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6th Youth Parliament Pakistan

A Report on

Energy Trade Policy

CASA 1000, Electricity Import from India and Coal Project in Assistance with China

March 2015



Secretariat Youth Parliament Pakistan

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PILDAT is an independent, non-partisan and not-for-profit indigenous research and training institution with the mission to strengthen democracy and democratic institutions in Pakistan. It also serves as Secretariat, Youth Parliament Pakistan.

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CONTENTS

Preface Executive Summary List of Abbreviation Members of Youth Parliament Standing committee on Energy

CASA-1000	11
Introduction	11
Key Interests of participating countries:	11
Tajikistan & Kyrgyzstan	11
Pakistan & Afghanistan	11
Funding of project	12
Progress of participating countries	12
Issues relating to completion of project	12
Converter Station Technology	12
Transit Fee	12
Security Issue	13
Tariff Issue	13
Recommendation	13
Electricity Import from India	13
Introduction	13
Diplomatic Perspective of Energy Trade	13
India	13
Pakistan	14
Fechnical Feasibility of Electricity trade with India	14
Conclusion	14
Recommendations	14
Coal	15
Introduction	15
Coal Energy	15
Thar Coal Underground Gasification project	15
Proposed Coal Plants	15
Recommendations	15
Bibliography	16



PREFACE

A fter the successful completion of 5 terms since 2007, the 6th Youth Parliament Pakistan was launched in June 2014. The specific objectives of the Youth Parliament Pakistan (YPP) programme are to inculcate democratic culture and spirit of tolerance for others views among the youth; to expose them to the political and parliamentary processes; to facilitate youth to express their views on various national, international, regional and local issues thereby helping the government and society at large to better understand the concerns of the youth; to groom the leadership potential of the youth of Pakistan by exposing them to peaceful and democratic resolution of differences especially at a time when various parts of Pakistan are suffering from conflict and extremism. Finally this provides a forum to the youth of Pakistan to understand how the Parliament works as the supreme public representative institution in a democracy.

The YPP has its own 2-party system, Leader of the House and Opposition, as well as an augmented system of Parliamentary Committees with Committee Chairpersons, Vice Chairpersons and Secretaries.

The Youth Parliament Standing Committees of the 6th Youth Parliament Pakistan (2014), as a part of the learning process, have been tasked with conducting reviews of national policies through research based analysis and with developing cogent policy alternatives for the Parliament and the Government of Pakistan. The six Youth Parliament Standing Committees for the current term are:

- Youth Parliament Standing Committee on National Security
- Youth Parliament Standing Committee on Foreign Affairs
- Youth Parliament Standing Committee on Energy
- Youth Parliament Standing Committee on Law, Justice & Human Rights
- Youth Parliament Standing Committee on Education & Youth Affairs
- Youth Parliament Standing Committee on Finance, Economic Affairs & Planning

The Committees have gone through a process of intensive research, consultations with policy experts and internal review within Committees before putting together their proposals. The initial findings were shared with the Secretariat Youth Parliament Pakistan and the Steering Committee Youth Parliament Pakistan who gave their comments on these drafts. After incorporating these inputs, the reports are finalized by individual Committees and thereafter presented on the floor of the House for further recommendations and feedback from the entire strength of the YPP. Going through this rigour the participants not only experienced the process of drafting policy in a democratic fashion but also formulated useful recommendation in the form of this report,

The reports are compiled and finally published for the purpose of dissemination through media briefing and report launch event at the closure of third YPP Session of the 6th YPP term. More importantly all the reports will be presented by the Members of YPP to the corresponding Standing Committees of the National Assembly and Senate, in the effort to incorporate the voice of the youth in the national policy making process. The authors of the reports, the MYPs, are to take the lead in lobbying for the recommendations they have devised, to civil society, media and to a greater audience. The reports are also available online at www.youthparliament.pk.

The 6th Youth Parliament Pakistan (2014-2015) is supported by the Danish International Development Agency, Government of Denmark, as recognition of the importance of young people's development in democracy and democratic practices.

Disclaimer

The Secretariat of Youth Parliament Pakistan has provided unbiased feedback in a timely manner on the research reports and the scientific value of the work done by MYP's. The Secretariat has given guidance in ensuring the content is clear, concise, and relevant to the current pool of knowledge in regard to originality, and interest to the readers. The opinions, findings or recommendations expressed in this report belong to the authors and do not reflect the views of PILDAT or DANIDA.

Secretariat of the Youth Parliament Pakistan Pakistan institute of Legislative Development and Transparency March 2015

EXECUTIVE SUMMARY A RY

Pakistan is suffering from acute energy crisis. Productive capacity of the country is far below demand and the available domestic supplies of energy are not constant As a result, Pakistan has to pay large amounts of revenue towards expensive energy imports. The prevailing energy crisis is not simple one but a complex, long -Running and multi-faceted problem with many possible solutions. For an economist, it is mostly a matter of circular debt, for a political observer, it is a question of absence of political will. For a specialist of supporting organizations, it's an issue of governance. From an engineer's perspective, it is a matter of solving technical problems, increase energy savings and addressing the issues such as theft and non-payment of electricity bills.

In the past few years, efforts to solve the energy crisis were made, but not necessarily appropriate given the gravity of the problem. Alternatives, such as independent power producers (IPP) have been identified and are installed but were not able to match the energy deficit along with high costs of electricity produced. At the moment, Pakistan has to look into the immediate and low-cost sources of electricity. Thus, for this purpose the possibility of cross-border trade in electricity should be considered by the country with the help of various international organizations. These activities should be intensified to meet the demand.

The report provides an overview of some of the key issues relating to the energy sector, considers some of the solutionsshort, medium and long term, the government undertakes. It presents different electricity trade venues in the region and their feasibility with a look at the benefits that Pakistan may achieve by greater engagement in regional and bilateral energy relations. The latter is often overlooked when discussing country's energy crisis, with the onus typically placed on domestic solutions

In this policy report, we endorse the electricity trade with different neighbour countries. A brief description of three main venues of electricity import for Pakistan is being presented in this report. These three feasible projects are **CASA-1000**, **Electricity Import from India**, and **Coal Project in Assistance with China**. In this policy the issues and hindrances to these projects are considered and feasible solutions to those are proposed. If Pakistan is able to have cross-border electricity trade it would be a new era of this continent and a win-win situation to move ahead. Adding an additional layer to an already complicated situation, Pakistan's energy crisis is in part linked to the geopolitics of its neighbourhood. For some observers, pipeline politics and access to resources have the potential to have a significant impact on the tenor of a number of Pakistan's international relationships in the case of India, quite possibly in a positive direction. It is clear that a caucus in Pakistan fully understands the extent of the issue: various high level committees over the years have astutely identified the problems and solutions, but there is a repeat failure to translate this into policy action.

To draft this report, all the committee members looked into the literature as well as conducted different interviews with key personnel's of different organizations. By analysing the reports presented by international organizations like SAARC, World Bank and ADB etc., we had a clear understanding towards problems and issue as well their feasible solutions. Then by consulting technical experts and policy makers of the country, we are able to draft this policy report.



List of Abbreviation

KPK	Khyber Pakhtunkhwa
MoU	Memorandum of Understanding
UNO	United Nations Organization
CAR	Central Asian Republics
CASA	Central Asian South Asian
HVDC	High Voltage Direct Current
HVAC	High Voltage Alternate Current
IDB	Islamic Development Bank
IMF	International Monitoring Fund
MW	Mega Watts
FGC UES	Federal Grid Company of Unified Energy System
TAPI	Tajikistan Afghanistan Pakistan India
IFC	International Finance Corporation
SAARC	South Asian Association of Regional Corporation
MFN	Most Favored Nation
USAID	United States Agency for International Development
BJP	Bhartia Janta Party
UCG	Underground Coal Gasification



Members of Youth Parliament Standing committee on Energy



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Y O U T H P A R L I A M E N T

CASA-1000

Introduction

Central Asia South Asia Regional Electricity Trade Project (CASA-1000) is an initiative to import electricity from Tajikistan and Kyrgyzstan by Pakistan and Afghanistan. A total of 1,300MW, of which 300 MW for Afghanistan and 1000MW for Pakistan will be exported by the mentioned countries.

In this Project, more than 1,200 kilometres of electricity transmission lines and associated substations will be built to import excess summer hydropower energy from existing power generations in Tajikistan and the Kyrgyz Republic by Pakistan and Afghanistan. The length of the CASA-1000 Project lines will make some 750 km. For 1,000MW power supply, transmission lines would pass through a small border area of Afghanistan and reach Chitral, which is 15km from Tajikistan's border In 2007, the four countries signed a memorandum of cooperation in the framework of the project, which has always seemed to sit a couple of years off on the horizon. The main consideration for Kyrgyzstan and Tajikistan is to sell their excess summer electricity to get revenues while Pakistan and Afghanistan have to reduce heavy shortfalls in electricity to support their economy. The project has been started in 2012 with the funding of World Bank and Islamic Development Bank (IDB) and is expected to complete in five years.

Key Interests of participating countries:

Tajikistan & Kyrgyzstan

Tajikistan & Kyrgyzstan have energy surpluses during summer season. This situation will remain for over 15 years. Thus it is a waste of revenue and resources if the surplus energy is wasted. Hence this project is inevitable, which would not only provide revenue via exporting power, but bring in use the extra energy produced.

In contrast with Russia's hold on power sector in the Central Asia, USA is also trying its best to invest in this project. As USA is going to leave Afghanistan and clear its way from Central and South Asia soon. Thus US foreign policy wants to keep its stake-holding in such projects in South and Central Asia which can preserve its benefits in the region and cater the Russian hold over economy. USA has already offered \$15 million investment in the said project.

A significant issue lies in the construction of Rogun dam in Tajikistan. The 3600MW proposed dam is also

linked to the CASA-1000 project. Though the dam is liable to reduce the downstream water supply to Uzbekistan, which has given rise to political tensions. But this dam can alleviate the strategic importance of Tajikistan in the region and thus USA and Russia will open more ways for bilateral trade and investment in Tajikistan. Russia has already opted for open support of the dam. This will ensure economic stability in the country which is comparatively poor and inflationstuck presently.

The major income source in Tajikistan & Kirghizstan is agriculture; unemployment has been a major problem of the small states. The project will not only produce thousands of jobs for the common people, but raise their standards of living.

The irrigation system in Tajikistan, especially in mountainous is very vulnerable and absent at some places. The dams which will be constructed in connection with the CASA-10000 project will provide an efficient irrigation system to the agricultural fields and potable water to the citizens.

The power shortages in winter season have been a major problem for Tajikistan and Kirghizstan. The revenue generated from CASA-1000 power export would be used to expand resources for production of sustainable energy in winter season.

Pakistan & Afghanistan

Central Asian countries especially Tajikistan & Kyrgyzstan are in dire need of access to world markets through Gawadar Port. This project will enhance the two-way trade between the countries through the silk route, and also provide a cheap and suitable sea route to CA countries to enjoy cheap exports to Gulf States, America and Australia through Indian Ocean which connects to Arabian Sea. The CASA-1000 project will provide better grounds for trade and benefit the both countries.

The Power Plants which will be used to transmit electricity for CASA-1000 project contain shares of Russian transmission company FGC UES. Russia has its political interests in Pakistan and Afghanistan. Russia also has urge to invest more in Pakistan's energy sector as it has recently offered export of 5000MW energy to Pakistan.

Thus the CASA-1000 project will serve as foundation for a new era of energy trade and strategic ties between Pakistan and Russia.

Pakistan and Tajikistan have already agreed to

cooperate in the field of explorations, extraction and processing of gas and oil products. By insurance of economic ties through the CASA-1000 project, Pakistan can exploit its oil and gas reserves more efficiently by utilizing machinery and technical assistance from Central Asian Countries.

The completion of CASA-1000 project will also pave the ways for the trade of gas through TAPI (Tajik-Afghan-Pakistan-India) gas pipeline.

The terrorism struck Afghanistan and KP province of Pakistan are now stabilizing both politically and economically after the formation of an elected government. The project will provide jobs opportunities to a lot of unemployed talented youth ensure construction of better schools and water provision to the areas.

For the development of modern industry and technology for a thriving country like Afghanistan, it is very necessary to have a stable and sustained electricity supply. The project will suffice to the said necessity and also create revenue by exporting excess electricity.

Funding of project

The World Bank and the Islamic Development Bank (IDB) have agreed to provide in financing for the power import project and the remaining funding needs will be met by participating countries. The World Bank has approved CASA-1000 project, offering \$120 million, out of a total loan of \$552 million, for laying transmission lines in Pakistan. The executive directors approved a grant of \$316.5 million for Afghanistan and a loan of \$38.25 million and a grant of \$6.75 million for the Kyrgyz Republic. Total cost of the project is estimated at \$1.16 billion and remaining funds will be provided by the Islamic Development Bank and other donors. International organizations for trade negotiations and the International Finance Corporation (IFC) have also supported the countries for establishment of infrastructure of contracts.

Progress of participating countries

Pakistan & Tajikistan governments have pursued funding from International Funding Organizations. World Bank has already ensured lending a loan amounting to \$120 million for the laying of power transmission lines in Pakistan. \$432 million has been confirmed for other stakeholders. Moreover, Islamic Development Bank and Asian Development bank have also been sought for funding.

Pakistani higher officials have also shown interest for establishment of a CASA Regional Electricity Market, which will promote the project and attract international investors in the region.

Feasibility study of the project has already been completed by a Canadian company SNC Lavalin which has successfully endorsed the project to be feasible on the grounds of projected spill over water from hydroelectric dams in Tajikistan during the May-September period.

The various Community Support Programs along the transmission line of the CASA-1000 have also been proposed for nearby citizens living in Tajikistan, Afghanistan and Pakistan.

The transmission line comprises of 2 main parts

- 1. An HVDC link between Tajikistan, Afghanistan and Pakistan which comprises of 1300MW converters situated in Tajikistan and Pakistan. Similarly, a 300MW converter has been proposed in Afghanistan which will connect to 1300MW transmission line. Its length will be 750km. The use of HVDC line for long transmission through borders will save both line losses and excessive expenditure.
- 2. An HVAC transmission line between Kyrgyzstan and Tajikistan which will be rated at 1000MW. Its length will be 477km.

Issues relating to completion of project

There are certain issues. E.g. Tariff negotiation (it has to cover transmission line construction cost and others it is feared that the tariff will be higher to overcome project cost) etc.

Converter Station Technology

Convertor station technology will be new as HVDC has not been previously built. It will be difficult without the assistance of China or other technically advanced country to build this Converter Station in Peshawar as the Power Supply Transmission Line will end in Peshawar. Therefore consultants will be required. 1000 MVA or 1300 MVA the capacity of converter station is also under discussion.

Transit Fee

Pakistan and Afghanistan have determined the transit fee for gas supply from Turkmenistan, but they have yet to decide on the fee for power transmission. Kabul is seeking two cents per unit, a high price that threatens to make power purchase unfeasible for Pakistan whose experts are of the view that, if necessary, the fee should not be more than Rs0.10 per unit.



Security Issue

Third issue is ensuring security as major part of line will pass through Afghanistan. Security issue is related to war torn Afghanistan and also financial security issue. Despite finalizing the tariff, a major challenge still stood in the way of the project as power transmission lines would have to pass through war-torn Afghanistan. It is unclear how the Afghan government will enforce its commitments on security in light of its deteriorating internal situation, uncertain election outcomes, and departure of American military forces.

Tariff Issue

The major issue which lied in towards the realization of agreement on the power purchase project was the decision of tariff. Tajik companies asserted to sell electricity at 7 cents per unit which was not accepted by the government of Pakistan, but after negotiations, the two parties settled over the figure of 5 cents per unit for the hydroelectric power import.

Recommendation

- The total funding required for CASA-1000 project are almost \$ 1.2 Billion, of which only \$520 Million have been arranged through World Bank. The remaining expenditure required for laying down transmission lines should be arranged from other investors i.e. Canadian Businessmen have recently shown interest in investing on power sector in Pakistan, moreover Scandinavian countries have been investing in major development fields in Pakistan, investors from these two and other countries should also be contacted and attracted to invest in this project,
- 2. A fixed amount should be charged from people of Pakistan from within their electricity tariff. A higher amount i.e. 2 rp/unit extra should be charged from industrial connections and 0.5 ps/unit extra from domestic connections.
- 3. Serious security issues might exist relating to transmission lines passing from Afghanistan, for curbing this problem, shortest transmission paths should be chosen for laying of transmission lines i.e. Shortest path between main source and end consumer. Moreover, the areas which have higher security or terrorism threats should be regularly guarded and invigilated by relevant security Agency.
- 4. People residing in the area of CASA-1000 transmission line within Pakistan run a number of cottage industries i.e. Wool and produce fields of a variety of fruits i.e. Apples, a Small Scale Trade Centre should be setup in the areas of Chitral and other accompanying cities to facilitate people for using the new trade route for exporting their goods

across the boundaries to Afghanistan, Tajikistan and Kirghizstan. Roads should also be constructed throughout the transmission lines to facilitate people for inter and intra-national transportation.

5. Tajikistan should take Uzbek government and people in confidence while building the Rogun Dam subject to the unhindered downstream flow of water, investors from Uzbekistan may also be called to invest in the project, so that the political tensions rising due to the CASA-1000 project may be settled down.

Electricity Import from India

Introduction

Lately, a draft of Memorandum of Understanding (MoU) was forwarded by Pakistan to India for making a deal to buy 500 MW electricity from India, approved earlier by the federal cabinet of Pakistan (Madaan, 2014). For this project, Wagah border will link both countries for an inter-grid connection to be built between Lahore and Amritsar. According to India's Economic Times, "To import 1,200 MW electricity from India, The World Bank offered to fund the feasibility study and the installation of transmission line" (The Economic Times, 2014). The deal would result in a transfer of total 1,200 MWs of electricity from India to Pakistan (Panda, 2014).

There are also reports circulating that Pakistan will grant India the status of most-favored nation (MFN). Granting MFN status to India will attract investor from India as there will be exemptions from sales taxes and import duties on machinery required for energy plants. This can further ensure the betterment in the crippling power sector of Pakistan which suffers losses in production on account of old plants (Vaid and Tourangbam, 2014). MFN status would open the massive potential of Pakistan-India trade and would also lead towards normality in social relations and convergence of economic ambitions of both countries.

Diplomatic Perspective of Energy Trade

India

Though rightist, yet Indian newly elected government of BJP has keen focus on mega infrastructure and development. Prime Minister Narendra Modi, in his first major policy speech in Parliament, said his government would focus on development in the world's second-most populous nation. Modi's image as a 'development man' is also reflected in his dealings with Islamabad. During his meeting with Prime Minister Nawaz Sharif, Modi pushed for full trade ties with

Pakistan.

Pakistan

Similarly, Pakistani current government of PML-N has especially emphasized on regional cooperation, mega infrastructure and development. With Pakistan already facing severe energy crisis since a decade or so, importing energy from India could result in accomplishing both objectives of government. Federal Minister for commerce Khurram Dastagir Khan has said that PML-N government changed the traditional stance with neighbours encouraging and initiating trade relations with the regional countries. According to a government source, cited by India's Economic Times, "To import 1,200 MW electricity from India, The World Bank offered to fund the feasibility study and the installation of transmission line." In a meeting recently held at New Delhi, The Pakistani officials have presented a draft Memorandum of Understanding (MoU) to the Indian side; both the countries have further looked into the deal by discussing the technical working groups and implementation procedures. According to the deal, in first phase Pakistan will import 500 MW which would be enhanced to 1,200 MW in future. Due to complex geopolitical situation, there are certain strategic and diplomatic issues hindering this project. These hindrances should be removed to build up a new era of relations between two countries.

Technical Feasibility of Electricity trade with India

As mentioned earlier, Pakistan and India have agreed to set up a joint working committee to discuss and finalize the 500 MW of electricity project after the successful visit of the delegation of Pakistan to India a few months ago, according to the Ministry of water and Power.

Pak delegation returned after fruitful discussions with Indian partners in New Delhi. The two sides agreed to establish a joint working committee to solve the problems of technical, commercial, construction, and regulatory issues involved in the 500mW electricity import from India. During the two days of technical discussions held on March 5 and 6, India has expressed its willingness to follow the Memorandum of Understanding (MOU), and agreed to provide electricity with high voltage DC system (HV DC) through Wahga to Lahore. In HVDC technology, transmission losses are less in comparison with HVAC standard technology. It also requires less number of transmission lines, which means less land needs to be cleared.

It is being reported that the interconnection will be

established on the outskirts of Wagha / Attari border and it would be a DC 400 kV or 500 kV according to the joint determination of experts of NTDC and Grid Corporation of India Limited. In starting phase supply would be 22 kV AC, and then converted to DC for transmission. At the receiving station it would be again converted to AC to inject in the national grid.

The major issues in this transmission line trade are:

- 1. The feasibility of optimal capacity and configuration of interconnections is difficult to ascertain.
- 2. Predictability and sustainability of tradable volumes by the supplier countries over long term cannot be assured.
- 3. The absence of a central pool between the trading countries makes synchronization of networks a major challenge.
- 4. Islanding of served areas in the recipient countries likely to raise socio-political concerns.
- 5. Inconsistencies in system stability, reliability and safety standards between different networks add to the risk profile of the interconnection arrangements.

Conclusion

The trade between India and Pakistan, specifically the energy trade cannot flourish well as long as the diplomatic, political and military tensions prevail. It is important to de-link politics and economics, as practiced by economically successful countries around the globe. The long term trade especially energy trade and a realistic geopolitical policy are two areas which can bring both the countries together with developing stronger economic ties, to add to the strength of both nations. The Woodrow Wilson International Centre for Scholars, a U.S. think-tank also suggested a win-win situation for both the countries.

Recommendations

This project has been deemed insecure for Pakistan due to long strategic clashes after independence. Preference shall be given to National Security and Integrity of the Nations on both sides. A MoU should be signed by both parties stating that none of them would try to violate the national interests of the other side through any way using this project and India shall not practice intentional load-shedding or hindrance in power transmission except any technical issues. The UNO, World Bank and IMF shall oversee the MoU as signatories.

Massive Capacity Building at various levels is required in Technical, Commercial, Financial, Regulatory and



Legal areas to be able to handle the upcoming challenges of power trade and development of regional electricity market in the South and Central Asia.

USAID (SARI-E and RESET), the World Bank, ADB, IsDB, SAARC and others are active in the Region to support energy trade and regional integration

The countries should create appropriate institutional mechanism to focus on cross-border electricity trade.

Coal

Introduction

Coal discovered throughout Pakistan and the rest of Southeast Asia in 1880 and was used by railway undertakings belonging to the British colonial era. Later, post-colonial Pakistan using coal to fuel its industry from independence to the discovery of the Sui gas field in Balochistan province in 1952, and Toot oil field in 1964.

Environmentalists are now fears that Pakistan recently discovered low and 4 low coal seams of average quality in the Punjab and intends to again carry out its important economic cement industry after its oil wells are dry due to heavy load. Coal with low sulphur content, has recently been found in Baluchistan, near Quetta as well. There are reports that low sulphur d e p o s i t w a s f o u n d n e a r I s l a m a b a d. Thar and Neyveli (Pakistan) Sindh lignite mines will also be developed from industrial applications. Specific measures are used to reduce the problems caused by the emission of fly ash, sulphur dioxide and smoke when burned trace.

Coal Energy

According to Pakistan Energy Year Book 2011, the installed generation capacity in the country is 22,477 MW, and demand is more or less the same.

According to recent estimates, in 2011, coal deposits in the country are up to 185 billion tons. The largest deposits are located in the Thar Desert, which is about 850 trillion cubic feet and Spanning over 10,000 square kilometres.

However, the Thar coal reserves can generate 20,000 MW of electricity for the next 40 years without load shedding and at a rate of Rs 4 less than the current cost of electricity production.

Thar Coal Underground Gasification project Thar Coal Underground Gasification (TCUG) project headed by nuclear scientist and member of the Planning Commission Dr Samar Mubarakmand was awarded Rs2.5 million by the Ministry of Petroleum and Natural Resources. The project cost is estimated Rs126.649 million, but in June 2011, funding of only RS20 million was given. Under the project, coal will not be mined, but the plants will be installed on deposits to produce gas.

On 24 November 2011, Mubarakmand said work was in progress and the first 50-MW gas project almost completed.

Proposed Coal Plants

- 1. Jamshoro power generation station (1,200 MW)
- 2. Port Qasim power station (500 MW)
- 3. Sindh power station (400 MW)
- 4. Gadani Power Park (6,600 MW)

Recommendations

Direct combustion of coal releases a lot of harmful smokes and substances into the air which are harmful for human life and the environment. Underground Coal Gasification should be opted for this purpose, as it is free from any pollution.

The waste constituents from UCG process should be recycled and used to produce Diesel, Grease and Cosmetics. Special recycling plants can be set up in collaboration with the Chinese engineers and investors. The construction of the project exists in the area of Thar where common masses are poverty-struck and unemployment is at its peaks. The Coal Projects should be used as a tool to ensure sufficient job opportunities for the local people in the fields of Human Resource, Labours and Supervising.

The Chinese Engineers and experts should train the project Maintenance and Operational Team, so that they can handle the advanced machinery efficiently and independently in the longer run.

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