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Coal Power and Livelihood Disruptions in Thar

PRIED
Policy Research Institute for Equitable Development Private Limited

Alliance for Climate Justice & Clean Energy

Project Brief

Coal Power and Livelihood Disruptions in Thar

Coal Mines

and

Thermal Plants

Encroaching on

Farmland

&

Grazing Land

PRIED
Policy Research Institute for Equitable Development Private Limited

By Azhar Lashari
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Acknowledgement

Author:
Azhar Lashari

Team:
Akash Hamirani,
Irshad Laghari
and
Assad Buzdar

Reviewed by :
Muhammad Badar Alam

Editing:
Fahmida Jan

Concept & Designing:
Azhar Lashari

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1. Introduction

To live a life, we, all the human beings, have to make a living and support our families so as to meet our basic needs of food, health and education as well as to thrive socially. Given its essentiality for human survival, the right to livelihood has been enshrined under the article 25 of the United Nation's Universal Declaration of Human Rights (UNDHR) adopted by the UN's General Assembly on 10th December 1948 in Paris, France. The article reads:

"*Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control*." 1

The means of securing the necessities of life can be different for different people, depending upon the knowledge and skills they have; the assets (including both the material and social resources) available to them; and the place they live in. The livelihood assets can be categorized into five groups—human/social, natural, physical, financial and political capitals.

Human capital includes the skills, knowledge, health and ability to work, which an individual or certain social group has to make living. Social capital is constituted by informal networks, membership of formalized groups and relationships of trust that facilitate economic cooperation. Natural capital comprises of natural resources, such as, land, soil, water, forest and fisheries. Physical capital includes basic infrastructure, such as, roads, water & sanitation, health facilities, educational institutions and good & services production, including tools/equipment and livestock. Financial capital comprises savings credit, and income from employment, trade and remittances.

1. https://www.un.org/en/about-us/universal-declaration-of-human-rights

People's livelihoods are developed in a certain social, economic and political context. Social relations configured along kinship, gender, caste, ethnicity and religion over a period of time determine the livelihoods of different groups within the community. Political power and authority legitimized and institutionalized whether socially or legally play a pivotal role in perpetuating the existing social inequalities and imposing new shifts in access to economic resources.

Social norms, customs and behaviors constituted by social relations, for instance, affect the access of different sections of the society to the economic resource base and opportunities. Similarly the laws, policies, rights & representation, the mechanisms of institutional governance and formal decision-making processes are the key tools available to the governments/state in maintaining and changing the livelihood patterns in certain area.

Over the centuries, the rural communities, depending upon diverse natural resource bases and living in peculiar ecological niches across the globe, developed different robust livelihood patterns, withstanding different shocks and stresses by manmade interventions or natural calamities. A livelihood is sustainable when the individuals/social groups 'can cope with and recover from the stress and shocks and maintain or enhance their capabilities and assets both now and in the future, while not undermining the natural resource base'. 2

2.https://www.unisdr.org/files/16771_16771guidancenoteonrecoveryliveliho.pdf

Major factor behind the sustainability of these traditional livelihood patterns was the harmonious relationship, which the local communities built over the centuries with the natural resources they depended upon for their survival.

Through their indigenous knowledge acquired after living in close contact with the nature in certain areas, the local communities knew the limits of regeneration and carrying capacity of the natural resources crucial for their living. And their social norms and customs effectively forbade them from exceeding these limits.

However with the social, economic and political changes like industrial revolution, expansion of colonialism, modern nation state and capitalism replaced the traditional natural resource use patterns with the modern, techno-centric and capital-intensive ones. The modern, growth-driven approach to resource use pattern exponentially scaled up the exploitation of natural resources.

On one hand, this ruthless exploitation of natural resources triggered the environmental and climate crisis, which the globe is encountering today while on the other, exposed the local communities to the challenges of displacement from their homes and hearths and livelihood disruptions.

Realization of these social and environmental challenges posed by the growth-driven approach to exploitation of natural resources compelled the development actors like the donors, industries and the governments to adopt the policies and actions for mitigating the potential adverse social and environmental impacts to be induced by certain development interventions.

Making the social and environmental impact assessment (SEIA) against certain standards and planning the actions to limit the potential negative social and environmental effects of development interventions were made obligatory for the relevant donors, industries and the governments.

However in the developing countries like Pakistan, these social and environmental obligations are given mere a lip service. As a rule, the SEIAs and the plans to mitigate the social and environmental impacts of a proposed development intervention are made in an exclusionary way, never allowing the relevant communities to meaningfully participate in and influence the decision-making processes having direct bearing on their lives and livelihoods.

The facts and figures given in the SEIAs are manipulated so as to make a proposed development intervention coming up to the required standards of social and environmental safety and in accordance with the national and international laws. The commitments to mitigate the adverse social and environmental impacts are never realized according to the plans.

It is interesting to mention here that not a single development project has ever been shelved in Pakistan due to enormity of its adverse social and environmental impacts. Hence these mega development projects have often proven to be socially divisive, economically unjust and environmentally disastrous. And the local communities have been the worst sufferers of these developmental injustices.

The story of coal mining operations and thermal power generation in Thar is no different. Tharis—the indigenous communities of Thar Desert—have been bearing the brunt of forced evictions, livelihood disruptions and poisoning of their water resources caused by the coal power projects in their homeland while the outsiders like banks, private companies, coal industry, the government officials and urban electricity consumers have been reaping the benefits of coal-based thermal power generation in Thar.

This project brief covers how the change in land use pattern after coal power development in Thar adversely impacted livelihoods of Tharis—particularly their right to grazing land, livestock rearing practices, risks to their animals and size of family herds. The information and data provided in this project brief is based both on the primary and secondary sources. The primary data has been collected through field visits and meetings with the coal-affected communities in the villages of Thar coalfield and the case study of Warvai—a village in Thar Coalfield Block-I (TCB-I). The secondary data given herein, however, has been extracted from the media reports, research studies and project documents on coal power projects in Thar. The geographical scope of the project brief is the coalfield in Islamkot taluka of Tharparkar district.

2. NATURAL RESOURCES AND LIVELIHOOD IN THAR

2.1. Thar: its geophysical conditions and natural resources:

Thar is the largest desert of Pakistan. Other deserts of the country include Cholistan and Thal in Punjab; Kharan desert in Balochistan; and cold desert in Sakardu. Like Cholistan desert, Thar Desert is also part of the Great Indian Desert. Thar is largely an arid region of rolling sand dunes. It is spread over four south eastern districts—namely Sanghar, Umerkot, Mirpur Khas and Tharparkar—of Sindh province.

However, major part of the desert is located in Tharparkar district. With an area of 19,637 square kilometers, 99 percent of which is desert, Tharparkar is also the biggest district of the province. Mithi, the district headquarter of Tharparkar, is situated some 380 km east of Karachi—the provincial capital of Sindh province. According to the national census held in 2017, total population of the district is 1,647,038. An overwhelming majority of population (1,514,502) lives in rural areas.3

Thar is prone to frequent mild to harsh droughts. The average rainfall in the region is 250-300 millimeters (mm), most of which occurs in monsoon from mid-June to mid-August. The winter rains are quite rare. Except for Tarai, the seasonal water ponds, which are replenished by the monsoon rains and do not last more than a couple of months, there are no sources of surface water in Thar.

The major source of the available water is underground, the quality of which generally ranges from saline to brackish.

For drinking, domestic use and animal-rearing, an overwhelming majority of local population depends upon dug-wells, the depth of which varies from 10 to 100 meters 4. Water from dug-wells is pulled out by the donkeys, camels and several human hands.

The natural resources of the district include range forest, granite and coal. Range forest of the district is spread over 230,304 acres. The largest part of the range forest is located in the Mithi taluka (93,325 acres) 5. Diverse varieties of trees, bushes and grasses grown in the range forest provide a grazing land for the domestic livestock and game animals. They are also used for housing, medicinal and spiritual purposes.

Rangeland management in Thar and other parts of the province is the responsibility of Sindh forest department. 'Scientific utilization of arid land for maximum production of the healthy forage for livestock' is one of the primary objectives of the rangeland management division of the department 6.

Granite is available in the extreme southeastern Nangarparkar taluka of the district. It is available in a variety of colors, including white, grey, black, blue, bluish grey, green and pink to red. According to Geological Survey of Pakistan (1977-78), granite available in the district is estimated to be around 15.864 billion tons.

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3. https://www.scitechnol.com/peer-review/assessment-of-water-quality-of-groundwater-of-thar-desert-sindh-pakistan-Rr1A.php?article_id=8364

4. https://www.scitechnol.com/peer-review/assessment-of-water-quality-of-groundwater-of-thar-desert-sindh-pakistan-Rr1A.php?article_id=8364

5. http://prjah.org/Articles_pdf/VOL-3-NO-1-2021-9.pdf

6. https://sindhforests.gov.pk/page-organizational-structure

The district hosts the sixth largest coal reserves of the world. Out of Pakistan's total coal reserves of 186 billion ton (bt), 176 bt reserves are located in a single contiguous area of 9,000 square kilometers in Tharparakr district of Sindh province in Pakistan. 'Thar coal reserves' are 50 mt more than the joint oil reserves of Saudi Arabia and Iran, having a potential to generate 100,000 megawatt (MW) of electricity for over 200 years 7.

2.2. Agro-pastoralism: a traditional livelihood pattern in Thar:

The type of land, water, forest and mineral resources available in an area plays crucial role to determine the livelihood patterns of rural communities living there. Agro-pastoralism is the principal livelihood pattern which, over the centuries, has evolved in this water-scarce, sparsely populated and naturally vegetated desert.

To make their living, the nomadic and semi-nomadic population of Thar relies mainly on livestock-rearing and partially on rain-fed subsistence farming. Monsoonal rains in Thar invigorate agriculture activity. Both the landholding and landless communities participate in farming. The categories of land used for agriculture purposes include *survey* (private ownership) and *yaksaala* (leased out by government) land.

With no other source of irrigation for agriculture except the monsoonal rains, Tharis grow only *khareef* crops, including *ganwaar* (cluster-beans), *baajhri* (pearl-millet), *moong* (green-gram), *motth* (bean), *choonra* and *korarr*. The *khareef* crops cultivated in Thar are grown in summer—seeded in June and July and harvested in September and October. These are mostly food crops the hay of which is also used as dry fodder for domestic animals.

Seasonal migration is a peculiar feature of Thar's landless families, who mostly work as *haari*s (farm labor). In summer, they work as farm labor in Thar. However as winter sets in, many landless families migrate to the canal-irrigated areas in other districts to earn their living by working as wage labor, mostly in agriculture sector.

Since the monsoonal rains are erratic in Thar, agriculture is not a dependable source of income for the locals. Animal husbandry, however, assures somewhat livelihood security to the inhabitants of this arid region even during the severest drought spell.

Sheep, goats, cows, donkeys and camels are the most commonly reared animals in Thar. In some villages buffaloes and horses are also raised. The landless and low-income households mostly raise sheep and goats, donkeys while cows and camels are reared by relatively better off families.

Horses are raised mostly as a symbol of honor and prestige whereas buffalo-rearing is limited to the villages where water availability is relatively plentiful. Sheep, goats, cows, buffaloes and camels are raised for milking. Donkeys and camels are used for pulling water from dug-wells, fetching water and fuelwood, ploughing the fields and other such purposes. Manure of the domestic animals is used as natural fertilizer.

Vast expanse of rangeland vegetated with different species of grasses 8, bushes 9 and trees 10 is widely used as communal grazing land, locally called *gauchar*. Besides, it also provides a habitat to a number of insect/reptiles 11, animals 12 and bird 13 species.

Having a free access to these *gauchar*s (communal grazing land), both the landholding and landless communities graze their animals there. Almost all the villages have their *gauchar*. In most of the villages, the area of *gauchar* land is more than that of the *survey* and *yaksaala* land combined together.

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7. A power point presentation of Engro Powergen by Kahlid Mansoor on 6th April 2012

8. E.g. Chirriya Wal, Mandhano, Daraminr, Chhirna Wall, Kouri, Bheekar, Wisoni, Sonail, Takandi, Martru, Paghro, Toolar, Sanhoro, etc.

9. E.g. Sinr, Khip, Booh, Murt, Dumm, Sainr, Dubb, Bhurtt, Gangheetay, Bhangri, etc.

10. E.g. Bayr, Kandi, Bawari, Jaar, Kumbhat, Kirarr, Devi, Akk, Roheera, etc.

11. E.g. snake, chameleons and tuatara

12. E.g. deer, rabit, fox, squirrel, rat, sooro, bogi, piyanr bala and khilkorri

13. E.g. peacock, pigeon, dove, wild rooster, perdicinae, sparrow, hawk, vulture, crow, dode kaa'n, hooriyo, layli, kabbra, dholar , moohar, siranr, ghugh, bheerab, borri, weeho, taaro (تارو), baabbooha, malaari and hullu

When not cultivated, the farmland (*survey* and *yaksaala* categories of land), in addition to *gauchar*, is also used for grazing domestic animals. Grazing animals on others' uncultivated farmland is usually not forbidden provided there is some hostility between the two parties. However, felling trees both in the private farmlands and communal grazing lands is strictly prohibited.

When the drought spells hit the desert, almost all the landless families and some male members of the landholding communities along with their herds of animals migrate to the neighboring districts in search of some paid work and greener pastures. On hearing the news about rains in Thar, they make their way back to their homes.

Before the advent of coal power development in Thar, agro-pastoralism has been the mainstay of the indigenous communities' livelihood. Though the land available for agriculture and animal grazing has been fast shrinking after ever expanding coal mining operations and coal based thermal power plants, an overwhelming majority, having no other skills to earn their living, continues to depend on subsistence farming and livestock-rearing.

3. COAL POWER DEVELOPMENT AND LIVELIHOOD CHALLENGES

3.1. Coal power development in Thar:

Thar lignite coal deposits were discovered in early 1990s. In terms of quality, Thar coal is ranked as lignite 'B' 14. Lignite coal is considered the lowest rank of coal due to its low heat and high carbon, Sulphur and ash contents.

In 2002, the government of Pakistan introduced "Policy for Power Generation Projects", which underlined the significance of indigenous resources, especially coal, for power generation 15. In 2008, the then federal and provincial (Sindh) governments decided to exploit Thar coal reserves for power generation on a 'fast track basis.' In this regard, Thar Coal and Energy Board (TCEB) was established to facilitate investment and development of coal based power projects 16.

In the years to come, there came Chinese investment under China Pakistan Economic Corridor (CPEC)—a project of Belt and Road Initiative (BRI)—to develop coal mining and thermal power plants in Thar. Thar Coalfield Block-II (TCB-II) was the first out of 13 blocks, where Sindh Engro Coal Mining Company (SECMC) started its coal mining and installation of a 660MW power plant.

After TCB-II, Sino Sindh Resource Limited (SSRL) started to develop coal mine and install a 1,320 MW thermal power plant in TCB-I. The next coalfield block to be developed under CPEC was TCB-VI, spread over an area of 66.1 square kilometers.

A UK-based company, Oracle Power PLC, was supposed to develop coal mine, install a 1,320 MW coal-fired power plant, and produce gas, urea and diesel in TCB-VI 17. Practically, however, no civil work has yet started in TCB-VI.

Two out of total 13 Thar coalfield blocks—namely TCB-II and TCB-I—have seen considerable growth in terms of coal-mining operations, development of coal-fired thermal power plants and coal based power generation in last several years (less than one decade). A 660 MW coal-fired thermal plant in TCB-II being operated by the SECMC has already started to feed into national grid, contributing 2% power in Pakistan's total installed generation capacity in 2021 18.

In 2022, extraction of lignite coal deposits began in TCB-I 19. A 1,320 MW coal power plant being installed by Sino Sindh Resources Limited (SSRL) is nearing its completion. Moreover, five out of total seven committed coal power projects in Pakistan's Indicative Generation Capacity Enhancement Plan (IGCEP) 2021-2030, which are likely to be operational in next couple of years, will be fueled by local (Thar) coal. Presently at different stages of completion, the five committed local coal power projects in Thar—including the 1,320 MW SSRL project—will be adding 2,970 MW to national installed generation capacity.

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14. 'Thar coal mining: potential, concerns and mining', a joint publication of Thardeep Rural Development Program (TRDP) and Novib
http://thardeep.org/thardeep/Publication/PubFiles/eptkriact8vqCoal%20Mining%20In%20Tharparkar%20Potential,%20Concerns%20and%20Remedies.pdf

15. Policy For Power Generation Projects Year 2002
https://nepra.org.pk/Policies/Power%20Policy%202002.pdf

16. Pakistan's Thar Coal Power Generation Potential, a report by Pakistan Power and Infrastructure Board (PPIB) published in July 2008
http://embassyofpakistanusa.org/wp-content/uploads/2017/05/Thar-Coal-Power-Generation.pdf

17. Sindh plans to launch Thar Coal Block-VI under CPEC
https://www.dawn.com/news/1521780

Indicative Generation Capacity Enhancement Plan 2021-2030 by NEPRA

18.https://nepra.org.pk/Admission%20Notices/2021/06%20June/IGCEP%202021.pdf

19. https://www.dawn.com/news/1672580/extraction-of-lignite-coal-deposits-begins-in-thars-block-1

3.2. Renewed importance of Thar coal after global spike in energy prices:

Pakistan's power sector, which is overwhelmingly dependent on imported oil, gas and coal, has added to its financial challenges amidst the global spike in energy prices after Russian war on Ukraine. Two thirds (66 percent) of the country's installed generation capacity is based on thermal power generated by fossil fuels.

Contribution of imported fuels like furnace oil, liquefied natural gas (LNG) and coal, to Pakistan's installed thermal capacity is 6,507 MW (31.9 percent), 5,838MW (28.62 percent) and 3,960MW (19.41 percent) respectively. It amounts to around 80 percent of the total installed capacity of the country's combined thermal power build-up.

According to the data released by the Federal Bureau of Statistics in May 2022, Pakistan's oil import bill surged by 95.84 percent to $17.03 billion in the July-April period compared to $8.69 billion in the corresponding period of the last fiscal year. Further breakup of the data shows that crude oil imports increased 75.34 percent in value while those of liquefied natural gas rose by 82.90 percent in value.

It is pertinent to mention here that the largest chunk of imported fuels is consumed by the power sector. The following facts and figures extracted from the Pakistan Energy Book 2020 give a sense about the power sector's consumption of LNG, coal and petroleum products.

The power sector consumed more than 60 percent LNG in the fiscal year 2019-20. With its share of 191,684 million cubic feet (CFt), the power sector consumed more LNG than fertilizer, cement, transport, domestic, general industries and commercial sectors.

The power sector's share in the country's total consumption of coal was 43 percent in FY 2019-20. Compared to other sectors—including cement, steel, brick-kiln and domestic sectors—its coal consumption (10,896,986 tonnes) was the highest.

In terms of the consumption of petroleum products, the power sector was the second largest consumer after the transport sector in FY 2019-20. The total consumption of petroleum products was 17,038,494 tonnes, out of which the power sector's consumption was 1,526,796 tonnes.

Thermal power is heavy not only on the country's fuel import bill but also on consumers' pockets. According to the State of Industry Report 2021 by the National Electric Power Regulatory Authority (NEPRA), several factors account for the high cost of electricity generated by thermal power plants.

These include unutilized 'take or pay' power generation capacity, impact of 'must-run' power plants, old in-efficient power plants, increasing capacity payments, a whopping circular debt, a weak transmission and distribution system, a lack of coordination among relevant power sector stakeholders, improper planning, poor governance, use of primitive technology, taxes, fees and levies in electricity bills etc.

In addition to the economic cost, thermal power has high environmental cost. Carbon dioxide and other greenhouse gases emitted in the wake of fossil fuel combustion for thermal power generation contribute to global warming and climate change.

The policy makers acknowledge the high economic and environmental costs of thermal power generation and promise policies and principles to mitigate these costs. However, these policies and principles turn out to be a mere lip service when it comes to plans. Indicative Generation Capacity Enhancement Plan (IGCEP) 2021-30 prepared by the National Transmission and Dispatch Company (NTDC) is the best example of this.

Notwithstanding its 'least cost principle', the NTDC included eight thermal power plants of 5,193 MW capacity as committed projects in IGCEP 2021-30. These include five local coal-fired projects of 2,970 MW, two imported coal-based plants of 960 MW and one RLNG-fueled power plant of 1,263 MW. The candidate projects under the IGCEP 2021-30 also include a local coal-, four imported coal- and two LNG-based thermal power plants.

After inaugurating a 330MW coal-fueled thermal power plant of Thar Energy Limited (TEL) recently,

the country's premier, Shahbaz Sharif, said cheaper production from Thar coalfields would be a game changer for the national development. Besides, he said the government would chalk out a policy framework on Thar coal project to connect it with the rest of the coal-powered plants in the country, producing 4,000 MW of electricity 20.

Thar coal as a 'least cost option' has assumed renewed significance for power generation amongst the policy makers against the backdrop of global spike in energy prices after the Russian war on Ukraine and the serious financial crisis Pakistan is currently facing. Notwithstanding its coal moratorium and commitments to reduce its emissions of carbon dioxide and other greenhouse gases, Pakistan does not seem to reduce the mining and combustion of its indigenous coal resource of Thar.

3.3. Livelihood challenges after coal development in Thar:

Coal power development has drastically changed the use of land in Thar coalfield. The land previously used for subsistence farming and grazing purposes has now been increasingly exploited for coal mining, building coal-fueled thermal power plants and setting up auxiliary infrastructure. Apart from contaminating local water resources and degradation of land, changing land use pattern has exposed Tharis to severe livelihood challenges.

Following the land acquisition for coal power projects in block-1and block-2 of Thar coalfield, more than 30,000 people have been facing displacement in 10 villages of Thar coalfield 21. With the expansion in mining areas, the number of families and villages to be displaced will further increase. Apart from their physical dislocation, the affected families have been suffering from huge livelihood losses. Since the local communities do not know any income-generation skills other than farming and livestock-rearing, an overwhelming majority of the displaced families has no source of earning their livelihood.

3.3.1. Policy and governance flaws in land acquisition processes:

Historically, land tenure in Thar has been different from the one prevailing in rest of the province. Notwithstanding the fact that water ponds, wells, sand, dunes, pathways and grazing fields have been declared communal properties under the Thar Land Grants Policy 1930, *gauchar*s (pastures) are being treated as the government's property in land acquisition processes for coal power projects.

The ongoing land acquisition and resettlement processes taking place in Thar without any official policy are characterized by arbitrariness, exclusionary decision-making, non-transparency and extraordinary delays in payment of compensation amounts. Moreover, there exists no system to proactively provide land acquisition and resettlement related official information to the affected communities.

Blatant violations of United Nations' 'Basic Principles and Guidelines on Development Based Evictions and Displacement' 22 are made in the land acquisition for coal power projects in Thar. Forced evictions coupled with no compensation against the grazing land have been causing massive impoverishment among the displaced families, a significant number of which are landless. Massive irregularities and human rights violations in land acquisition process have been causing a sense of deprivation and anger among the local communities.

3.3.2. No compensation against *yaksaala*, *gauchar* and the assets other than houses:

In Thar, the local communities—both the land owners and landless people—have been depending upon a number of land categories—including *survey* (privately-owned), *na-qabooli*, *yaksaala* (the land leased out to the farmers) and *gauchar* (common grazing land). The ongoing resettlement in Thar, however, involves the compensation only against *survey* (privately-owned) land. In almost all villages of Thar, every land-owning family has been tilling *yaksaala* (the land leased out to the local farmers) besides its *survey* (privately-owed) land for decades.

In many cases the size of *yaksaala* happens to be twice or even more than the total survey land of the owners. However due to the corrupt practices on the part of revenue department officials and inability of local communities in record-keeping,

20. https://www.dawn.com/news/1714366/thar-coal-is-a-game-changer-says-shehbaz

21. https://acjce.com/wp-content/uploads/2021/09/Research-Study-Coal-rush-The-impacts-of-coal-power-generation-on-Tharis-land-rights-1.pdf

22.https://www.ohchr.org/Documents/Issues/Housing/Guidelines_en.pdf

the local farmers possessing *yaksaala* land do not have proof of paying lease amount to the government and hence cannot make a claim about the land leased out to them.

So the *yaksaala* land is being acquired without any compensation to the local farmers. Besides, the government has been making only a lump sum amount of compensation against the houses. The number of houses are determined by the existing number of *nikaah* (marriage contract) solemnized before the compensation award. No compensation against the assets other than the houses—including trees, orchards, animal pens, etc.—is being made.

3.3.3. Provision of no alternative grazing land to livestock-dependent indigenous communities of Thar:

Subsistence rain-fed farming and livestock-rearing are two primary sources of livelihood for the local communities in Thar. Compared to agriculture, livestock-rearing is rather a more stable and dependable source of livelihood both for the landholding and landless families. During the drought, the animals the local communities raise provide them a great sustenance cushion. All the villages have their *gauchar* (common pastures) to graze the animals. The size of *gauchar* is often equal to the *survey* and *yaksaala* lands combined together. Despite the centrality of *gauchar* for livestock-dependent local communities, no alternative grazing land is being provided to the families against the acquisition of their *gauchar*s for coal power projects in Thar. Only the farmers of Senhri Dars village (in Thar coalfield block-II) have been provided an alternative *gauchar*, which was claimed to be the *yaksaala* land of farmers belonging to Thario Halepoto village. It triggered a conflict between the local communities of the two villages, resulting in filing of cases and arrests of some farmers hailing from Thario Halepoto. village

3.3.4. Enclosure of grazing lands and inhuman treatment of shepherds by coal power companies:

Following the land acquisition in Thar Coalfield Block-I (TCB-I) and Thar Coalfield Block-II (TCB-II), the coal power companies have enclosed most of the *gauchar*s (grazing lands) by laying barbed-wire fences around them. Having their grazing land shrunk, the desperate herders tend to stealthily enter into their enclosed *gauchar*s wherever they find some way. On being caught grazing their animals in enclosed grazing lands, the herders are subjected to harassment, punishment and threats by security officials of the coal power companies. Sometimes, the security officials do not allow the local shepherds to take back their animals.

In some areas, for instance in Warwai (TCB-I), the companies have allowed the locals to graze their animals in the enclosed *gauchars*. In these areas, the herders—who along with their animals enter through designated gates—have to face humiliation by the security officials on daily basis.

3.3.5. Animals dying after drinking poisonous wastewater released from coal mines and thermal power plants:

The companies operating coal mines and thermal power plants have been dumping the poisonous wastewater both at the designated sites (e.g. Gorano Reservoir, Dukar Cou Reservoir and Reinjection Plant at Meghay-Jo-Tar) and undesignated places (e.g. the farmlands and pastures of Jaman Sammu, Bitra, Warwai, Tilwaiyo villages).

The companies have been dumping wastewater in an arbitrary, irresponsible and dangerous manner. Disposal of poisonous wastewater—particularly in undesignated sites like Tilwaiyo, Warwai (TCB-I), Jaman Samoon and Bitra (TCB-II) villages—have been causing the deaths of animals. For last several months a number of livestock heads—camels, cows, sheep and goats—have died after drinking wastewater released in these villages.

3.3.6. No livelihood compensation to landless *haaris* (farmers):

In Thar, a majority of local population is landless. The landless people—an overwhelming majority of which belongs to the scheduled caste of religious minority—depend upon their animals and till the land of others as *haaris*—farm wage workers.

They are the worst sufferers of land acquisition. On the one hand, they have been losing the *gowchar*/grazing land while on other they do not have any more land in their neighborhood to work as wage labor. Ideally some affirmative actions should have been taken to compensate them for their livelihood losses.

On the contrary, they have not been given any compensation against the livelihood losses they suffered due to land acquisition for coal mines and thermal power plants. The only compensation amount they receive against their houses after their displacement is being consumed for meeting the daily living expenses. The landless *haari*s have been turning out to be the worst sufferers of the ongoing land acquisition for coal power projects in Thar.

3.3.7. No jobs in coal power companies given to the locals:

Before their displacement, the local communities are promised to be given job opportunities in the coal power companies acquiring their land.

To motivate the communities for surrendering their farmlands and pastures for coal mines and thermal power plants, the companies offer some menial jobs to the members of displaced families. However as the land acquisition process picks up and becomes smooth, the coal power companies start to sack them from their jobs on one or the other pretext.

The companies have been discriminating against the local communities and giving preference to the outsiders while hiring their employees. If the companies ever offer any opportunities to the locals, these happen to be menial jobs. The high-paid, technical jobs are exclusively meant for the outsiders even if the locals have required educational qualification, skills and experience.

4. PASTORALISTS' WOES

AFTER COAL POWER IN THAR : A CASE STUDY OF WARVAI VILLAGE

4.1. Village Profile:

Warvai is a village in union council Khario Ghulam Shah of Islamkot taluka, Tharparkar district. It is among -nine (9) villages—including Warvai, Male-jo-Tar, Saren-jo-Tar, Sinhar Vikio, Ajbe-jo-Tar, Khario Ghulam Shah, Tilvai, Bhave-jo-Tar and Shahmir Vikio/Qurban Vikio— falling in the Thar Coalfield Block-I (TC-I) and facing displacement due to a coal mining and thermal power generation project, officially known as SSRL Thar Coal Block-I 6.8 mtpa & Power Plant (2x660MW) (Shanghai Electric).

The village is located some 60Km from district headquarter Mitthi and 15Km from Islamkot in east. The distance between Warvai and UC Khario Ghulam Shah is four (4) kilometers. However after the Sino Sindh Resource Limited (SSRL) laid fencing around the mining area, the residents of Warvai village have to cover a distance of 20 Km to reach Khario Ghulam Shah.

Total number of the households is around 650 while the registered voters are roughly 1,200. With an average household size of seven (7), total population of the village is estimated to be 4,550. The castes/clans living in the village include Lanja, Rahimoo, Kohli and Menghwar. Since the Lanja are in great number, the village is also called Warvai Lanja. Rahimoon and Lanja families are predominantly dependent on agriculture and livestock-rearing while the landless Menghwar and Kohli families earn their living by doing wage-labor and grazing animals.

Table-1: Population of Warvai by castes and clans

S#	Name of Caste and Clans	Number of households	Total population
1	Lanja	300	2100
2	Rahimoon	250	1750
3	Kohli	50	350
4	Menghwar	50	350
	Total	**650**	**4550**

There are total 10 dug wells in the village. Due to mining and the wastewater discharged by the coal company, the water of village wells is becoming brackish and unusable. Out of total 10 wells, five (5) wells of the village have become unusable in a span in last one year.

4.2. Civic amenities available to Warvai:

The village is linked to Islamkot through a narrow metaled road. The civic amenities available to Warvai include: (1) two government primary schools for boys and girls, (2) one government middle school both for boys and girls, and (3) a government-run dispensary.

The high school students from the village have to go to Islamkot on public transport. Out of total distance of 15 Km from Warvai to Islamkot, the students have to cover a distance 3Km on foot from their village to Engro More. On their way to school and back to home, the students generally take lift from the commuters. The company had provided a pick and drop facility in the form of a school bus for the students. However, the facility was taken back after one month.

There is only a two-room government dispensary in the village. An MBBS doctor appointed at the dispensary visits the facility only once in a week. The villagers complain that the doctor comes only to distribute the medicines. The locals visit the government dispensary only for the diseases like cough, flu and fever. They complain that the quality of the dispensary is quite pathetic. For the

Table-2: Education facilities available to Warvai

S#	Education Facility	Location and Distance from Village	Number of Students availing facility	Comments
1	Nearest Primary School	Within the village	Total 350 students	There are two primary schools, in the Warwai village. Bo separate school for the girls is there in the village. Both the boys and girls study in the same schools. Almost 250 students are enrolled in one school and 100 in the other
2	Nearest Middle School	Within the village	150 students	There is a government middle school both for boys and girls in the village in which around 150 students are enrolled
3	Nearest High School	Islamkot, 15 Km	45 students	There is no high school in Warvai. The nearest high school is located in Islamkot. Only boys go to Islamkot for matriculation. The girl students have to end their education after passing their 8th grade examination.
4	Higher Secondary School	Islamkot 15 Km	22 students	There is no higher secondary school in Warvai. The nearest higher secondary school is located in Islamkot.

treatment of emergency and serious diseases, they visit taluka headquarter (THQ) Hospital and private clinics in Islamkot.

4.3. Major livelihood dependencies:

Mutually complimentary rain-fed agriculture and livestock-rearing are major sources of livelihood. Some crops grown here provide off-season or dry fodder for the livestock while the animals' manure is used to fertilize the farmland.

Irrespective of their principal source of income, almost all the families directly or indirectly are engaged in livestock-rearing or animal grazing. Almost 90 percent of families, whether they hold any land or not, are dependent on subsistence farming and livestock.

Apart from agriculture and livestock-rearing, other livelihood sources in the villages include private jobs, small and medium businesses, and government jobs .

Total *survey* and *yakssala* land available for farming is 1300 acres land. Only the Muslim families of Rahimoon and Lanja castes possess farmland while the Hindu families of Menghwar and Kohli clans are landless. The Rahimoon and Lanja families possess both the '*survey*' (privately owned) and '*yaksala*' (leased out) land. The Menghwar and Kohli families hold neither any '*survey*' nor '*yaksala*' land. They mostly work as farm labor or grazers.

Table-4: Land-holding by castes and clans

Name of Caste and Clan	*Survey* Land	*Yaksala* Land	Total Land
Rahimoon	600 acres	300 acres	900 acres
Lanja	200 acres	200 acres	400 acres
Menghwar	Nil	Nil	Nil
Kohli	Nil	Nil	Nil
Grand Total	**800 acres**	**500 acres**	**1300 acres**

Table-3: Major livelihood sources and their ranking in terms of dependence

S#	Livelihood Source	Ranking (1st, 2nd, 3rd, nth source of livelihood	Number/percentage of dependent families	Comments
01	Livestock-rearing	1st (First)	100%	Almost all the families keep raise animals
02	Agriculture/farming	2nd (Second)	90%	majority of population
03	Wage-workers/ Private job	3rd (third)	6%	45 men are employed with the coal power companies
04	Small and medium business	4th (fourth)	2%	12 men from the village are running small general stores in Islamkot
05	Government job	5th (fifth)	2%	10 persons from the village are in government job

Compared to rain-fed agriculture which is erratic, livestock-rearing is rather more dependable source of income. The local term their animals as their 'bank balance'. Whenever they need cash, they sell their animals. Even those, who have government and private jobs or run some businesses are directly or indirectly engaged in livestock rearing. Currently gross livestock population is estimated to be around 16,985 while the total population of milk-giving animals is around 8,650.

Average number of animal-holding by a family in Warvai is 26.13. Though the Rahimoon families possess more farmland than Lanja families have, average livestock-holding by a Lanja family (33.33 animals) is greater than that of a Rahimoon family (22.44 animals).

Table-5: Livestock-holding by castes and clans

S#	Name of Caste and Clans	Sheep	Goats	Cows	Buffaloes	Camels	Donkeys	Horses	Total
1	Rahimoon	1500	2500	1000	300	150	150	10	5610
2	Lanja	3000	4000	2000	350	400	250	Nil	10000
3	Menghwar	500	800	Nil	Nil	25	50	Nil	1375
4	Kohli	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	Total animals	5000	7300	3000	650	575	450	10	16985
	Total milk-giving animals	2500	3650	2000	300	200	Nil	Nil	8650

It is interesting to note that though being landless, Menghwar possess significant number of sheep and goats. Average livestock-holding by a Menghwar family (27.50 animals) is more than that of a Rahimoon family (22.44 animals). Kohli families possess neither any land nor animals. They mostly work as farm labor. Some Kohli men also work as shepherd to graze the animals of others. They mostly fulfill daily milk needs of their family by borrowing from the families having their livestock.

4.4. Income from livestock-rearing:

Livestock-raising is dependable source of income in the village. The villagers earn their income by selling their animals as well as milk, byproducts of milk, wool of some animals and ropes, rugs and sack made of the wool. Selling animals milk and its byproducts, which was a social stigma a few years ago, has become almost a normal practice after the companies selling packed milk established their milk collection points in Islamkot and started procuring milk from the area.

Table-6: Animal-wise daily milk production in liters

Animal	Minimum (liters)	Maximum (liters)	Average (liters)
Sheep	1	1	1
Goats	3	4	3.5
Cows	8	10	9
Buffaloes	16	18	17
Camels	10	12	11

Compared to other animals, buffaloes give highest amount of milk. Since per capita water consumption of the buffalo is highest compared to other animals and water is most precious commodity in the area, very few villagers afford to have buffaloes.

A milk company's van daily comes to collect milk from the villagers. Besides, the milk is also purchased by some sweetmeat and dairy shops in Islamkot. Though the rate of milk is a little higher in Islamkot, a large number of villagers prefer selling milk in the village. Milk of different animals is purchased at different rates.

Table-7: Animal-wise rate of milk

Animal	Minimum Rate (Rs. Per liter)	Maximum Rate (Rs. Per liter)	Average Rate (Rs. Per liter)
Sheep	60	70	65
Goats	60	70	65
Cows	100	110	105
Buffaloes	120	120	120
Camels	100	120	110

Except for the camel milk, the milk of other animal, including sheep, goats, cows and buffaloes is used for producing yogurt, butter and desi ghee. Apart from yogurt which is locally consumed, the villagers sell butter and desi ghee (purified butter) to the sweetmeat and dairy shops in Islamkot. Around 6 Kg of *desi ghee* (purified butter) is produced from a cow's milk in a month.

Table-8: Animal-wise rates of milk byproducts

Animal	Butter	Desi Ghee
Sheep	800	1200
Goats	1000	1200
Cows	1300	1500
Buffaloes	1300	1500

The wool of sheep, goats and camels is trimmed twice (in March and October) a year (in October and in March). Only the wool of sheep is sold at the rate of Rs. 1200 per 40 kilogram. The wool of sheep and goats is also used for making ropes, rugs and sacks. Ropes are made both for domestic use and sale purposes while the rugs and sacks are produced only for commercial purpose. The wool of camel, however, is not used or sold. Nor is it used for making any handicrafts.

Table-9: Animal-wise rates of wool-made handicrafts

Animal	Rope (Rs. per piece)	Sacks (Rs. per piece)	Rugs (Rs. per piece)
Sheep	300-500	1500-5000	10,000-30,000
Goats	400-500	2000-5000	10,000 - 20,000

The villagers generally sell and purchase their animals at the nearest market in Islamkot. It is a weekly market, which is held on Thursday. Both sale and purchase of animals is a male occupation. The woman can sell or purchase animals only if she does not have her husband or a male family member to do it for her.

Table-10: Market price of different animals

Animal	Minimum Price (Rs. per animal)	Maximum Price (Rs. per animal)	Average Price (Rs. per animal)
Sheep	15,000	25,000	20,000
Goat	25,000	40,000	32,500
Cows	100,000	150,000	125,000
Buffaloes	250,000	300,000	275,000
Camels	100,000	150,000	125,000
Donkeys	15,000	20,000	17,500
Horses	200,000	250,000	225,000

4.5. Restrictions on access to *gauchar* and everyday problems:

Total area of the village's communal grazing land, locally called as Warvai-jo-*Gauchar*, is 12,000 acres. Currently it is being exclusively used by the pastoralists belonging to the Warvai. Before the advent of coal power development and fencing of the *gauchar* by the SSRL, the pasture was also used by the herders from neighboring villages, especially Tilwaiyo, Bhavay-jo-Tar and Khario Ghulam Shah. After the fencing of the *gauchar*, only the herders of Warvai village can graze their animals in the *gauchar*.

When the company acquired their *gauchar*, the villagers asked for an alternative grazing land for their animals but their demand was rejected on the ground that the *gauchar* is a government property and they have no legal entitlement to claim compensation against its acquisition.

Much before the formal land acquisition took place in the area, the residents started to face restrictions on their entry into and grazing animals in *gauchar*. Following the erection of fencing around the site and starting of mining, restrictions on animal grazing in the *gauchar* became all the more stringent and painful for the villagers.

Though the company has allowed the locals to graze their animals in the fenced mining area till they are relocated, the pastoralists have been facing a number of problems in making their entry into and grazing their animals in the *gauchar*.

They have to cross two gates—one on the outer fence and the other on inner fence—to enter into their *gauchar* and graze their animals there. Due to restrictions on accessing the *gauchar*, they have been facing a number of troubles. Every time they enter the gate on outer fence, the shepherds have to face the hassle of registering their entry into the *gauchar*.

The security guards appointed at the gate subject them to harassment and humiliation, accusing them of theft. In an attempt to eat something lying across the fence, sheep and goats often get trapped in the fence and injured.

The company officials throw food waste wrapped in polythene bags in the *gauchar*, which attracts the animals. After eating the waste-food along with the plastic bags, a number of animals (50 sheep and goats) have died.

The coal power company has been releasing poisonous wastewater in the *gauchar*. Around 500 animals of Tilwaiyo and Warwai villages have died after drinking the poisonous water.

The coal company has adopted and let lose some ferocious dogs in the fenced area. A number the animals grazing in *gauchar* have died after being bitten or injured by these dogs.

Some animals have been buried alive by the sand and soil being offloaded by the company's dumper trucks. After the restrictions on access to *gauchar* by coal power company, almost 50% livestock has decreased in the village.

4.6. Livestock management: before and after coal power project:

Livestock management is a full time family occupation, involving men, women and children in Thar. However due to restrictions on grazing animals in *gauchar*, the locals have been facing a number of problems in animal-grazing, watering animals, milking animals and treating their sick animals.

Animal grazing: Animal grazing is mainly the responsibility of male family members. They take their herds to *gauchar* at 03:00pm and come back to the village at 07:00pm. Presently there are 1,200 shepherds in the village. Before the *gauchar* was fenced, there were around 2,000 shepherds in the village. There has been 40% decrease in the number of shepherds after imposition of restrictions on access to the communal grazing land. Presently only 12 shepherds belonging to Kohli community are engaged in grazing the animals of others on monthly wage of Rs. 10,000. Earlier their number was 50.

Watering animals: Before the advent of coal power project, the shepherds would bring their herds in gauchar back to the village for watering their animals. All the family members—including children, men and women—would participate in

Table-11: Decreasing number of animals after coal power projects

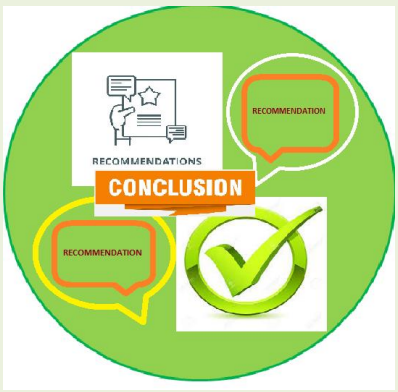
S#	Animal	Before Restrictions (numbers)	After Restrictions (numbers)	Decrease	
				Decrease in numbers	Decrease in percentage
01	Sheep	10,000	5,000	5,000	50.0%
02	Goat	12,000	7,300	4,700	39.16%
03	Cows	9,000	3,000	6,000	66.66%
04	Buffaloes	1,000	650	350	35.0%
05	Camels	1,100	575	525	47.72%
06	Donkeys	1,000	450	550	55.0%
07	Horses	30	10	20	66.66%
	Total	**34,130**	**16,985**	**17,145**	**50.23%**

watering their animals. Now the situation has changed. To avoid the humiliation they have to face at the hands of security guards on the gates of *gauchar*, the shepherds now do not come back to village for watering their animals. Instead they have to arrange water for their animals in the *gauchar*. To provide drinking water to their animals, the villagers have to procure 5 tanks in a day. The cost of each water tank is Rs. 5,000, implying that they have to buy water amounting to Rs. 25,000 for their animals on daily basis.

Milking animals: All the animals are milked twice a day—first in the morning and then in the evening. If the animals are in the village, both the women and men milk the animals. If the herd is in *gauchar*, away from the village, only men milk the animals.

Treating sick animals: The most prevalent animal-diseases in the village include: *maata* (a skin disease affecting mouth and other parts of the animal), *khangh* (cough) and *aaphar* (loose motion/digestive ailment). The nearest veterinary hospital is located in Islamkot, some 15 Km from the village. Instead of taking their sick animals to veterinary hospital, the villagers generally prefer to treat their sick animals through their traditional methods and medicinal plants. If their sick animals are not cured by their traditional methods and local medicinal herbs, they call veterinary doctor/quack from Islamkot, who charges them Rs. 1,000 for his visit apart from the price of medicines and injection. The villagers complain that animal diseases have increased in last several years.

5. CONCLUSION AND RECOMMENDATIONS



Coal power development in Thar has exposed the local communities to a plethora of livelihood challenges. It has drastically changed the use of land in Thar coalfield. The land previously used for subsistence farming and grazing purposes has now been increasingly exploited for coal mining, building coal-fueled thermal power plants and setting up auxiliary infrastructure. Apart from water contamination and land degradation, changing land use has left almost no land for subsistence farming and livestock rearing.

Following the land acquisition in Thar coalfield, more than 30,000 people have been facing displacement in 10 villages of Thar coalfield. With the expansion in mining areas, the number of families and villages to be displaced will further increase. Apart from their physical dislocation, the affected families have been suffering from huge livelihood losses. Since the local communities do not know any income-generation skills other than farming and livestock-rearing, an overwhelming majority of the displaced families are left with no source of earning their livelihood.

Against this backdrop, the government and coal power companies are recommended to:

- Stop land acquisition in Thar coalfield until an official Thar-specific land policy—considerate to basic human and livelihood rights of the affected communities—is adopted. Protection and restoration of livelihood security of the indigenous Thari communities should be an integral part of the proposed land acquisition policy for Thar coal power projects.
- Pay compensation against the *yaksaala* land and the assets other than houses.
- Provide alternative grazing land to the local communities against their *gauchar*s (pastures) acquired for coal power projects.
- Give free, unrestricted access to the enclosed *gauchar*s unless the land is used for mining purpose and poses any threat to the shepherds and the animals.
- Stop subjecting the local herders to inhuman treatment.
- Act responsibly and comply with the national and international environmental laws in disposal of poisonous wastewater in Thar.
- Give priority to the local communities in the job opportunities created by coal power companies
- Compensate the local communities who suffered livelihood losses due to disposal of wastewater.
- Give a special livelihood package for the landless farmers based on their existing set of skills.

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