune with globalization.

More private sector participation, including investment from foreign investors. It increases international competitiveness and exposes the industry to global market dynamics. Technology transfer, wherever necessary, and best practices can be easily adopted by experts who can infuse their knowledge. We can add best practices and improve operational efficiency. So, this investment can be applied in our mining context within the Indian mining industry. This is part of our broader economic reforms, as I said, to increase competitiveness, improve efficiency, and encourage private sector participation.

Disinvestment in mining sector

- **Globalization and Competition:** In the era of globalization, disinvestment can make Indian mining companies more competitive internationally by exposing them to global market dynamics, technology transfers, and best practices.

Overall, disinvestment in the Indian mining industry is pursued as part of **broader economic reforms aimed at fostering competitiveness, efficiency, and private sector participation while generating revenue for the government and promoting sustainable development.**

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This will generate revenue for the government and promote sustainable development by adding to the existing structure. Disinvestment also paves the way for another strategy in the mining business. Greater private sector involvement is integral to the next stage, which you can think of as the public-private partnership or PPP model. So, when we talk about disinvestment, we invariably refer to privatizing ownership.

But then, public-private partnership emphasizes collaboration between public and private entities. Why? This is to leverage resources and expertise for the mutual benefit of both public and private sectors. Now, disinvestment lays the groundwork for PPPs by creating

a competitive, open environment. So, where the public and private entities can work together more effectively than ever before. This is basically PPP is a collaborative agreement between the public sector and the private entities in respect of finance, development and on operation of the projects. So, they try to combine the strains of both the sectors. the government oversight and private sector efficiency. This is ideally the philosophy behind the creation of public private partnership.



Disinvestment to PPP

- **Disinvestment as a precursor to PPP:** Disinvestment reduces government control, paving the way for greater private sector involvement, which is integral to Public-Private Partnerships.
- **The shift in focus:** While disinvestment focuses on privatizing ownership, PPP emphasizes collaboration between public and private entities to leverage resources and expertise for mutual benefit.
- Disinvestment lays the groundwork for PPPs by creating a competitive, open environment where public and private entities can work together effectively.



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The governments long your this thing experience in administration and the connections of different ministries and at the same time the private sector efficiency. If you add together then we think that the private public private partnership can lead to a sustainable development in mining industry. So, this will address the resource infrastructure gaps, this will again increase the private investment in high capital projects, where the government might have trouble in infusing a high amount of high amount of capital at a particular moment. So, you can invite the private sector to bring in more investment. And of course, by including the private sector in the business, you can think of more innovation, more technology adoption in mining easily than ever before.

So, this gives an opportunities for the private players to invest in the high capital mining ventures and depending on traditionally as we dependent on the government. And through PPP also the critical mining structures infrastructure likes roads, railways or

processing plants they can be developed more quickly by investing by inviting the private partnership. So, our aim is to increase the resource extraction efficiency, minimizing the wastage, maximizing the output. So, this PPPs will help all as that countries to compete in the global mining industry through these processes. Now we will give some simple example like the built operate transfer or BOT model very now in a popular here in our country.

Public-Private Partnerships (PPP)

- Public-Private Partnerships (PPP) are collaborative agreements between the public sector (government) and private entities to finance, develop, and operate projects.
- PPPs aim to combine the strengths of both sectors—government oversight and private sector efficiency—for sustainable mining development.
- **Importance:**
 - Addresses resource and infrastructure gaps.
 - Encourages private investment in high-capital projects.
 - Promotes innovation and technology adoption in mining.

The slide features a yellow header and footer. The footer contains logos for 'Mineral Economics and Business' and 'Prof. Bibhuti Bhusan Mandal & Prof. Shantanu Kumar Patel, Department of Mining Engineering, IIT Kharagpur'. A video inset in the bottom right shows a man in a checkered shirt speaking.

So, in this model, developing the mines with private players first. Building infrastructure very fast and operating it for a fixed term. So, the whole system is taken—you can take a trial to see whether it is running, identify the problems, correct them, and ultimately, when it is stabilized and fully developed, transfer it back to the government. This is a beautiful model in this way—you can develop the mines very fast and put them into operation. So, what are the benefits that we get?

It ensures the creation of immediate public investment asset creation. So, we are creating assets without immediate public investment. Immediately, you do not require thousands of crores to create these things. So, you can bring the private sector there, develop it, run it for a fixed term, and then hand it over to the government. Also, we can think about joint ventures where the government will collaborate with private companies.

So, this will be a joint, truly public-private partnership. So, both partners will share risks and rewards because both are the owners. So, also, the service contracts are typical. A private contractor is hired for exploration, drilling, or say, ore processing this part. So, key benefits.

Key Objectives of PPP in Mining

- PPPs provide opportunities for private players to invest in high-capital mining ventures, reducing government dependency.
- Through PPPs, critical mining infrastructure such as roads, railways, and processing plants can be developed more quickly.
- PPPs aim to enhance resource extraction efficiency, minimizing wastage and maximizing output.
- By leveraging private sector innovation and management, PPPs help countries compete in the global mining industry.

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So, the government retains control over the key part of the business while utilizing private expertise. This is a good model of a combination of their own strengths. So, both have their own strengths in different ways. We combine them, and then it becomes stronger. We will give some examples, like the National Mineral Exploration Trust in our country, which promotes private sector participation in exploration activities in line with the National Mineral Policy.

Government initiatives like Make in India and FDI (Foreign Direct Investment) reforms encourage PPPs in mining and allied sectors. For example, in recent developments, the privatization of coal mines has led to a huge number of coal mines being operated by private companies. The government has allowed 100 percent foreign direct investment in commercial coal mining, boosting the private sector manyfold. So, these successful partnerships in mineral-rich states like Chhattisgarh, Odisha, and Jharkhand for coal and iron ore mining projects have seen many success stories. Another example is Coal India,

the biggest company, which will be the nodal and executing agency for coal mining PPPs, aiming to add about 60 to 70 million tons per annum capacity in the coming years.

Types of PPP Models in Mining

Build-Operate-Transfer (BOT): Developing mines with private players building infrastructure, operating it for a fixed term, and transferring it back to the government.

- Key Benefit: Ensures asset creation without immediate public investment.

Joint Ventures (JV): Government agencies collaborates with private companies for resource extraction and profit sharing.

- Key Benefit: Both partners share operational risks and rewards.

Service Contracts: A private contractor is hired for exploration, drilling, or ore processing.

- Key Benefit: Government retains control while utilizing private expertise.



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Already, CIL has been using contract miners for overburden removal and, in some cases, coal mining as well. This has been very successful, and we are actually getting the benefit of private efficiencies along with government control in key areas. Now, we come to the third one, which is also very popular now: outsourcing the mining business. Outsourcing. So, we had private disinvestment, then we had PPP partnerships, and now we are almost completely outsourcing the whole thing.

PPP in Indian Mining Sector

- **Policy Support:**
 - The National Mineral Exploration Trust (NMET) promotes private sector participation in exploration activities.
 - Government initiatives such as 'Make in India' and FDI reforms encourage PPPs in mining and allied sectors.
- **Recent Developments:**
 - Privatization of coal mining: The government allowed 100% FDI for commercial coal mining, boosting private sector involvement.
 - Successful partnerships in mineral-rich states like Chhattisgarh, Odisha, and Jharkhand for coal and iron ore mining projects.
- **Example**
 - It has been proposed that Coal India Ltd (CIL) will be the nodal and executing agency for coal mining PPP. Development of coal mining projects of CIL through PPP aims to add about 60-70 million tonnes per annum capacity in the coming years. CIL has been using contract miners for overburden removal and, in some cases, for coal winning; this has been successful in harnessing private efficiencies.



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So, you must have seen nowadays that there is a very skeletal structure in a company, which includes key persons from the main company like managers, mine agents, owners, and some safety officers, but the rest of the operations are all outsourced. How did it actually occur? How did it happen? How do we understand the benefit of all these things? The PPP actually focuses on long-term collaboration for mining projects.

PPP to Outsourcing

- **From Collaboration to Specialization:** Public-Private Partnerships focus on long-term collaboration for mining projects. Within such partnerships, outsourcing specific activities to specialized contractors ensures operational efficiency and cost-effectiveness.
- **Building on the PPP Framework:** PPPs often encourage the inclusion of third-party service providers to handle non-core operations like drilling, maintenance, and logistics, ensuring streamlined project execution.
- The collaboration model of PPP naturally extends to outsourcing as mining companies and public entities increasingly rely on specialized third-party services for efficient operations.

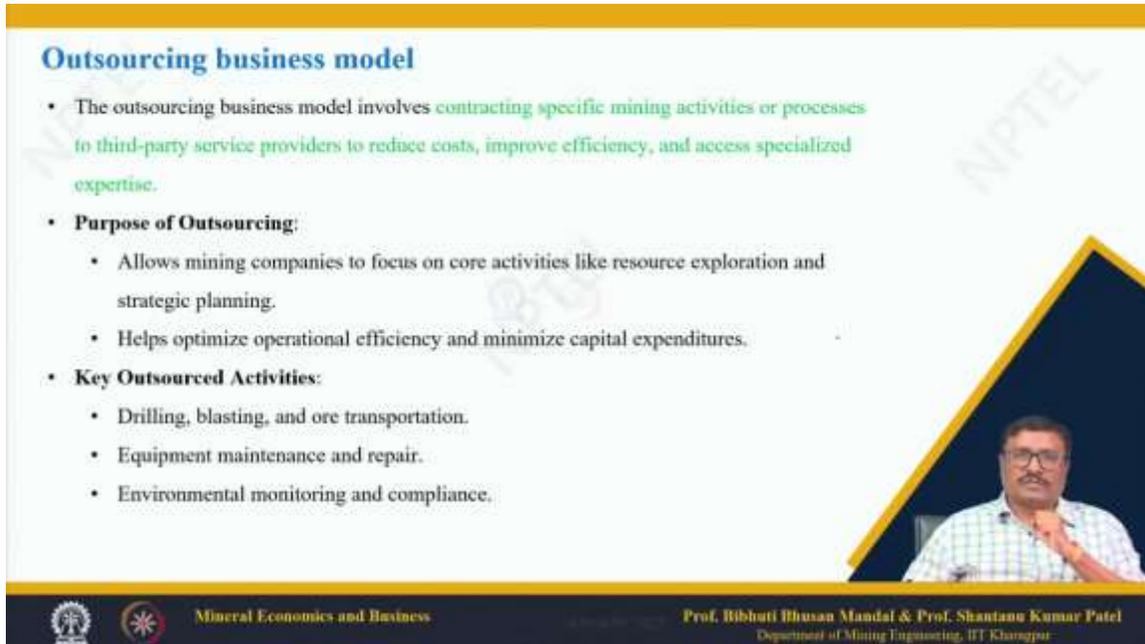
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So, within such partnerships, outsourcing specific activities to specialized contractors ensures operational efficiency and cost-effectiveness. That means now you are outsourcing part of the business or most parts to different contractors. You have to coordinate them and get maximum efficiency from them. Now, basically, it was built upon the PPP framework. So, the PPPs basically often encourage the inclusion of third-party service providers to handle non-core operations like drilling, maintenance, and logistics to ensure that the project execution is fully streamlined and smooth.

So, from there, we got more ideas that more and more things should be outsourced. So that we can utilize specialized third-party services to increase operational efficiency as a whole. The outsourcing business model involves contracting specific mining activities or processes. So that we can reduce costs, improve efficiency, and have easy access to specialized expertise. So, what is the purpose? Just write down one or two things here: it

allows mining companies to focus on core activities like resource exploration, strategic planning, or even safety.



Outsourcing business model

- The outsourcing business model involves **contracting specific mining activities or processes to third-party service providers to reduce costs, improve efficiency, and access specialized expertise.**
- **Purpose of Outsourcing:**
 - Allows mining companies to focus on core activities like resource exploration and strategic planning.
 - Helps optimize operational efficiency and minimize capital expenditures.
- **Key Outsourced Activities:**
 - Drilling, blasting, and ore transportation.
 - Equipment maintenance and repair.
 - Environmental monitoring and compliance.

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So, this part we can take care of environmental control. And it helps optimize the operational efficiency and minimize the capital expenditures. You can just give them contract tonnage-wise, metre-wise development. So, you have to make a few kilometres of the decline. So, what will be the per-metre payment like that?

So, you do not have to maintain your inventories and other workshops—all these things will be done by the outsourced agency completely, and you get the benefit of operational efficiency. Now, what are the things that we outsource nowadays? I think nowadays almost everything can be outsourced, but to give you an example: drilling, blasting, ore transportation, equipment maintenance, and repair. In the transportation itself, you will see that the dumpers are being supplied by a third party.

So, you do not have to maintain all those things, and you do not have to invest in purchasing all that equipment. So, you can order 30 dumpers in the morning, you get them, and the repair and maintenance are taken care of by the supplier. Environmental monitoring and compliance can also be outsourced to specialized agencies. This outsourcing business model, as I said, is growing steadily in our country at the moment.

The cost efficiency is easily understood—outsourcing allows mining companies to access specialized services.



Outsourcing business model

Currently the outsourcing business model in the Indian mining industry has been steadily growing.

Several factors contribute to the prevalence of outsourcing in the Indian mining sector:

- **Cost Efficiency:** Outsourcing allows mining companies to access specialized services and expertise without the burden of maintaining large in-house teams. This can lead to cost savings in terms of salaries, benefits, and infrastructure.
- **Regulatory Environment:** India's mining industry is subject to complex regulatory requirements, including environmental and safety standards. Outsourcing certain tasks can help companies ensure compliance while leveraging the expertise of service providers familiar with these regulations.



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you do not have to use people who are unskilled in particular thing. So, only the skilled people known for their efficiency and skill in a particular job will be hired and then your outsourcing will be given to those parties. So, you save a lot of cost and you get a lot of benefits. Now, as that we have regulatory complex regulatory requirement in the beginning. Now, we are slightly streamlining things and especially in case of environmental compliance all those formalities are a time taking.

So, this happens when you are getting expertise of the service providers who are familiar with these kind of regulations, how to manage things, how to prepare documents, how to take So, that we can expedite the process of the ah the permissions approval we get we can we can engage consultants also and easily get back into the business and run it smoothly. ah The adoption of different advanced technologies through the outsource models like this drones, remote sensing, data analytics they have made the outsourcing more attractive. And the ah the government the basic infrastructure or the or the skeleton structure as I said in the beginning that they can focus on the core competency ah the business how much we are getting the benefit, look at the exploitation of the or

exploration of the ore and all those things ah planning part that part we can take care of.



Outsourcing business model

Currently the outsourcing business model in the Indian mining industry has been steadily growing.

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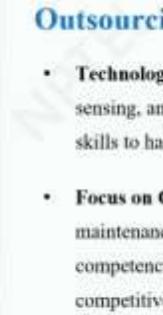
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Also in infrastructure development we can outsource the entire thing instead of doing it on your own which faces lot of challenges. So, we can do the infrastructure development through outsourcing very fast and in they said in the 5-10 years we have seen that the infrastructure development through outsourced agencies are very common and the growth is growth is visible in it is taking it is taking care of all those hurdles and then you can see the growth in infrastructure section everywhere. Now, the outsourcing model also faces certain challenges this is general this is not only in India this can happen anywhere. So, the changes in the regulatory policies or environmental norm can impact the outsourcing contract.

So, it could be more difficult for engaging outsourcing and maintaining the standard, the environmental standard or safety standard at the same time because you need to have a very close look. or supervision on what this outsourced agencies are doing. There are examples where this there are outsourced agencies which have not taken care of ah the safety and of course, they have mined out certain high grade areas in mines underground mines and they are left they have neglected the low grade areas. So, what happens that you are violating the the conservation of minerals or principles. In that case also the the

the challenges are there that means, we need to have more supervisory and more introspective ah look at what this outsource agencies are doing.



Outsourcing business model

- **Technological Advancements:** The adoption of advanced technologies such as drones, remote sensing, and data analytics has made outsourcing more attractive as companies seek specialized skills to harness these tools for efficient and sustainable mining practices.
- **Focus on Core Competencies:** By outsourcing non-core functions such as equipment maintenance or waste management, mining companies can concentrate on their core competencies like exploration or ore extraction, thereby enhancing operational efficiency and competitiveness.
- **Infrastructure Development:** India's mining industry often faces challenges related to inadequate infrastructure, such as transportation networks. Outsourcing certain activities like logistics and transportation to companies with established networks can mitigate these challenges.



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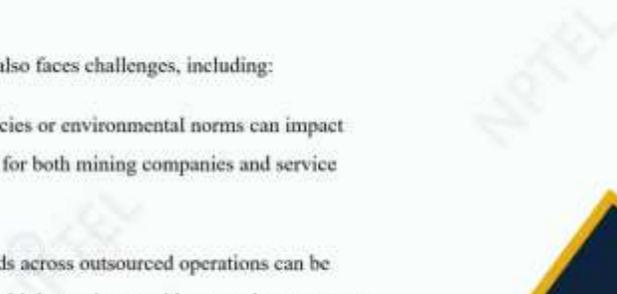
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Otherwise in the long term this can be difficult to manage. As I said maintaining quality standards across outsource operations can be challenging and because there are lot of there are multiple sub service providers and they also subcontract certain things. So, you need to coordinate and then have a close look as how things are going on because they have their interest and there could be conflict of interest also. So, some people will see their own business and then neglect whether the whether whole company is growing or not because that is not their business they think that I have my part to complete. So, I will do that.

So, this coordination becomes a challenging things in outsourcing business model. In the socio-economic concerns there are we have seen it that there are social and economic tensions, especially job security of the local people. A contractor may like to bring labour from outside. So, the local labour may be neglected. So, that we have to see that the contractor should engage as much as possible the local people.

So, the labour rights violation has to be looked into, and the community relation between the mining company and the local community—that means the local people—needs to

be... that could be challenging because these outsourced agencies are absolutely foreign parties, I mean, not belonging to those places, and they can have a contract for a few years, maybe 3 years or 4 years, then they will go. So, their sense of belongingness to that place will not be the same as the government-owned companies. We have to see that there should not be a conflict of interest, and the relation with the community—the local community—should be conducive, and a good relationship with the community should be maintained. So, there should not be any complaint; there should not be any socio-economic concern that can hamper the business as a whole.



Outsourcing business model

Outsourcing model in the Indian mining industry also faces challenges, including:

- **Regulatory Risks:** Changes in regulatory policies or environmental norms can impact outsourcing contracts, leading to uncertainties for both mining companies and service providers.
- **Quality Control:** Maintaining quality standards across outsourced operations can be challenging, particularly when dealing with multiple service providers or subcontractors.
- **Socio-economic Concerns:** Outsourcing can sometimes lead to social and economic tensions, especially concerning issues such as job security, labor rights, and community relations in mining regions.



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There could be regions where the labour laws are weak—the state labour laws. So, there can be unethical practices. You will see that, in many places, the contractual labourers are working beyond even 12 hours. We talked about 8 hours; now, 10 hours could become normal, and sometimes they are working beyond 12 hours. And the wages are low compared to the government wages.

Poor working conditions—this can happen. Because you have outsourced, and you are trying to forget that it is a matter—these things belong to the contractors, which is not true. We need to look into this matter and see that these poor working conditions should be removed. The wages—they should follow the government laws about the minimum

wages. And there should not be any unethical practices, no discrimination—all these things are to be seen.



Outsourcing business model

- **Exploitation of labor:** Outsourcing firms, especially in regions with weak labor laws, may engage in unethical practices such as low wages, poor working conditions, or unsafe work environments, leading to exploitation of workers.
- **Security Risks:** Outsourcing certain functions may expose mining companies to cybersecurity risks or intellectual property concerns, particularly when dealing with sensitive data or proprietary technologies.

Overall, while outsourcing continues to be a prevalent business model in the Indian mining industry, its success depends on careful consideration of the aforementioned factors and effective management of associated risks

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So this outsourcing business model has new challenges. This has obvious benefits but also there are certain things which are requires our attention more than ever before. There could be certain functions because we are involving many people in one business and they are contributing different expertise in different sectors but we are exposing ourselves. It could be matters of cyber security, risks, there could be matters related to the intellectual property rights. We need to be careful about our data security, our information, our safety worker safety in mining and any unethical practices for as far as the low wages, poor working conditions this has to be removed.

So the outsourcing business gives more benefit definitely but at the same time its success will depend on careful consideration of these factors and effective management of this risk that I have just now discussed which is very very important. Thank you and ah in this class we have ah we in this particular lecture I have tried to explain different business models which are basically the reserves of the implementation of the long term national mineral policy. Thank you very much.