

PAKISTAN

THAR COAL AND POWER TECHNICAL ASSISTANCE PROJECT (TCAP)

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ENVIRONMENTAL AND SOCIAL ASSESSMENT APPROACH AND SERVICES

A. Background

Pakistan is endowed with extensive geological potential particularly the 175 billion tonnes of coal deposits at Thar in Sindh Province. However, the development of its mineral resources has been limited to modest amounts of coal for internal power generation. Due to the limited involvement of the private sector and foreign investors, there has been little or no modern exploration activity and the mineral sector has not benefited from modern management and advanced technologies. These conditions prevent the mineral sector of Pakistan, and the Province of Sindh in particular, from fully contributing to growth and poverty reduction. Currently, mineral exploitation represents only about 0.5% of the GDP despite Government's interest in developing the sector.

The Government of Pakistan started the reform of the mining sector by formulating a National Mineral Policy (NMP) in 1995, but the results have been modest mostly due to relatively slow implementation of the NMP and uncertainty created by inadequacies of regulatory framework at the province level. Meanwhile, in addition to the broader need for developing the mining sector, Pakistan now faces increasing economic hardship through reliance on high-cost, imported energy resources used in end-use markets for which lower-cost indigenous coal resources are appropriate. The Government of Pakistan as well as the Government of Sindh Province place a high priority on the rapid development of the coal resources of Sindh, particularly the Thar region, for power generation.

An investors' roundtable held in Washington (July 28-29, 2008), resulted in the Government of Pakistan requesting World Bank technical assistance to enable development of indigenous coal resources. Also in July, 2008, the Government of Sindh requested the World Bank for assistance to address the mining sector's needs and achieve mining sector growth. Subsequently, coal sector reform with concurrent transaction advisory service is being proposed to assist the Sindh Government (on the fuel development side) and the Government of Pakistan (on the power production side) with ongoing development initiatives and to rebalance Pakistan's fossil-energy portfolio, lessen downstream impacts on thermal industries and the power sector, and sustain economic growth.

The project will be implemented as a partnership between the Province of Sindh (coal mining) and Government of Pakistan (coal-fired power development). The Provincial part of the IDA financed part of the project is estimated at \$25.8 million, and Federal at \$4.2 million. IDA Credit will finance 100% of identified project costs agreed for IDA financing. The Government of Sindh has also allocated as a parallel financing: (i) US\$4.2 million equivalent for the operation of the PMU and related management costs for the project; and (ii) about US\$8 million equivalent for technical studies for Thar.

The World Bank Thar Coal and Power Technical Assistance Project, TCAP, is a technical assistance program to assist (i) the Governments of Sindh and Pakistan strengthen the enabling policy, legal, and regulatory frameworks and governing institutions for coal-to-power sector; (ii) in attracting qualified private investors who would develop Thar Block I. Investments into Block I coal mine and associated power plants would come from the private sector. Mining and power plant construction investments as well as other ancillary infrastructure development projects are not funded by this TCAP, but are an expected outcome of this process.

The Block I transaction methodology and documentation to be developed under TCAP is a pilot demonstration of a transparent international competitive bid methodology for coal-to-power projects. It is expected that the government would replicate it on other Thar blocks in accordance with the Coal Road Map (to be prepared under the TA). Investments into ancillary infrastructure (i.e. water systems, roads, communications and rail), to be identified under the project, are expected to require public-private partnerships between the government and private sector. Following the Block I transaction, recurring financial obligations to the government in the future would include (a) preparation of additional bid packages and competitive selection of qualified bidders for additional Blocks; and (b) additional investments into supporting ancillary infrastructure and associated ICB's. Recurring institutional obligation to the government would include sustained federal / provincial coordination on coal mining and coal-to-power projects.

The project development objectives of TCAP are to help the Governments of Sindh and Pakistan (a) strengthen the enabling policy, legal, and regulatory frameworks conducive to new investments in the coal-to-energy sector; and (b) attract qualified private investors to develop Thar coal deposits and build new coal thermal power generation following international good practices for environmental and social sustainability. The Project will ensure that the coal-to-power sector development responds to the needs of Pakistan's long-term energy strategy.

To efficiently complete tasks needed for the new mine / power plant(s) transactions, the project has been designed in two phases:

- (a) ***Advance technical activities*** to be performed by an Advance Team of individual consultants during the project preparation stage. This will include technical advice to the government and preparation of the background information for the bid package(s) for the mine and power plant(s) in Thar Block#1, including rationalizing existing information and assessing additional information needs in the area of coal mining, energy, institutional reform, transaction and environmental / social issues, and
- (b) ***Downstream activities*** (under the TA Project) to be performed by firms during the project implementation across (i) Sector Governance and Capacity Building that includes coal assessment and technical studies; policy, legal and regulatory safeguards advice; and institutional reform and capacity building; and (ii) Transaction Advisory services for Block #1.

The design of the work program, and in particular the deployment of an Advance Team, serves to accelerate preparatory work, during which procurement of firms to undertake downstream activities will be on-going. As such the Advance Team will: (a) assess past studies, making a determination as to what additional technical studies are needed, (b) prepare Terms of Reference for technical studies to be executed across the life of the project; and downstream transaction-related activities, (c) prepare a draft Information Memorandum and Transactions Principles and Intentions policy document that will be used to frame the transaction, and (d) provide guidance to the government in early stages of framing the transactions and identifying long-term development goals.

The Advance Team will provide guidance to provincial and federal counterparts on the Thar coal-to-power transaction, and building early capacity to implement the project. The composition of the Advance Team will include the following individuals:

- ***Institutional Advisor / Advance Team Leader*** providing (a) guidance on the appropriate institutional and regulatory reforms for coal-to-power development; and (b) using the final transaction methodology, coordinate the preparation of key sections within the Information Memorandum and Transactions Principles and Intentions policy document
- ***Transactions Draftsman*** developing a final transaction methodology (see draft outline Annex D) most appropriate for new mine / power plant(s) at Block #1 and provide guidance on an as-needed basis in the preparation of a Transactions Principles and Intentions Policy document
- ***Energy Advisor*** providing guidance on power sector development and energy-related sections for the draft Information Memorandum and Transactions Principles and Intentions policy document
- ***Mining Advisor*** providing guidance on coal mining development and lead on preparation of a Thar Coal roadmap, and providing mining-related sections for the draft Information Memorandum and Transactions Principles and Intentions policy document
- ***Legal Advisor*** providing guidance on the overarching legal and regulatory framework for coal-to-power transactions; and prepare legal-related sections for the draft Information Memorandum and Transactions Principles and Intentions policy document
- ***Environmental Advisor*** providing guidance on the environmental and social safeguard dimensions relating to coal-to-power development and prepare the Environmental / Social Management Framework for the government; and prepare environmental-related sections for the draft Information Memorandum and Transactions Principles and Intentions policy document
- ***Social Advisor*** contribute on social safeguard dimensions and contribute to social-related sections for the draft Information Memorandum and Transactions Principles and Intentions policy document

B. Project Description

The project is a technical assistance (TA) credit to the Government of Sindh and Government of Pakistan. Preliminary component description is provided below:

Component 1: Sector Governance and Capacity Building (US\$15.5 million)

The objective of this component is to facilitate coal-to-power sector development based on global good standards and building the government's capacity to manage and supervise the sector. To this end the component will comprise: (i) a suite of *Thar Coal assessment and technical studies* including field surveys and data analysis for the Thar coalfield and Thar Block I, through the Mines and Minerals Development Department. Specific studies include; (ii) *Policy, legal, regulatory and safeguards advice and frameworks*; and (iii) *Institutional Reform and Capacity Building*. These activities are briefly described below.

A. Thar Coal assessment and technical studies. (partially parallel financed with the Government of Sindh under approved PC-II schemes):

- i. Undertaking field surveys and data interpretation related to the Thar coalfield and Thar Block I, through the Mines and Minerals Development Department.
- ii. Supervising and providing technical assistance with developing the water master plan, through the Sindh Coal Authority in coordination with the Sindh Irrigation and Drainage Authority.
- iii. Undertaking environmental and social work, including environmental and social baseline assessments for the Thar coalfield, a strategic environmental and social assessment for the coal-to-power sector, development of a land-use plan for the Thar coalfield and a Spatial Development Plan for Thar Block I, through the Mines and Minerals Development Department in collaboration with the Ministry of Environment, the federal and provincial environmental protection agencies, and the Sindh Social Welfare Department. An elaboration of these tasks is, as follows:
 - assessment of coal and coalbed methane resources through geophysical and other field surveying, and data interpretation related to Thar coalfield and in greater detail for Thar Block I. Areas for surveying will be identified based on assessment of existing exploration data, combined with selection of areas for possible coalbed methane.
 - a regional hydro-geological study, through the Sindh Coal Authority in coordination with the Sindh Irrigation and Drainage Authority. This work will be closely linked and coordinated with water resource studies in Thar that include surface and sub-surface waters and planning for their development and use.
 - environmental and social baseline surveys and assessments for the Thar coalfield, including data collection, assessment / projections in regards to new development in Thar, assessment of livelihood impacts and potential relocation needs. On the environmental baseline -- On

environment, trans-boundary aspects of air quality and water pollution merit special consideration. On the social baselines -- it is highly probable that social impacts will be challenging and the social parameters in the baseline should be further strengthened by including information on in-migration, nomadic use of natural resource systems in the Thar area, labor camps during development and the establishment of new, multiethnic / multicultural communities associated with the mines and power plants. Gender and health factors should be included.

- An air quality assessment including GHG baseline and methodology for monitoring and verification of GHG emissions, GHG credits / benefits / costs for the economic and financial modeling.

- a strategic environmental and social assessment (SESA) that will: assess priority developmental issues, policy / regulatory gaps, capacity constraints and opportunities, and stakeholder mapping; provide guidance for developing the land-use master plan across all coal blocks with proposed locations, magnitude and timing of coal mining and power development; describe associated ancillary infrastructure (physical, social and economic) needs; and undertake active stakeholder education and consultation.

- development of a Thar Basin land-use plan including identification of all potential environmental and social impacts associated with proposed mine and power plant(s), and proposed mitigation measures to avoid or minimize any environmental and social impacts. A more detailed Thar Block I spatial development plan will also present suggested visions, principles and targets of the mine and power plant(s), propose plan for spatial development of the planning area and provide instructions for implementing the Spatial Development Plan for Block I.

- Develop an environmental and social baseline data monitoring program and data register, including profiling of all communities and ethnic groups.

- Prepare and adopt in line with good international practices an Environmental and Social Management Framework (ESMF) to guide the planning and implementation as well as management of environmental and social impacts of the downstream investment operations.

- Undertake broad consultation and support public review / adoption of reforms.

- Create an ombudsman office and website for the intake and management of conflicts arising from coal mining and coal-to-power development.

- Prepare ToR's for the Environmental and Social Impact Assessments (ESIAs) and Environmental and Social Mitigation Plans (ESMPs) for the downstream development projects.

- Carry out policy, legal and regulatory reforms at both provincial and federal levels.

- Build capacity on environmental assessment and management procedures at both provincial and federal levels.

- iv. Establishing a computerized environmental and social database and registry with the Sindh Environmental Protection Agency.

B. Policy, legal, regulatory and safeguards advice and frameworks covering two key areas.

- i. Developing overarching policy, legal, regulatory and safeguards frameworks for coal, coalbed methane, potential future carbon sequestration, and related public private partnerships.

- ii. Developing overarching policy, legal, regulatory and safeguards frameworks for coal-fired power generation, potential future carbon capture, and related public private partnerships.

- iii. Developing and adopting an operational environmental and social management framework for the coal-to-power sector, including undertaking local consultations in the Thar area, in coordination with the Ministry of Environment and the federal and provincial environmental protection agencies.

Key aspects for which environmental and social management frameworks are needed include:

Coal, coalbed methane, coal-fired power generation, potential future carbon sequestration, and related public private partnerships including:

- coal, coalbed methane, and coal-to-power specific policy, laws and regulations, including benefit sharing mechanisms with local communities and sustainable development of coal resources principles and building economic linkages around coal mining and power generation activities
- fiscal regime/ coal pricing principles and application/ transfer pricing regulations

- procedures for handling applications for mineral rights for exploration and development in a transparent, stable, non-discretionary manner using, and ensuring the good standing of issued mineral rights according to the regulations;
- licensing provisions for tendering of known and well defined mineral assets and other projects that would not be on first-come/first-served basis
- procedures and legal requirements for ancillary infrastructure development
- procedures and legal requirements for carbon sequestration
- safeguards requirements and enforcement mechanisms

Environmental and social management frameworks for the coal-to-power sector: in coordination with the Ministry of Environment and the federal and provincial environmental protection agencies. This process and documentation will provide the government officials managing coal-to-power sector with a set of procedures for environmental and social assessments and environmental and social screening process/ guidance that will enable the government to identify, assess and mitigate potential negative environmental and social impacts of downstream coal-to-power projects in the planning stage. The framework will also include ToR's for Environmental Impact Assessments (EIAs), Social Impact Assessments (SIAs), Resettlement Action Plans (RAPs) and Mine Closure Plans for future mining / plant development to be used by the investors for specific projects/areas, and the proper response to these issues through management plans.

C. Institutional Reform and Capacity Building covering numerous agendas and topics as listed below.

- i. Strengthening the capacity of the Mines and Minerals Development Department and Sindh Coal Authority to improve sector governance for coal and provincial-level ancillary infrastructure development.
- ii. Strengthening the capacity of the Ministry of Water and Power and the Private Power Infrastructure Board to improve sector governance for coal-generated power and federal-level ancillary infrastructure development.
- iii. Strengthening the capacity of the local communities in resource development and corresponding environmental / social impact monitoring and reporting, in consideration of broader skills training needs.
- iv. Strengthening the Thar Coal and Energy Board to facilitate quality private investments for coal and coal bed methane-to-power projects in Thar by making it operational, including the development of procedures, guidelines, staff plans and capacity building.
- v. Strengthen coal power generation unit within PPIB and technical assistance to NEPRA on coal to power

- vi. Improving the regulatory efficiency of the Mines and Minerals Development Department, including setting up a computerized mining cadastre system and a geographical information system for management of resource information province-wide.
- vii. Building the capacity of the Directorate General for Mines and Minerals, the Chief Mine Inspectorate and the Sindh Coal Authority to manage the minerals sector and develop ancillary infrastructure.
- viii. Setting up of a conflict resolution office with the Mines and Minerals Development Department for the Thar coalfield area.
- ix. Building the capacity of the Mines and Minerals Development Department, Sindh Environmental Protection Agency, Sindh Coal Authority, Directorate General for Mines and Minerals, Chief Mine Inspectorate, and local agencies for environmental and social management and monitoring of the coal-to-power sector.
- x. Building the capacity of the Ministry of Water and Power, Private Power Infrastructure Board, Ministry of Environment and the federal Environmental Protection Agency for environmental and social management and monitoring of coal-fired power generation.

A series of workshops and seminars will be conducted to a broad range of stakeholders, including federal, provincial and local authorities, private sector, CSOs/NGOs, and community-based organizations. These will include explaining the processes and reports developed under TCAP across environmental and social arenas (SESA, ESMF and Development Plans). Particular attention will be paid to explaining the steps towards implementing the recommendations at each level and building capacity of the stakeholders to manage these activities.

Component 2: Transaction Advisory Services

The objective of this component is to provide expert advisory services to help attract quality private investors to develop Thar Block I. Preparation for this transaction will include consideration of the investment role of IFC and other IFIs to be reflected in the bidding documents. The methodology and documentation that will be developed for this transaction will be applicable to forthcoming developments and will assist the government in structuring future coal-to-power transactions. Proposed bid methodology is provided in Annex 4.1. The activities to be supported under this component will include:

- i. Finalizing and adopting the bid methodology for Thar Block I transactions, the Information Memorandum¹, and the Transaction

¹ Information Memorandum will include information on the deposit, legal/ regulatory/ institutional framework and arrangements, energy sector background and summarize studies up to-date; and the regulatory environment for potential downstream carbon capture and storage.

Principles and Intentions policy document² for Thar Block I, through the Thar Coal and Energy Board.

- ii. Providing transaction advisory services for a coal mine transaction in Thar Block I, including preparation / issuance of requests for proposals, market soundings, and assistance to the government with bid collection, evaluations, negotiations, and capacity building towards financial closing.
- iii. Providing transaction advisory services for power plant(s) transaction(s) in Thar Block I, including preparation / issuance of requests for proposals, market soundings, and assistance to the government with bid collection, evaluations, negotiations, and capacity building towards financial closing.

Component 3: Project Management and Communications

43. The objective of this component is to ensure that project financed activities are supervised and managed in accordance with the Bank standards. The component will finance:

- i. Providing project management costs, including sector specialists (mining, energy), procurement, financial management, environmental specialist, social specialist, water specialist, and communications specialist
- ii. developing communications and outreach program
- iii. training and study tours
- iv. equipment
- v. security measures

C. Environmental and Social Safeguards' Approach

The remaining contents of this Approach and Services document focuses on the environmental and social safeguard processes and products that will be developed as part of the TCAP. Although this TA project has been classified as Category B, it is anticipated that most of the downstream investments (coal mine development and operation, coal-fired power plants, ancillary infrastructure development, transmission lines, and other associated projects) will be Category A projects that will require specific EIAs. As such specific topics of concern that will need to be addressed include changes in topography, land form and land use; soil erosion/contamination; water consumption and/or contamination; air quality deterioration; loss of natural habitat and vegetation, and threat/damage to wildlife resources; land acquisition and involuntary resettlement issues; affects on the livelihood of the local population; employment opportunities; safety and

² Transaction Principles and Intentions policy document will define policy level decisions and commitments by the Government on the mine, power plant(s) and ancillary infrastructure. This will include (a) key terms and conditions for the model contract (b) land and cultural restrictions (c) commitment by the government to undertake certain technical studies and base-line assessments, (d) potential public private partnership arrangements, etc). (e) Transparency and disclosure mechanisms.

public health hazards for the local community; influx of workforce; and other environmental and social issues.

In view of the severity and high significance of the potential environmental and social impacts associated with the future development activities described above, the appropriate mitigation mechanisms for the environmental as well as social aspects are being integrated into the planning and development phase for the future mine and power plants. This will be required (i) to minimize the adverse effects of the development on the environment and people, and to make this development ‘sustainable’; and (ii) to comply with international good practices (including the Equator Principles) for environmental and social sustainability to attract the international investors for the future development projects in Thar.

As explained above, the TCAP program will be based on a timed approach of using technical advisors in the preparatory phase and a consulting firm to carry out the studies. In all cases, the various technical advisors and various technical reports will be integrated to ensure a holistic approach to this program.

D. Scope of work for the *Environmental Advisor* as part of the Advance Team

The Advisor will have core responsibilities spanning two thematic areas (a) contributions towards preparation of the World Bank project and (b) Policy, Legal, Regulatory and Safeguards Advice. The advisor will conduct a desk review of existing government policies and local institutions to manage environmental safeguard impacts related to mining and coal-to-power development; identify the major gaps; contribute to the finalization of the conceptual approach to address environmental safeguard impacts for coal-to-power development in Thar areas (from TCAP to future development), and provide contributions for the Project Appraisal Document (PAD).

The advisor will also prepare Terms of Reference for key environmental and related studies including:

- an air quality assessment including GHG baseline, and methodology for monitoring and verification of GHG emissions (including assessment of GHG credits / benefits / costs for the purpose of economic and financial modeling)
- a government Environment Social Management Framework (ESMF) and TORs for associated planning activities to address environmental impacts associated with future coal mining and coal-to-power power development;
- an environmental baseline data monitoring program and data register, around which capacity building can take place in the project.
- the SESA of the downstream development activities (coal mining, power generation and associated activities)
- together with the social advisor, a ToR for stakeholder mapping and preparation of a draft community consultation framework

The advisor will also review existing ToR’s, suggest improvements and thereafter undertake early supervision of the following field programs funded and executed by

DMM for:

- environmental baseline data collection for Block #1 under the existing PC – I entitled *Environmental Impact Assessment Of Coal Mining & Coal Fired Power Generation at Thar (Modified)*
- a regional hydro-geological study of the Thar coalfield (geographic coverage to be confirmed) entitled Hydro-geological Studies of Thar (22,000 sq. km)

In addition the advisor will assist Government in creating an ombudsman office and website for the intake and management of environmental / social conflicts arising from coal mining and coal-to-power development. Part of his/her role will also be to identify practical capacity building activities that include training, development of guidelines and sharing of international good practice. Some of this effort will be reflected and augmented in the SESA and ESMF products described below.

These initiatives will assure appropriate social and environmental considerations are included in the planning and future development of the Thar coal mining and power generation projects. The above initiatives by the advisor will support the necessary technical requirements so that a team of international and local consultants can undertake the required studies and produce all required documentation for investment of coal mines, thermal power plants and ancillary infrastructure.

E. Specific Environmental and Social Safeguard Processes and Products to be Prepared by a Firm

Based on the technical preparation by the advisor, contracts will be issued to develop a set of products and associated processes. Many of the processes will be undertaken through a combination of government professionals, the advisor and the consultants.

The key products that will be developed as part of the TCAP include:

E.1. Social and Environmental Baseline Survey, including data collection and creating an environmental/social data monitoring system and registry. Specific focus will include:

- ***Data collection*** will summarize the bio-physical area of influence of the region, demographics of local populations and communities, including profiling of all communities and ethnic groups, existing socio-economic conditions, potential labor force, development challenges and needs and identification of vulnerable groups. Because of the fragile ecosystem and arid and water shortage situation, special emphasis will be placed on identification of water use and availability (tied to the separate hydrological study).
- ***Assessment and predications of*** various gaseous emissions (including GHGs) from the construction and operation of mining and power generation facilities, impacts of these emissions on the ambient air quality, and the associated health hazards for the local population. The consultants will particularly focus PM₁₀ and PM_{2.5} emissions from the mining and power generation operations, in addition to the SO_x, NO_x and CO.
- ***Soil and water contamination and consumption*** associated with waste generation and discharges (both liquid and solid) from the construction and operation of mining and power generation facilities, impacts of these discharges on the environment, and the associated hazards for the local population as well as natural flora and fauna.
- ***Water Consumption*** from the water needs for various construction and operation activities, identifying possible/preferable sources, and assess the impact of the water consumption on these sources and other consumers (people, vegetation, wildlife).
- Associated impacts on ***land use, land forms and natural habitats*** and ***vehicular traffic***.

E.2. Environmental and Social Data Monitoring System and Registry based on a field sampling and testing program for Thar area to monitor environmental emissions and pollution levels in air, surface waters and groundwater over a period of six months. This data will be used in simple models to create insight into the distribution of pollutants caused by lignite mining and power generation and other activities in the area and their

migration in time. The collected data will be used to set up an environmental data registration system in environmental authorities of Sindh (Sindh EPA) and Pakistan to be used for monitoring, reporting and statistical purposes.

E.3. An Air Quality Assessment including GHG baseline and methodology for monitoring and verification of GHG emissions, GHG credits / benefits / costs for the economic and financial modeling

E.4. Contribution of environmental and social aspects toward the hydro-geological study of the Thar basin, being conducted by WSIP and TCAP jointly under a separate contract.

E.5. A Participatory and Consultation Plan that will include awareness raising seminars at the time of launching the SESA, ESMF and Land-Use Plan in Karachi and in the area of influence of the coal mining and power generation operations. In these seminars, the Consultants will explain objectives, approach and expected outcome and how stakeholders will participate in the assessment. This will include several rounds of workshops in the area of project influence to identify environmental and social priorities, and validate the effects of mining/power generation and coal sector reform on the stakeholders and affected parties. This will also include dissemination meetings of the work results in Karachi and the areas of influence, including a plan for participation of civil society organizations in monitoring the implementation of recommendations

E.6 A Strategic Environmental and Social Assessment for coal-to-power sector that will assess priority developmental issues, policy / regulatory gaps, capacity constraints and opportunities, and stakeholder analysis. It will also provide guidance for developing the land-use master plan across all coal blocks with proposed locations, magnitude and timing of coal mining and power development; and associated ancillary infrastructure (physical, social and economic) needs. This effort will also include a stakeholder education and consultation process and a framework for such engagement.

- ***Stakeholder Analysis and Political Economy of the Mineral/Power Generation Sectors*** to identify key stakeholders in coal mining and coal-to-energy operations in Thar coalfield. Specific attention will be paid to the most vulnerable groups who are under greater risk of impoverishment and social marginalization, with special attention to women, migrant laborers, the disabled, the extreme poor and minority groups. Incentives and interests underlying key stakeholders' behavior and the corresponding benefits and costs for them arising out of the proposed mining and power generation operations will be highlighted. The political economy and power dynamics analysis will be completed in consideration of gender and provide insights into ways to engage constructively key groups into the T-CAP. This process also includes the ***assessment of Institutions and Governance Systems*** for policy, legal, institutional, sectoral and regulatory frameworks for environmental and social management. This work will feed into the Environmental and Social Management Framework (ESMF) for downstream coal mining and thermal power generation projects. It will assess the capacity of the institutions and stakeholders to effectively address the likely significant effects of mining/power generation operations on environmental and social priorities. Specific capacity building recommendations will be documented under a separate section. This information will also link to the ESMF process. In addition, the preparatory work by the Environmental Advisor will

have laid out numerous capacity building activities as part of their expert analysis and advice.

- ***Identification of Environmental and Social Priorities*** will be based on the results of the baseline assessments and analysis of the political economy dimensions key strategic environmental and social issues. The identification of key issues will focus on the Thar coalfield and peripheral influence areas in the broader context of the policy, legal, institutional and regulatory framework for environmental and social management. These key issues will be then prioritized by the SESA stakeholders through regional/local workshops, focus groups' discussions or surveys to be laid out in the public participation plan. Feasible mitigation strategies for these environmental and social impacts will be identified where applicable.
- ***Assessment of Effects of Coal Mining/Power Generation on Local Development Priorities*** will be identified through review of the sector development strategies, policies, related studies. To do so, a range of likely mining/power generation scenarios in Thar coalfield will be analyzed (using the Coal Road-Map developed under a separate assignment) with respect to the social and environmental aspects, based on existing information. The scenarios will be geographically referenced to identify the regions and communities that would likely be affected by mining/power generation development, and take into consideration all projected new mining, energy and transport infrastructure, and other associated activities in the Thar Basin. The geographic scenarios will form basis for the Thar coalfield land-use plan.
- ***Recommendations and Priority Setting*** is the result of the SESA process and is a combination of analysis and feedback. To accomplish this results are to be presented in a policy-action matrix and validated in workshops and/or focal groups with key stakeholders ensuring the participation and due consideration of views of vulnerable or affected stakeholders. The recommendations will also seek to mainstream local population into mining/power generation projects through enhancing awareness, capacity building and benefit sharing mechanisms, etc. These recommendations will inform the preparation and implementation of a master plan to guide the sustainable development of activities in the Thar Basin project areas. The SESA will also recommend policies to address barriers to the development of adequate institutions, particularly political economy considerations, and barriers to women and vulnerable groups having a voice in the sector development.

E.7 A Thar Coalfield Land-use Plan, to scope future development principles and direction in Thar basin. This plan will be based on and in parallel to the Strategic Environmental & Social Assessment (SESA) and develop possible scenarios for Thar coal-field build out plan. The land use plan will: describe the spatial implications of the development of mine / power plants; set the spatial planning cornerstones and framework for the activities of the private sector investor who will develop mine(s) and thermal power plant(s); propose the measures to handle the consequences in an environmentally and socially acceptable manner (this links in with the mitigation measures proposed in the SESA and ESMF); and finally provide guidance to the affected municipalities for their future local spatial planning. This plan will be informed by the Thar Coal Roadmap to be prepared by the Advance Team.

E.8. An Environmental and Social Management Framework (ESMF) to provide the government officials managing coal-to-power sector with (i) a set of procedures for environmental and social assessments; and (ii) an environmental and social screening process/ guidance that will enable the government to identify, assess and mitigate potential negative environmental and social impacts of downstream coal-to-power projects at the planning stage. This will include:

- ***Review of Existing, Procedures and Institutional Capabilities*** for EIA and associated permitting processes. In collaboration with the preparatory legal work, specific thresholds and acceptable levels of pollutants will be identified for each key pollutant (such as PM₁₀, PM₂₅, SO_x, NO_x, acid drainage and others), with recommended criteria values/levels, in line with the national and international standards. A penalty regime will be proposed in case the emissions/discharges exceed these limits, based upon the international best practice/available technologies and where necessary, recommendations provided on new pollutant limits. Mechanisms for proper compliance and enforcement will be proposed.
- ***Environmental and Social Assessment Procedures*** for the coal mining and power generation sector. The procedures should clearly distinguish actors and roles in the procedure, linkage to permitting procedures, scoping and reporting requirements, timing and maximum duration and validity of approval, consultation requirements and appeal procedures.
- ***Environmental and Social Screening Procedures*** to allow government to properly classify the downstream projects, and apply relevant requirements - ranging from the application of simple mitigation measures as outlined in the environmental checklist, to the preparation of a separate environmental assessment (EA), social assessment (SA) and resettlement action plan (RAP) according to Pakistan's requirements.
- ***Coal-to-Power Sector EA/SA Handbook*** to provide guidance to all actors in the assessment process and explain on a step-by-step basis required actions. The handbook will discuss typical environmental and social issues and mitigation measures in the sector, environmental standards and a detailed table of contents for EA/SA reports for a typical power project and a typical mining project.

E.9 Resettlement Policy Framework . These actions are to be complimented with the preparatory work by the Social Advisor and will identify key mitigation measures of any land acquisition and economic and physical resettlement impacts that have been identified in the SESA. The Resettlement Policy Framework needs to be prepared to establish resettlement objectives and principals, organizational arrangements, and funding mechanisms for any resettlement operation as part of project activities. This Framework will be prepared since the extent and location of resettlement is not known at this time and will be detailed during the early project assessments. When the extent of resettlement is identified for any project component , the Resettlement Action plan is prepared.

The Resettlement Action Plans should ensure that affected communities' physical structures, and livelihoods are restored to their previous standard and preferably exceed their current status. The RAP will include the valuation of all associated impacts on people's property and livelihoods and is the required tool proposed to address and

implement mitigation of the impacts of resettlement based on international standards. The RAPs will:

- obtain cadastral data and maps of the land to be acquired for the project's development
- estimate compensation costs for land, property and businesses
- provide to decision makers with all the relevant information on land to be acquired and utility /public services to be relocated or protected;
- raise and spread awareness of the project as regards land acquisition and its consequences among the public in general and persons who will be directly affected
- be linked to the social economic studies of areas to be impacted identifying social and economic characteristics of communities and businesses and how they will be affected by the project;
- value losses and determine compensation packages, for persons communities and businesses who will be affected;
- design resettlement measures including required inputs, implementation plans and monitoring and evaluation arrangements;

F. CAPACITY BUILDING

The objectives of this task is to build capacity of staff from regulatory institutions in Sindh and Pakistan to familiarize them with environmental and social implications and mitigation measures for coal to power sector in general and as it is applicable to Sindh / Thar in particular.

F.1. Training

The assignment includes an elaborate training program for relevant institutions at federal, provincial and local authority level, consultants and other (public, semi-public and private) parties working in coal and energy sectors. The program with international tutors includes training in

- (i) EA/SA/RAP/EMP procedures and international legislation,
- (ii) technical training for the EPA experts to determine compliance of the mining and power generation activities with respect to the environmental parameters (emissions, effluents and others),
- (iii) technical training in coal to power project features both for mining and power generation,
- (iv) typical environmental issues and impacts of lignite power sector activities and projects, the technologies to handle the key pollutants, and pollutant-penalty regimes
- (v) land-use planning – main tools and applications (including spatial planning applicable to coal to power projects)

(vi) case studies,

(vii) specific issues for Thar coalfield development.

The training program is inter-active; the participants will be required to work on case studies during the course that is expected to take 4 or 5 days in Pakistan/Sindh with 20 to 30 attendants, possibly in two groups.

A smaller group, maximum 10 candidates will participate in a 4-5 days study tour and visit coal mining and power generation facilities in the other countries and discuss EA/SA issues with the environmental regulators of these facilities.

The Consultant will organize these training programs and will allow in his project budget for all related costs including travel and lodging costs of the participants in the study tour.

F.2. Capacity Building for Implementation of Recommendations of the ESMF, SESA and Spatial Development Plans

The consultant shall undertake a series of workshops and seminars introducing and explaining reports developed under this assignment (SESA, ESMF and Spatial Plans) to a broad range of stakeholders, including federal, provincial and local authorities, private sector, CSOs/NGOs, and community-based organizations. Special attention will be paid to explaining the steps towards implementing the recommendations at each level and building capacity of the stakeholders to manage these activities.