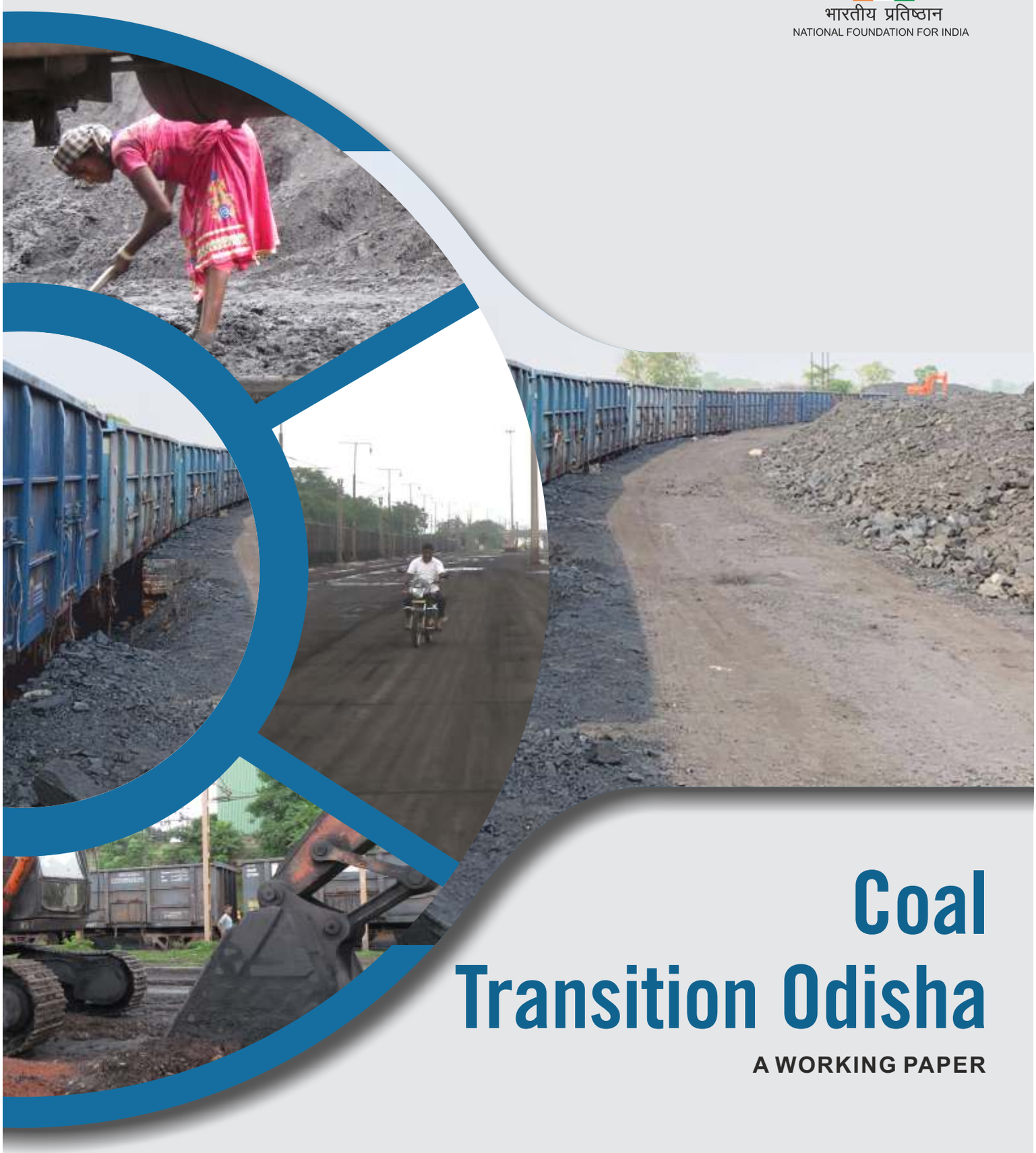
भारतीय प्रतिष्ठान
NATIONAL FOUNDATION FOR INDIA



Coal Transition Odisha

A WORKING PAPER

Authors

Pooja Gupta; Mohammad A. Faraz & Kavya Singhal

Cite this paper as

Gupta P; Mohammad F; Singhal K; Coal transition- Odisha Working Paper, National Foundation For India, September 2022

Published By

National Foundation For India

This study was supported by the Stichting SED Fund

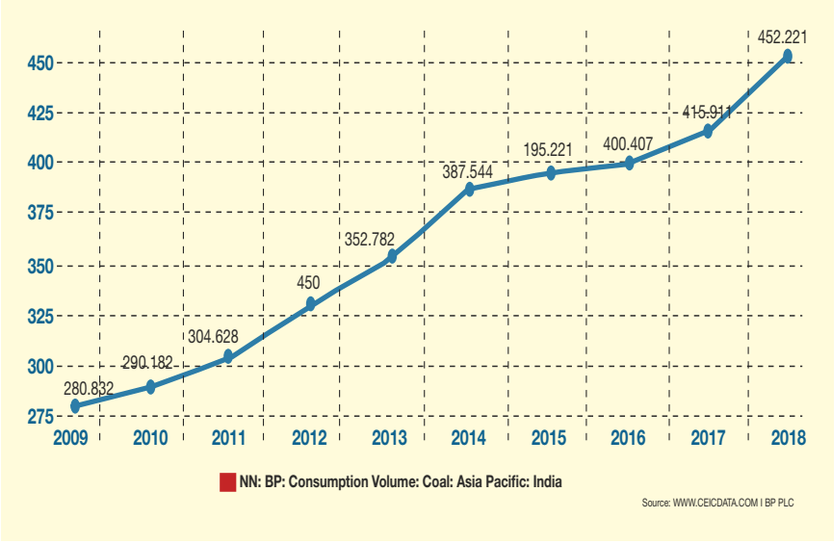
Coal Transition Odisha

A WORKING PAPER

Table of Contents

1 Phasing-down Coal In India

India is the world's third largest energy user, although it ranks 47th in terms of world per capita energy consumption[1]. At present, India has 200 GW electricity generation capacity based on coal. Commercial primary energy consumption in India has grown by about 700% in the last four decades. It accounts for 55% of the country's energy need[2]. The current per capita commercial primary energy consumption in India is about 350 KGOE/year[3]. Coal mining is confined mainly to the Public Sector which contributed 95% to the national production[4]. For more than a century, coal has been the quintessence for the Indian economy and Indian coal consumption has been on a constant increase over the decades.



Source - CEIC Data

> **"The current per capita commercial primary energy consumption in India is about 350 KGOE/year[3]."**

Coal is a way of life in major coal-mining states like Odisha, Jharkhand, Chhattisgarh, West Bengal, and Madhya Pradesh, with profound ties to the social, political, and economic systems. Coal, part of the fossil fuel basket, is the largest contributor towards emission so that the global temperature rise is restricted to 1.5-degree Celsius compared to the pre-industrial temperatures[5]. At the COP26 summit in November

1 https://www.climate-transparency.org/wp-content/uploads/2019/01/Coal-Transition-in-India.pdf
2 https://iea.blob.core.windows.net/assets/1de6d91e-e23f-4e02-b1fb-51fdd6283b22/India_Energy_Outlook_2021.pdf
3 Ministry of Coal
4 https://ibm.gov.in/writereaddata/files/11272019155933Coal_2018_FR.pdf

2021, India announced that it would increase the installed capacity of renewables to 500GW by 2030[6]. India has committed to becoming a net-zero nations, that is, it will offset its emission impacting the climate by 2070[7]. This means India has 49 years to develop a transition strategy and 'phase down' coal in a "fair" way. But, in a growing country like India, where millions of lives and livelihoods are directly or indirectly dependent on coal, what will 'phasing-down' and 'Just Transition' mean[8]?

The emphasis is that the 'phase out' should be done subject to the provision of support to the poorest and the most vulnerable and be in line with national circumstances. In this way, the transition from coal to other forms of energy can be done justly. A 'Just Transition' strategy must ensure that no one is left behind as promised by India in the Glasgow pact. This is critical as the bulk of India's workforce part of the informal sector and is not included in official labour figures. It is important to understand what just transition means for India, especially to the communities, and detail the risks and opportunities of coal phase-out. In-depth research of a top coal mining district of Odisha, where many coal mines are already present and are operational, is urgently needed.

In November, **National foundation For India**[9] came out with a report on Socio Economic Impacts of coal transition in India. Phase-I of the study on coal transition in India[10] consciously presented a socio-economic picture of impact of coal transition on coal, associated industries' workers at large, and its impact on the communities. The purpose of this discussion paper is to present an existing scenario of coal mining in Odisha and how 'Just Transition' will impact the vulnerable communities if not done thoughtfully. This policy brief will help in understanding the nexus of coal mining and other interdependent industries and local economy.

"A 'Just Transition' strategy must ensure that no one is left behind as promised by India in the Glasgow pact."

5 https://energy.economictimes.indiatimes.com/news/coal/coal-korba-and-climate-a-case-study-for-indias-energy-transition/89710332

6 https://economictimes.indiatimes.com/industry/renewables/2030-renewable-energy-target-panel-to-be-set-up-soon-for-mission-500gw/articleshow/88267104.cms

7 https://www.bbc.com/news/world-asia-india-59125143#:~:text=India's%20bold%20step&text=Detailing%20what%20he%20termed%20were,the%20country's%20electricity%20from%20coal.

8 https://www.iddri.org/sites/default/files/PDF/Publications/Catalogue%20Iddri/Rapport/201809-Synthesis%20Report%20Iddri-COALTRANSITIONS-def.pdf

9 https://www.nfi.org.in/

10 https://www.nfi.org.in/sites/default/files/pub https://www.dailypioneer.com/2021/state-editions/at-154-mt-odisha-coal-production-is-2nd-highest.html https://www.dailypioneer.com/2021/state-editions/at-154-mt-odisha-coal-production-is-2nd-highest.htmllication/cti.pdf

2 Coal economy in Odisha

In 2020-21, Odisha produced the second-highest quantity of coal (over 154 Million Tonnes Per Annum (MTPA) in the country after Chhattisgarh[11]. The state shares of about 19.8% to the national output. A total of 455 coal mines (as on 31.03.2018) in India reported production in 2017-18[12] out of which Odisha only had 26 functional mines.

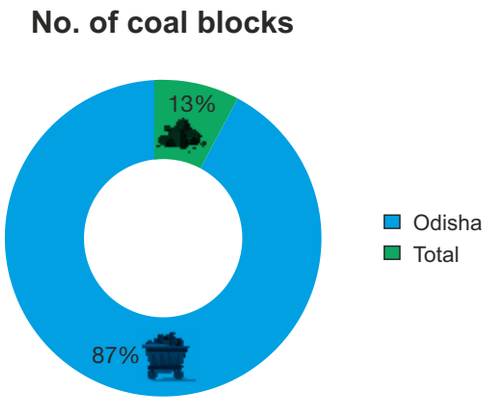


Figure 1 - ***Source:*** *Indian Minerals Year book 2019, Indian Bureau of Mines, Government of India*

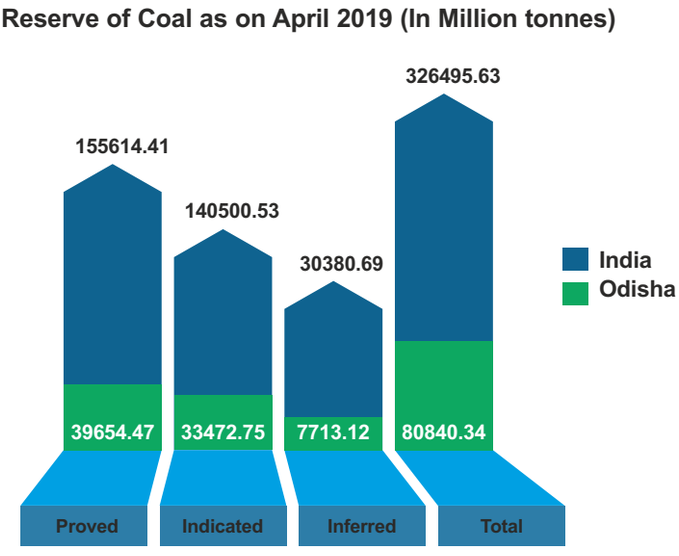
> **"A total of 455 coal mines (as on 31.03.2018) in India reported production in 2017-18[12] out of which Odisha only had 26 functional mines."**

Odisha alone accounts for 84.652 BT (24.61%) of coal reserve[13] out of 336.861 Billion Tonnes (BT) shared by seven states producing coal, which accounts for 22 percent of India 's total coal reserves. The state's GSDP increased at a CAGR of 6.72% between 2016-17 and 2020-21[14].

As per Coal Directory of India, the state hosts some of the big mining subsidiaries like Mahanadi Coal Limited (MCL) a subsidiary of Coal India Limited (CIL), Neyveli Lignite Corporation Limited (NLC), National Thermal Power Corporation (NTPC) Orissa Cement Limited (OCL), Odisha Coal and Power Limited (OCPL), Karnataka Power Corporation Limited (KPCL), and private companies like Essel Mining & Industries Ltd and Global Coal and Mining Pvt. Ltd. (GMR), and others working in collaboration with the state government. These entities have access to 13% of the total coal blocks of the country and 22%[15] of the total coal reserve.

11 https://www.dailypioneer.com/2021/state-editions/at-154-mt-odisha-coal-production-is-2nd-highest.html
12 Indian Mineral Yearbook - IBM 2020
13 Coal Directory of India, 2019 - 20
14 India Brand Equity Foundation (IBEF), India Brand Equity Foundation (IBEF) is a Trust established by the Department of Commerce, Ministry of Commerce and Industry, Government of India.
15 Coal Directory of India, 2019 - 20

Chart No 2: Reserve of Coal as on April 2019 (In million tonnes)



Source: Indian Minerals Year book 2019, 58th Edition, Indian Bureau of Mines, Government of India

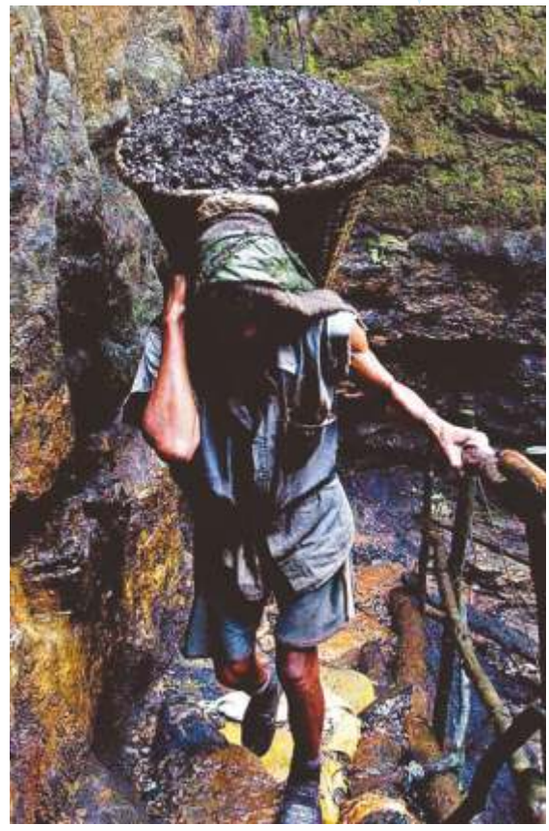
As per the Indian Bureau of Mines[16], Odisha has two coalfields, the Talcher and Ib River. The Talcher alone has 51220.67 MT of reserve accounting for 63% of the total reserve of Odisha. Anugul district coming under Talcher coalfield produced 11.4 MT. Last year, Sundergarh and Jharsuguda collectively produced 69.2 MT of coal, while a small fraction of coal was produced from Sambalpur (0.27 MT) making the three districts key coal producing locations in the state[17].

Majority of the mines in the state are Open Cast Mines (OCM) and about 31% are Underground (UG) mines reflecting the extended engagement of work force these mines have on direct and indirect economy. After mechanization in the coal mines, the workforce requirement in OCM is much less as compared to UG mines. Annex 1 is attached for reference on the details of mines across the state[18].

Table No 1: Production of Coal (Quantity in 000 tonnes)

State	2016-17	2017-18	2018-19 (P)
India	657868	675400	728718
Odisha	139359	143328	144312

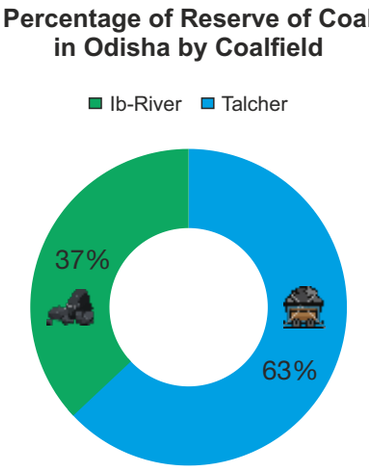
Table - Production of Coal year wise data for Odisha (Quantity in '000 tonnes)
Source: Indian Minerals Yearbook 2019, Government of India, Ministry of Mines, and Indian Bureau of Mines

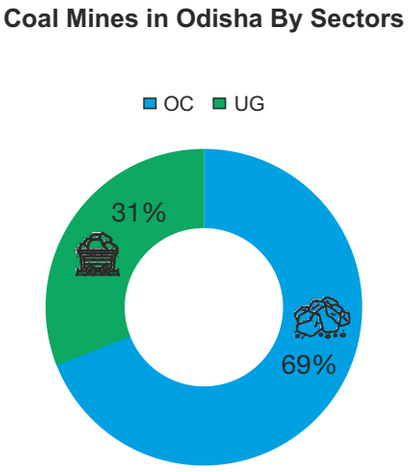


> **"After mechanization in the coal mines, the workforce requirement in OCM is much less as compared to UG mines."**

16 https://ibm.gov.in/writereaddata/files/10192020104607Coal_2019_R.pdf
17 https://mines.gov.in/writereaddata/UploadFile/Mines_AR_2017-18_English_Final%2017052021.pdf
18 The Directorate of Mines, Orissa

Chart No 3 and 4: Percentage of Reserve of Coal in Odisha by Coalfield and Coal Mines in Odisha By Sectors

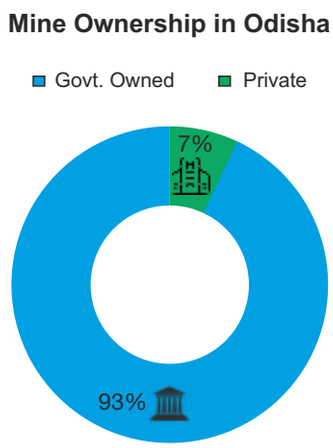




Odisha government, during the 2020-21 financial years, received coal royalty worth over Rs 1,855 crore[19], as per the Union ministry. As per data available by the government of Odisha[20], 30 coal mining leases have been allotted so far, 80% of them are operational and 93% are under government Owned.

> **"30 coal mining leases have been allotted so far, 80% of them are operational and 93% are under government Owned."**

Chart No 5: Mine Ownership in Odisha



Source: Indian Minerals Yearbook 2019, Government of India, Ministry of Mines, Indian Bureau of Mines

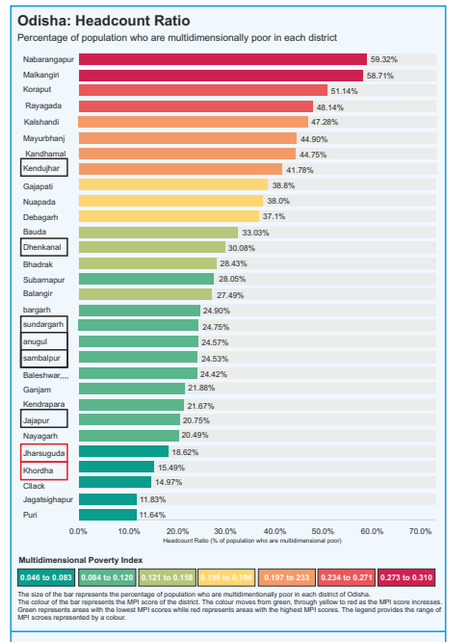
19 https://timesofindia.indiatimes.com/city/bhubaneswar/revision-of-coal-royalty-every-3-years-not-mandatory-centre/articleshow/84633642.cms
20 The Directorate of Mines, Orissa

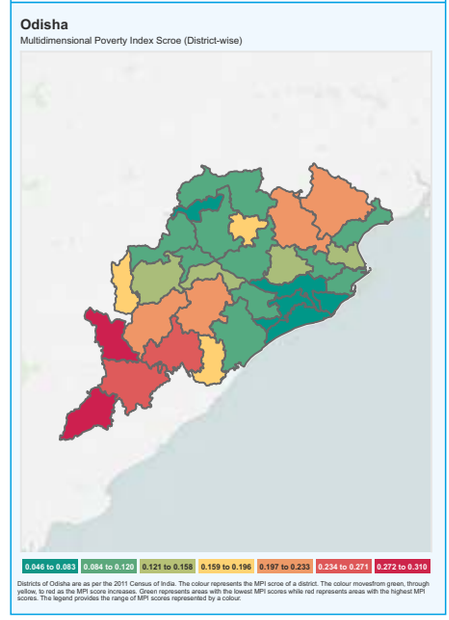
3 Low Standard of Living

Odisha is India's eighth largest state and 29.35% of the state population is poor, ranking it 9th poorest state. 37.26% population in Odisha are deprived of nutrition even though the state is rich in natural resources and generates high revenues. 29.35% of Multi-Dimensional Poverty encompasses the various deprivations experienced by poor people in their daily lives – such as poor health, lack of education, inadequate living standards, disempowerment, poor quality of work, the threat of violence, and living in areas that are environmentally hazardous, among others. 65.30% households in Odisha do not have access to cooking fuel. Their primary source of cooking fuel, dung, wood, charcoal, or coal indicates a low standard of living. Mining activities and massive extraction directly make the agricultural lands and Common Property Rights (CPR) infertile to produce economic benefits, which leads to pauperization[21].

Adverse effects on physical capital generates financial risk. In the context of Odisha, the physical capital of the people has witnessed significant deterioration on both personal and public fronts[22]. Agricultural and CPR land are significant bases on which the livelihood of rural communities is built up. Damage or lack of access to them is the principal source of recapitalization and marginalization[23]. Due to ongoing and large-scale extraction and heavy pollutants[24] like fly ash, the agricultural lands in the regions have degraded and are almost infertile, affecting the land's productivity. It will be difficult to sustain agriculture if the government plans to transition to renewables and close coal mines. The local communities will not have any other source of income and sustenance. Mining practices have also endangered[25] Common Property Rights, and consequently many are now unused[26].

> **"Odisha is India's eighth largest state and 29.35% of the state population is poor, ranking it 9th poorest state."**





Source: National Multidimensional Poverty Index- Baseline Report based on NFHS-4 (2015-16)

21 National Multidimensional Poverty Index- Baseline Report based on NFHS-4 (201516), NITI Aayog, 2021
22 https://link.springer.com/article/10.1007/ s13563-021-00272-5
23 https://www.researchgate.net/publication /338260970_Human_Rights_and_Sustainable_Finance_Exploring_the_Relationshi_-UNEP_Inquiry_into_the_Design_of_a_Sustainable_Financial_SystemInstitute_for_Human_Rights_and_Business/ references
24 https://www.researchgate.net/publication/11065792_Restoration_of_drastically_eroded_land_using_coal_fly_ash_and_poultry_biosolid
25 https://www.researchgate.net/ publication/314832364_Development_and_Displacement_The_Case_of_an_Opencast_Coal_Mining_Project_in_Orissa
26 Ray and Saini 2011

4 District-level Vulnerability Assessment

Out of 30 districts, 9 districts will be impacted due to transition of coal, says the report “Socio-economic Impacts of coal transitions in India" published by National Foundation For India. According to the report, the most susceptible districts towards the transition process will be the ones that have least direct economic involvement with coal and its allied sectors. The districts which have higher coal production like Anugul, or larger number of allied industries as such steel and thermal like in Sundergarh, will be least vulnerable in the transition process immediately.

> **“According to the report, the most susceptible districts towards the transition process will be the ones that have least direct economic involvement with coal and its allied sectors.”**

Figure 3 - *Coal Mining Region (Red- Maximum production, Light Pink – Least Production)*

Chart No 6: Industrial Presence in the Districts

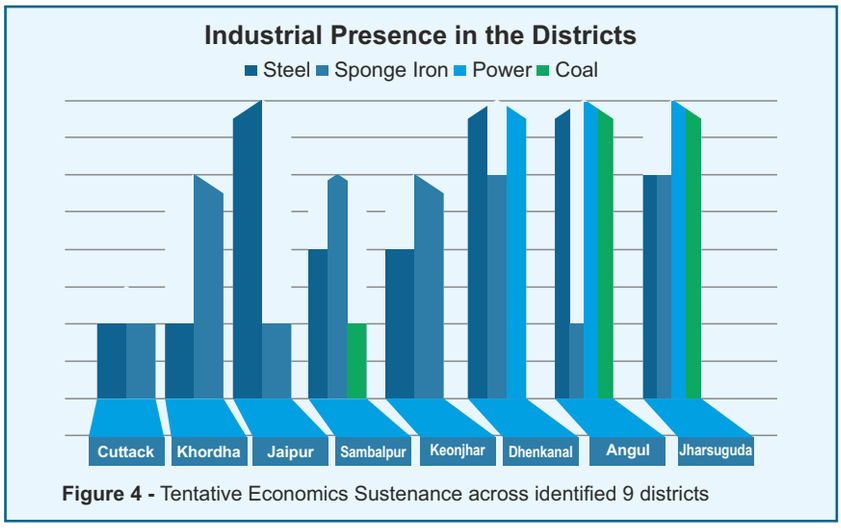
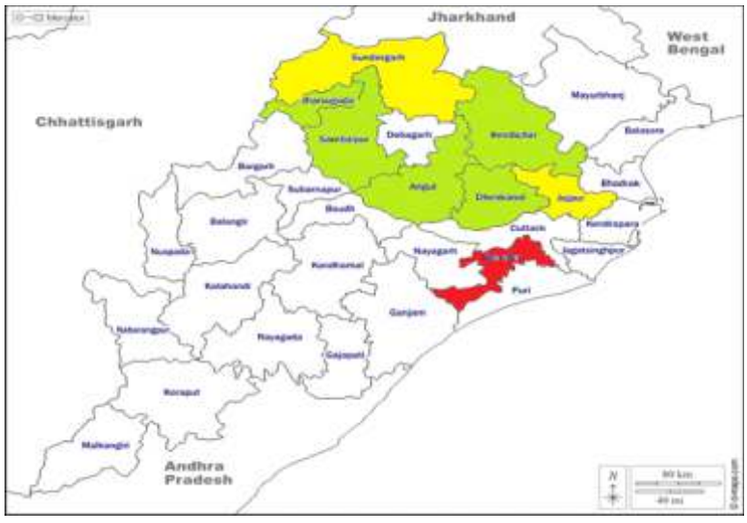


Figure 4 - Tentative Economics Sustenance across identified 9 districts

Based on the study published by National Foundation For India, districts like Khordha, which have no coal production and less than two allied industries producing less than 1 MT, will be the first ones considered for transition as the industry contributes less to the state's economy. A district like Anugul which has highest coal production, will be the last to go through transition as the economic dependency on coal is much higher in the district.

> **"A district like Anugul which has highest coal production, will be the last to go through transition as the economic dependency on coal is much higher in the district."**



Red: High vulnerability; Yellow: Medium vulnerability; Green: Low vulnerability towards transition

Coal alone accounted for almost 70 percent of the royalty received by the state. Out of these nine identified districts in the report, 4 districts have functional coal mines producing more than 142.16 MT. These coal mining regions are some of the most underdeveloped and have faced adverse economic, social, and environmental impacts over the years.

Table no 2: Coal Production by Districts

District	Coal Production (MT) (2019-2020)	No. of Mines
Angul	80.607	13
Jharsuguda	38.251	10
Sundergarh	0.27002	4
Sambalpur	23.039	3

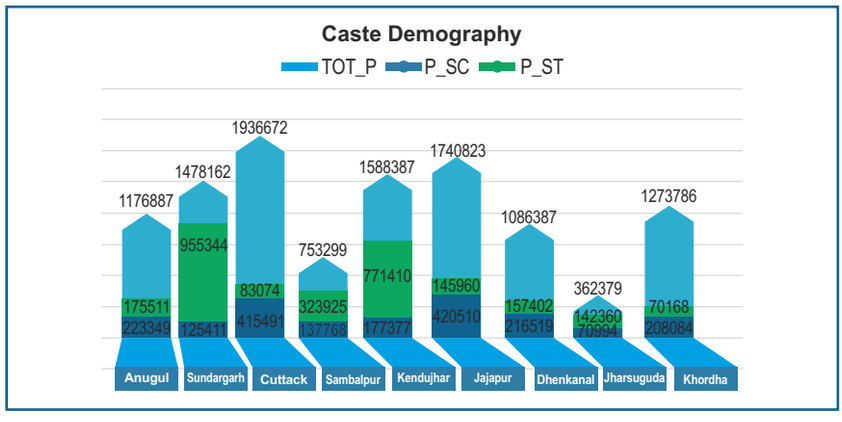
Table 1- District Wise Mine Data, Source: Pai, S & Zerriffi, H. 2021. A novel dataset for analysing sub-national socioeconomic developments in the Indian coal industry, IOP SciNotes, https://doi.org/10.1088/2633-1357/abdbbb

Some of the largest coal mines in India are present in the state. The Talcher region in Anugul district is known for hosting the largest deposits of power-grade coal in the country. According to Mahanadi Coalfield Ltd (MCL), a subsidiary of Coal India Ltd (CIL), Talcher coalfield hosts the highest reserve of coal in India measuring up to 51.220 billion tonnes[27]. This large-scale coal mining makes the area extremely vulnerable to negative social and environmental impacts but makes it least likely to transition. Many of the residing tribal communities at Talcher and Ib valley region, who on the forest resources to maintain their livelihood, are marginalized[28]. The natural resources from rural and tribal areas are being exploited to meet the ever-increasing requirements and aspirations of affluent groups[29].

> **"Some of the largest coal mines in India are present in the state."**

Districts like Sundergarh which has higher vulnerability towards the mine closure also has more tribal communities. These tribal communities will most likely be adversely impacted during the transition process.

Chart No 7: Caste Demography



Source - District Census Handbook – Odisha

27 https://science.thewire.in/environment/indias-largest-coalfield-talcher-mining-environment/
28 https://link.springer.com/article/10.1007/s13563-021-00272-5
29 https://bioone.org/journals/air-soil-and-water-research/volume-10/issue-1/1178622117728913/Coal-Mining-and-Local-Environment--A-Study-in-Talcher/10.1177/1178622117728913.full?tab=ArticleLinkCited

Moreover, 69% of all coal mines are OCM and at least 25% of the total workforce is directly employed in the mines. 25-40% of the manpower in the coal mining workforce is concentrated as over burden (OB) handler, dumper truck operator from extraction to crushing and crushing to despatch and other associated jobs[30]. So, the districts like Anugul having more OCM will have higher workforce involvement and will be least intimidated by transition process.

> **"Moreover, 69% of all coal mines are OCM and at least 25% of the total workforce is directly employed in the mines."**

Chart No 8: Share of manpower in different activities (OCM)

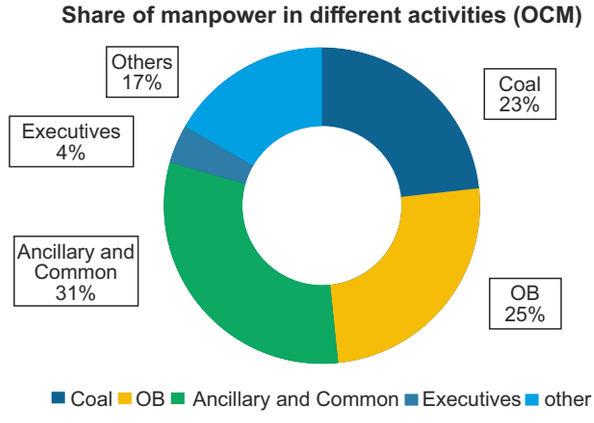


Figure 5 - Showcasing the Manpower Engagement in OCM

Chart No 9 and 10: Distribution of labour in different sector across coal economy in Odisha and Coal Employees

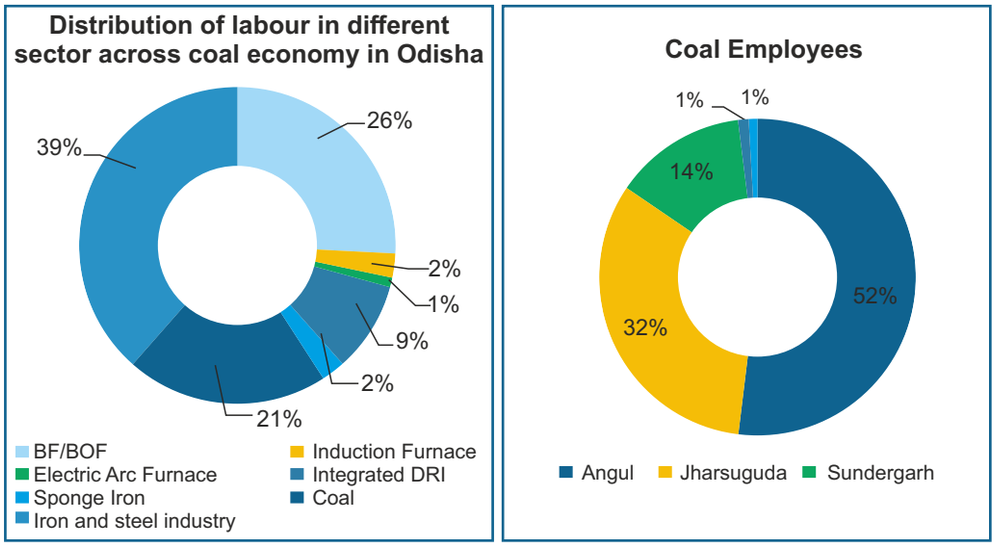


Figure 6 - Showcasing the Employment Breakup in the state, Source- Author

Anugul alone has 43,807 direct jobs in Coal mining, while Jharsuguda has 24,167 and Sundergarh has 12,418 direct employments. But the point of concern here is that only permanent

30 https://www.nfi.org.in/sites/default/files/publication/cti.pdf

workforce are counted. These numbers do not include contract workers and the induced economy that the mining industry creates in the districts. Odisha has more than a million working population in the Iron and steel industry providing diverse work profile and skill sets.

In Sundergarh as district has the highest working population in the steel and iron industry (33%), Rourkela alone contributes 22% to the states's workforce in steel and iron industry. While Dhenkanal and Sambalpur are second (17%) and third (14%) participating districts respectively with 158,497 labours at present in the highly skilled sector like technology.

Odisha also has a higher number of non-working populations (6,902,390) in these identified nine districts and cannot be overlooked while making the plans for transition. This burden of transition will not only be on the semi-skilled and unskilled workforce. The government must also consider the unemployed section for a more inclusive approach. Based on the district census data[31] it was seen that areas like Sundergarh and Kendujhar have higher women marginal workers. These workers are those who get to work for 3-6 months a year, in and around the mining areas. If mines are closed, they will be the group most likely to lose their jobs. Females who worked in surface roles in the mining areas were often paid less than men, as they are viewed as cheaper labour by mine-owners. Even the unions are usually to opposed women workers and excluded them from becoming members, preventing them from accessing their social security rights.

Even though women's workforce is 48% in similar clusters of marginal occupations, women earn less than men (daily wages), evidence-less experience, hours worked, and core employment, and receive lower returns to their employment characteristics than do men. These inequities indicate that taking a gender-inclusive approach while drafting transition policies is extremely important.

> **"Odisha also has a higher number of non-working populations (6,902,390) in these identified nine districts and cannot be overlooked while making the plans for transition."**

Chart No 11: Gender Ratio of Marginal Workers

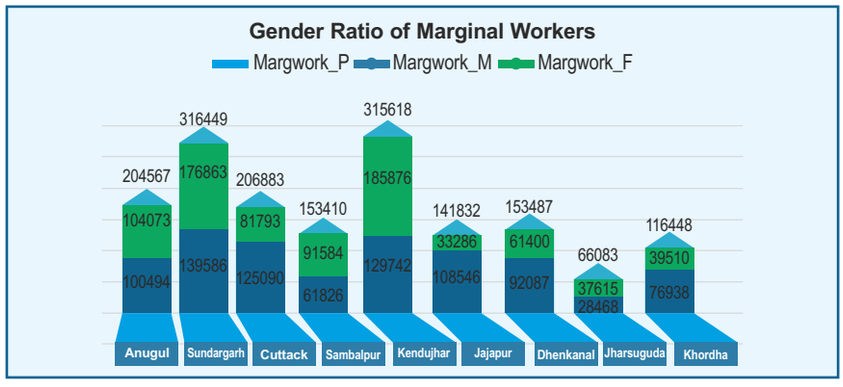


Figure - Gender Ratio of Marginal Workers, Source- District Census

31 https://censusindia.gov.in/2011census/dchb/Odisha.html

5 Challenges in the Regulatory Frameworks

Many studies that used the sustainable livelihoods framework[32] have seen that coal mining, which is a form of physical capital, contributes to the enhancement of financial capital[33]. However, it negatively impacts societal well-being and the environment. Coal Mining has a mixed impact on physical and social capital, and a negative impact on human and natural capital[34]. In this situation, while there may be benefits for a shorter or limited period, the negative costs are usually borne over the long run. Moreover, the concept of Just transition may have positive impacts[35] on natural capital but can affect negatively social, physical, and financial capital if not done with consideration for the existing situation. Major tribal groups living in the mining areas of Odisha (Kisan, Munda, Oraon, Kharia, Gond, and Bhuyans)[36] are again vulnerable to displacement and relocation if such mines are closed without proper planning.

The threat to social capital ends up in social risk. The displacement issue in the coal mining areas of Odisha is quite significant because underprivileged people largely inhabit the area. Displacement is the prime cause of the breakdown of social capital. For the tribal community, social capital acts as a significant source of life support system[37]. The key issues related to displacement and rehabilitation is usually that the displaced are the poorest people living at the edge of survival on a day-to-day basis. These people are the most vulnerable to any form of change and are usually from marginalized and tribal communities. Displacement further increases their poverty due to loss of land, home, existing jobs, food insecurity, loss of access to common property assets, increased morbidity, and social isolation. Displacement usually impacts women more compared to men, as they do not have entitlement over any land or property, nor do they get compensation or rehabilitation rights.

> **"Coal Mining has a mixed impact on physical and social capital, and a negative impact on human and natural capital[34]."**

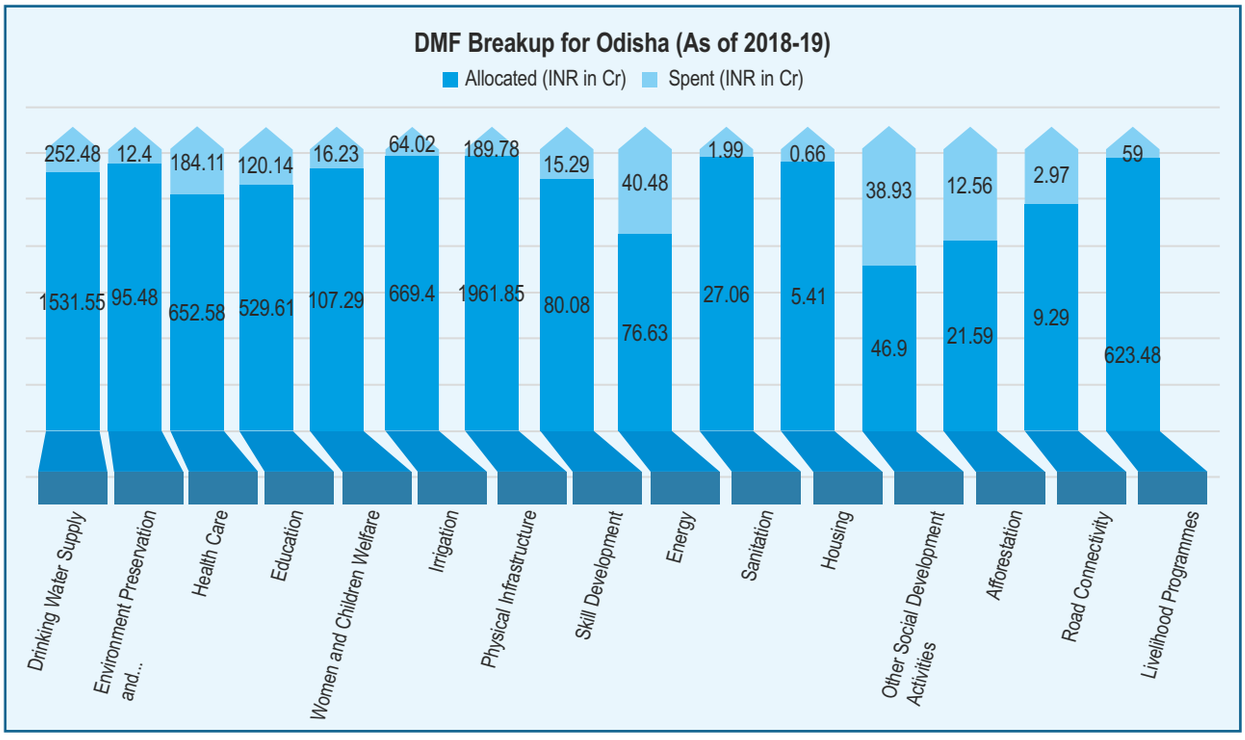
In District Mineral Foundation

Pradhan Mantri *Khanij Kshetra Kalyan Yojana* (PMKKKY) is a guideline for framing rules by States for the District Mineral Foundation (DMF) proposed under the amended MMDR 2015 Act. The guidelines categorise two major heads for expenditure viz. high priority areas and other priority areas, thereby also emphasising the utilisation of funds collected under respective DMFs.

32 https://www.soas.ac.uk/cedep-demos/000_P528_RF_K3736-Demo/unit1/page_22.htm
33 https://www.epw.in/journal/2009/44/special-articles/coal-mining-and-rural-livelihoods-case-ib-valley-coalfield-orissa
34 https://www.sciencedirect.com/science/article/pii/S0301420717301484
35 https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf
36 https://tribal.nic.in/repository/ViewDoc.aspx?RepositoryNo=TRI22-08-2017162859&file=Docs/TRI22-08-2017162859.pdf
37 Roy-Burman, 1994

One would find that rather than directly benefiting the 'mining affected communities,' the government is building projects from these funds for providing basic essential services as if communities are burden in the absence of such a fund.

Chart No 12: DMF Breakup for Odisha (As of 2018-19)



INR 6,438.2 Cr under DMF was allotted to Odisha out of which only INR 1,011.04 Cr was spent. This means only 15% of the total money was used for community development purposes. The state allocated INR 623.48 Cr. for **Livelihood Programmes** but spent only INR 59 Cr. **For Irrigation Projects** only INR 64.02 Cr was spent of the allotted INR 669.4 Cr. Anugul District received a maximum contribution to the DMF fund from coal mining followed by Jhaursuguda. Anugul and Jhaursuguda are two contiguous districts with most coal deposits and mining by Mahanadi Coalfields Limited (MCL). Only 16-17% of the funds are being used and as they largely sit unutilized due to various practical reasons, the upliftment of the districts might be slow. **The government of Odisha also works with consulting firms like E&Y and PricewaterhouseCoopers (PwC). Though only E&Y currently has functioning offices in some of the districts.** These consulting firms have Project Management Units (PMUs) established for District Mineral Foundation. Project Monitoring Units (PMUs) have been

> **"Only 15% of the total money was used for community development purposes."**

DMF - Anugul

Based on the information available, one would find that, rather than directly benefiting the 'mining-affected communities', the DMF funds are being used in building infrastructure projects for providing basic essential services as if government don't have access to other funds in the absence of DMF.

But the after unswerving conversation with the DMF department of Anugul, it was observed that the department is liaising between different government projects where funds are insufficient and DMF funds available, to uplift the existing situation of the district. It is promoting projects mainly on green and circular economy. Under the green economy framework, the department organises "Green Summit" targeting the corporates wanting to get engaged in circular economy sector. DMF-Anugul is taking lead and filling the gap in improving the education access to the children of the district. Many school-dropout in Anugul happens because of lack of toilets in schools and heat. To address these issues, the district administration has made necessary changes and upgradation in the existing infrastructure of primary education system, so that there is access to toilets and fans and better amenities.

The DMF department of Anugul has also been engaged on several WASH projects and promote health and hygiene under 'School Transformation Program". The department is also working on mapping water atlas of the district, training women on promoting Non-Pesticidal Management (NPM) for sustainable agriculture. Different techniques of NPM.

These areas of sustainable agriculture and green economy are some of the areas to be considered as alternate job creation and livelihood generation if government plans to phase down from coal.

"These areas of sustainable agriculture and green economy are some of the areas to be considered as alternate job."

established in the state's top five mining districts[38]- Keonjhar, Sundargarh, Angul, Jharsuguda and Jajpur. Any district having DMF allocation above 100 Cr are outsourced to consultants and their PMUs. These PMUs act as advisory for DMF department on fund allocation and program engagement in the districts.

In MGNREGA Implementation

National Rural Employment Guarantee Act, 2005 (MGNREGS) is the single largest centrally sponsored scheme for providing wage employment to people throughout the country. The scheme provides guaranteed employment to rural poor households as a means of sustenance since its inception in 2005. Out of 67.92 lakh registered households in the state, 66.82 lakh households have been issued job

38 https://www.business-standard.com/article/economy-policy/odisha-drags-feet-on-dmf-funds-use-ranks-7th-on-project-implementation-118112901009_1.html

cards up to 2019-20. **It was seen that in 2019-20 Odisha recorded the highest level of 1,115.72 lakh person-days of employment generation under the program in the country out of which 483 lakh person-days were for women labourers which accounts for 43.0% of the total person-days generated.** The Schedule Caste and Schedule Tribe components constituted 50.84%. It may also be seen that the women component of person-days generated is showing an increasing trend from 2015-16 (38%) to 2019-20 (43%). However, the SC/ST component of person-days generated at the state level is showing a declining trend between 2015-16 (57.7%) and 2019-20 (50.54%).

> **"It may also be seen that the women component of person-days generated is showing an increasing trend from 2015-16 (38%) to 2019-20 (43%)."**

In Rehabilitation and Resettlement

Private companies are responsible for rehabilitation and resettlement (R&R) of the mining impacted (both completely and partially) communities and can be part of the transition process. For example, Talabira-I had 144 Project Affected Families (PAFs) who were rehabilitated and resettled as per the records of M/s Hindalco Industries Limited. Whereas, in some cases like Talabira Opencast Project (Talabira II & III), a total of 2,046 PAF are supposed to face involuntary displacement[39]. These types of voluntary and involuntary R&R are something that should be kept in mind while making plans for 'Just' Transition.

In PESA

The Provision of the Extension to the Scheduled Areas Act, 1996 (PESA) came into force on the 24th of December The 1996. Orissa Gram Panchayat Act, 1964, Orissa Panchayat Samiti Act, 1959 and Orissa Zilla Parishad Act, 1991 have adopted the provisions of PESA. It covers 7 districts i.e., Mayurbhanj, Sundergarh, Koraput, Malkangiri, Rayagada, Nowarangpur and Kandhamal in full, and Keonjhar, Gajapati, Kalahandi, Balasore, Sambalpur and Ganjam in part. It is spread over 1,966-gram panchayats in 118 Blocks in full and 3 Blocks in part. Accordingly, 24,734 out of 87,542 wards, 1,966 offices of Sarpanch out of 6,234, 1,965 offices of Panchayat Samiti Member out of 6,233 and 256 members of Zilla Parishad out of 854 come under the Schedule Area. However, the state government of Odisha has not yet framed PESA Rules and few laws subject to it, like Land Acquisition and Agro-Produce Market, are yet to be PESA compliant[40]. The gram panchayats, under PESA, currently fail to protect and preserve customary practices of tribes. This will have negative social and human impact during the just transition process.

39 http://www.infraline.com/Coal/Players/RevisedDraftPIBNoteTalabiraOCP20.MCL.aspx

40 https://www.cfdra.in/implementation-of-the-provisions-of-pesa-act-in-the-state-of-odisha/#:~:text=It%20covers%207%20districts%20i.e.,and%203%20Blocks%20in%20part.

6 Need for a Qualitative Study at the District Level

When studying the vulnerability and impacts of just transition on each state and their districts, it was ascertained that each one differed from the others in terms of geography, demographic, economic structure, occupational engagement, environmental conditions, and other factors. There are about 51 coal mining districts in India across 13 states[41]. Out of these 51 districts, 9 districts from Odisha were identified during the 1st phase of study that is most likely to through the transition process. But not all districts will face a similar disruption given the structure of the district economy, the number of coal mines and dependent industries in the district, and the impact created by the coal economy. Therefore, alongside estimating absolute direct and indirect employment numbers, it is imperative to assess impact and value creation. This will lead to a ranking of districts on their resilience and help identify key impact areas. Resilience[42] here refers to the distinction between short-term capacity of an economy to absorb shocks (adjust), and its long-term capacity to develop new growth paths (renew)[43]. This assessment will be useful to create/expand investments for the economic diversification of the district. Hence, a coordinated strategy is the only way in which Odisha will be able to transition away from coal in the next 30 years without painful fallout.

> **"Out of these 51 districts, 9 districts from Odisha were identified during the 1st phase of study that is most likely to through the transition process."**

41 *Pai & Zerriffi, 2021*
42 *https://doi.org/10.1093/jeg/lbu015*
43 *Campbell & Coenen, 2017*

7 The Road Ahead

The major challenges in Odisha to drafting just transition policies and framework will be lack of data. Data is expected to deliver value for public governance[44]. The use of "analytics" to extract information[45] and insights from information available through diverse datasets can give a better reflection on the existing situation in the state.

Hence, National Foundation For India intends to address the upcoming issues that may occur during the transition process from non-renewable to renewable energy by the state governments in an upcoming study. The planned study will identify the most impacted groups and areas in the districts both from community perspective and industry perspective. It will further assess the impact of transition on the employment of those who are directly and indirectly associated with coal mining. This will be inclusive of the induced sector jobs too. It will be an approach that considers India's development objective, diversity, and democratic ideals, while addressing the core value of reducing poverty and eradicating inequitable system.

> **"National Foundation For India intends to address the upcoming issues that may occur during the transition process from non-renewable to renewable energy by the state governments in an upcoming study."**

Objective of the working paper is to address issues, by adopting an approach that accounts for its development agenda, its diversity and its democratic values and an approach that keeps the agenda of alleviating poverty and eradicating inequity at its heart as a core value. NFI will undertake the next phase of the coal study in the state of Odisha. Phase-1 of the research study estimated direct and indirect jobs in coal and coal-allied sectors at the national level. The study was acknowledged as one of its kind for defining a coal transition worker and looking at energy transitions from a community's perspective. Going forward, the objective of Phase-2 is to estimate the induced jobs and engage with the coal communities to facilitate knowledge sharing. Induced jobs refer to those employed to provide goods and services to meet consumption demands of additional directly and indirectly employed workers. For example, a local street vendor or a tea seller. Hence, major study activities to be conducted at state and district level are as follows:

- Work with state and local government of Odisha to map resources on coal and non-coal revenues, DMF, CSR, and local taxes,

44 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7327742/
45 https://www.sciencedirect.com/science/article/pii/S0167715218300944

income levels, existing demographic, and socio-economic indicators.

- Create a data repository of energy and climate action plans in the state.
- Facilitate knowledge sharing between state and central ministries - labour, coal, agriculture, energy, environment, and climate change.
- Conduct a household level survey (quantitative) in 2 districts of Odisha that will likely be impacted due to a coal transition.
- Conduct qualitative surveys in the form of focus group discussions with stakeholder groups like labour unions, coal sector officials, and personal in-depth interviews with state and local government representatives, and civil society groups.

An in-depth targeted data survey at household level, focused group discussions, research at the district level will be done to develop a local transition framework which can be fair and just not only to industries but other stakeholders too. Income levels, social and economic infrastructure, reliance on coal for livelihood and income, alternative livelihood possibilities, and other factors will be investigated in order develop a strategy for transition.

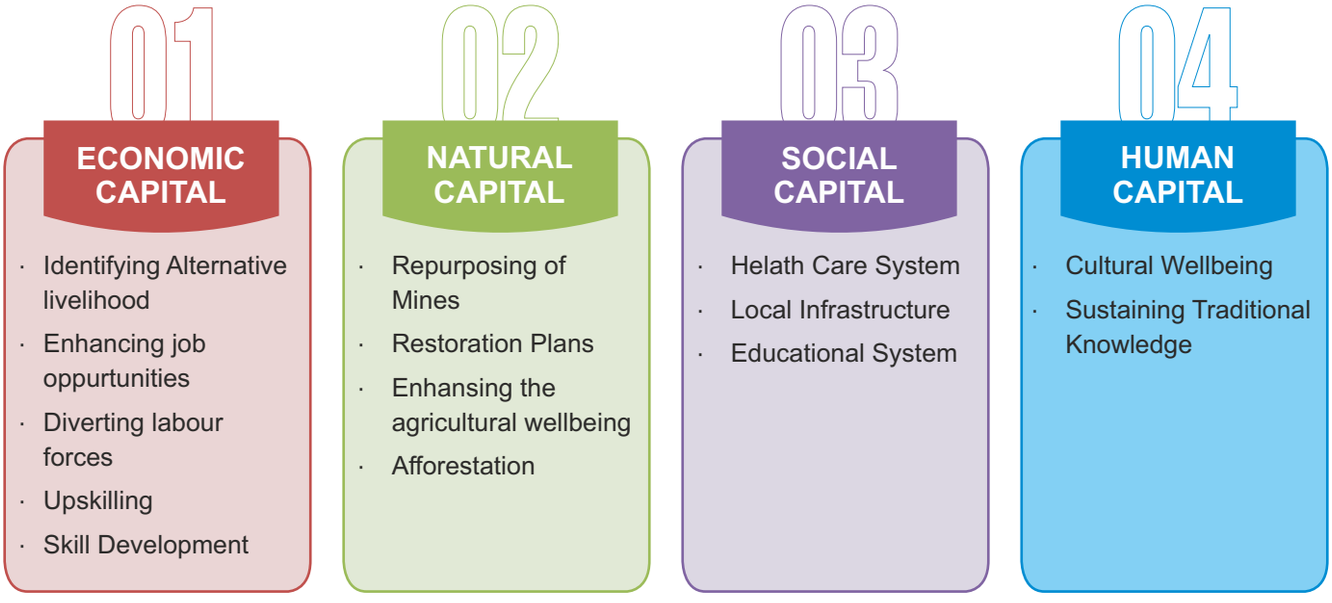


Figure 8 - *Four fundamental elements to be considered in designing Just Transition Policies*

The conversation for India to transition away from coal is just beginning. Planning for a phase down must begin now given the economic, political, social, and financial challenges ahead of the country. India can learn from other countries' approaches, but it will have to chart its own path on coal transitions.

The report[46] by NFI gave conservative estimates of the number of people directly and indirectly employed in coal and coal-allied sectors. These numbers are good enough to present baseline estimates; however, planning a just transition will require looking at various other parameters. The same has been elaborated in the following structure below, which illustrates the four fundamental elements that will be considered for district-level just transition planning to be fair to all the stakeholders.

> **"It is extremely critical to analyse the situation of the economy and plan the transition policy and process accordingly and make it more inclusive."**

The issue with existing mine closures is lack of planning behind it. Unplanned mine closures can lead to displacement of the communities and affect local economies. A quantitative survey focused on capturing the status of the district's economy, can be a step forward towards providing baseline estimates. A district specific assessment will facilitate the formulation of Just Transition framework. Further, a qualitative survey in the form of focus group discussions with stakeholder groups like labour unions and coal sector officials, and personal in-depth interviews with state and local government representatives, civil society groups, etc; should be conducted. Hence, planning the transition process in such a vulnerable state where already so much impact has happened.

Such vulnerable states have already experienced so much impact already. It is extremely critical to analyse the situation of the economy and plan the transition policy and process accordingly and make it more inclusive.

Including the local community in the planning and having inclusive framework and policies are the most crucial aspect of the transition. It will not be successful unless the locals and the most impacted communities are to be included on the journey, so that they can own and acknowledge[47] the progress towards a 'just' transition.

46 efaidnbmnnnibpcajpcglclefindmkaj/https://www.nfi.org.in/sites/default/files/publication/cti.pdf

47 https://theconversation.com/3-local-solutions-to-replace-coal-jobs-and-ensure-a-just-transition-for-mining-communities-174883

Annexure - 1
List of Mines in Odisha

Sl No.	State Name	District Name	Mine Name	Production (MT) (2019-20)	Coal Mine Owner Name	Coal/ Lignite	Govt. Owned (GO)/ Private (P)	Type of Mine (OC/ UG/Mixed)
1	Orissa	Angul	Nandira	0.085	MCL	Coal	GO	UG
2	Orissa	Angul	Deulbera	0	MCL	Coal	GO	UG
3	Orissa	Angul	Handidhua	0	MCL	Coal	GO	UG
4	Orissa	Angul	Bharatpur	4.781	MCL	Coal	GO	OC
5	Orissa	Angul	Chhendipara	0	MCL	Coal	GO	OC
6	Orissa	Angul	Hingula	6.582	MCL	Coal	GO	OC
7	Orissa	Angul	Balram	5.234	MCL	Coal	GO	OC
8	Orissa	Angul	Jagannath	3.453	MCL	Coal	GO	OC
9	Orissa	Angul	Bhubaneswari	28	MCL	Coal	GO	OC
10	Orissa	Angul	Ananta	10.932	MCL	Coal	GO	OC
11	Orissa	Angul	Lingraj	14.007	MCL	Coal	GO	OC
12	Orissa	Angul	Kaniha	7.533	MCL	Coal	GO	OC
13	Orissa	Angul		0	MCL	Coal	GO	UG
14	Orissa	Jharsuguda	Lajkura	2.84	MCL	Coal	GO	OC
15	Orissa	Jharsuguda	Samaleswari	4.611	MCL	Coal	GO	OC
16	Orissa	Jharsuguda	Belpahar	7.51	MCL	Coal	GO	OC
17	Orissa	Jharsuguda	Lakhanpur	21	MCL	Coal	GO	OC
18	Orissa	Jharsuguda	Lilari	0	MCL	Coal	GO	OC
19	Orissa	Jharsuguda	Mine No.1&2	0.314	MCL	Coal	GO	UG
20	Orissa	Jharsuguda	Mine No.3	0.041	MCL	Coal	GO	UG
21	Orissa	Jharsuguda	Hirakhand Bundia Incline	0.395	MCL	Coal	GO	UG
22	Orissa	Jharsuguda	Mine No.4	0	MCL	Coal	GO	UG
23	Orissa	Jharsuguda/ Sundergarh	Dulanga Coal Mine (Captive)	1.54	NTPC	Coal	GO	OC
24	Orissa	Sundergarh	Kulda	13.627	MCL	Coal	GO	OC
25	Orissa	Sundergarh	Garjanbahal	7.592	MCL	Coal	GO	OC
26	Orissa	Sundergarh	Basundhara (W)	1.82	MCL	Coal	GO	OC
27	Orissa	Sambalpur	Talabira II	0.00001	NLC LTD	Coal	GO	OC
28	Orissa	Sambalpur	Talabira III	0.00001	NLC LTD	Coal	GO	OC
29	Orissa	Sambalpur	Talabira I (Captive)	0.27	GMR Group	Coal	P	OC
30	Orissa	Sambalpur	Talabira I (Captive)	0.27	GMR Group	Coal	P	OC

Source: *Pai, S & Zerriffi, H. 2021. A novel dataset for analysing sub-national socioeconomic developments in the Indian coal industry, IOPSciNotes, https://doi.org/10.1088/2633-1357/abdbbb Pai, S; Zerriffi, H; Kaluarachchi, S, 2021, "Indian coal mine location and production - December 2020", https://doi.org/10.7910/DVN/TDEK8O, Harvard Dataverse*

भारतीय प्रतिष्ठान
NATIONAL FOUNDATION FOR INDIA

National Foundation For India

India Habitat Centre, Core 4A
Upper Ground Floor, Lodhi Road
New Delhi 110 003, India
Tel: 91-11-24641864, 24641865
24648490, 24648491
Mail: info@nfi.org.in

Authors – Pooja Gupta; Mohammad A. Faraz & Kavya Singhal