



Combined Project Information Documents / Integrated Safeguards Datasheet (PID/ISDS)

Appraisal Stage | Date Prepared/Updated: 05-Feb-2020 | Report No: PIDISDSA28695



BASIC INFORMATION

A. Basic Project Data

| | | | |
|------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| Country Pakistan | Project ID P163461 | Project Name Khyber Pakhtunkhwa Hydropower and Renewable Energy Development | Parent Project ID (if any) |
| Region SOUTH ASIA | Estimated Appraisal Date 14-Feb-2020 | Estimated Board Date 30-Apr-2020 | Practice Area (Lead) Energy & Extractives |
| Financing Instrument Investment Project Financing | Borrower(s) The Islamic Republic of Pakistan | Implementing Agency Pakhtunkhwa Energy Development Organization, Energy and Power Department, Government of Khyber Pakhtunkhwa | |

Proposed Development Objective(s)

Increase renewable energy generation and strengthen the capacity of associated institutions in Khyber Pakhtunkhwa.

Components

Development of Hydropower and Renewable Energy Projects
 Institutional Strengthening and Energy Sector Development
 Environment and Social Management
 Project Implementation Support and Technical Assistance

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

| | |
|---------------------------|--------|
| Total Project Cost | 782.00 |
| Total Financing | 782.00 |
| of which IBRD/IDA | 425.00 |
| Financing Gap | 0.00 |



DETAILS

World Bank Group Financing

| | |
|--------------------------------------------------------------|--------|
| International Bank for Reconstruction and Development (IBRD) | 137.97 |
| International Development Association (IDA) | 287.03 |
| IDA Credit | 287.03 |

Non-World Bank Group Financing

| | |
|-----------------------------------|--------|
| Counterpart Funding | 134.00 |
| Borrower/Recipient | 134.00 |
| Commercial Financing | 223.00 |
| Unguaranteed Commercial Financing | 223.00 |

Environmental Assessment Category

A-Full Assessment

Decision

The review did authorize the team to appraise and negotiate

B. Introduction and Context

Country Context

1. **Pakistan, the sixth most populous country in the world, is at a crossroads.** Pakistan’s Gross Domestic Product (GDP) growth slowed to 3.3 percent in Fiscal Year (FY) 19; a 2.2 percentage point decline compared to FY18. Poverty declined from 64.3 percent in FY01 to 24.3 percent in FY15, but inequality persists. The country ranks low on the 2018 Human Capital Index, at 134 out of 157 countries. Gender disparities continue, and female labor force participation is low at 26 percent. Natural disasters and unreliable water and power supply constrain progress. After the onset of another boom and bust cycle, an International Monetary Fund (IMF) Extended Fund Facility (EFF) is underway to stabilize the economy. Growth is expected to gradually recover as structural reforms take effect and macroeconomic conditions improve. Pakistan will need to protect its poor and those just above the poverty line in the next few years through targeted safety nets. Over the medium to long term, Pakistan needs to invest more and better in human capital, raise more revenue, simplify ease of doing business, expand regional trade and exports, and manage its natural endowments sustainably.

2. **Pakistan’s economy is unable to sustain high growth rates and suffers from recurrent boom and bust cycles.** The fundamental cause for the short-lived growth cycles in Pakistan is that these are propelled by private and government consumption, not by higher investment and exports. In FY19, Pakistan’s already low total investment-to-GDP ratio fell from 16.7 percent in FY18 to 15.4 percent of GDP. Inflation



is expected to rise in FY20 to 13.0 percent, the highest since FY11 driven by exchange-rate pass-through to domestic prices. Domestic energy prices (gas, electricity and fuel) were also increased in FY19 and this trend is likely to continue in FY20 through monthly and quarterly tariff adjustments. About 70 percent of electricity generation is from fossil fuels linked to international oil prices affecting cost of supply. Over the medium to long-term government plans to shift the generation mix towards low-cost renewable energy (RE) to lower the cost of supply and boost country's economic development.

3. Over the past few years Pakistan has struggled to meet its fiscal targets, partly because of power sector deficits. One of the key fiscal risks is the underperformance of State-Owned Enterprises (SOEs) in the power sector. The overall power sector debt (circular debt) as of June 2019 totaled Pakistan Rupees (PKR) 1.6 trillion (around 4.2 percent of GDP), and a large share of this debt will eventually become a fiscal liability that the government will have to settle. This is in addition to about PKR 2.5 trillion subsidies provided by the government over the last 10 years (FY10-FY19) to maintain tariffs at a lower rate. In FY19, the energy subsidies constituted 92 percent (PKR 250.5 billion) of total federal subsidies. The government is now implementing power sector reforms to reduce the deficit of the sector through a Circular Debt Reduction Plan and enhance efficiencies of power sector entities. In addition, the Government intends to accelerate the development of RE, including hydropower, to reduce the cost of power generation and the dependence of imported fuel. These reforms are jointly supported by Asian Development Bank's Pakistan Energy Sector Reforms (2019), IMF-EFF (2019) and the World Bank's planned Resilient Institutes for Sustainable Economy (RISE Development Policy Credit (DPC), P171850).

Sectoral and Institutional Context

4. In the early 1990s Pakistan was one of the first countries to reform its power sector. The first stages of reform aimed to attract private investment into the generation segment, largely based on thermal sources. As the share of domestic gas for power generation started declining due to depleting natural gas reserves and no new major discoveries, the gap was filled with imported fossil fuels – Fuel Oil, Re-gasified Liquefied Natural Gas (RLNG) and more recently coal. The National Electric Power Regulatory Authority (NEPRA) was set up in 1997, with responsibility for licensing, determining tariffs, creating standards, and monitoring sector performance. The Government also unbundled the Power Wing of the Water and Power Development Authority (WAPDA) in 2007, which had been a publicly owned, vertically integrated monopoly with responsibility for generation, transmission, and distribution: four thermal generation companies, one transmission¹ and eight distribution companies were formed, and the hydropower assets remained with WAPDA. After the 18th Amendment to the Constitution of Pakistan in 2010, the provinces were given more autonomy to generate, transmit and distribute electricity. In Khyber Pakhtunkhwa (KP), Pakhtunkhwa Energy Development Organization (PEDO), a provincial entity 100 percent owned by the Government of Khyber Pakhtunkhwa (GoKP), can play a leading role in developing vast renewable energy potential including hydropower in the province and will be responsible for the implementation of the proposed project through a dedicated Project Management Organization (PMO).

5. Dependence on imported fossil fuels for power generation has fiscal, financial and environmental implications. Despite huge hydropower and renewable energy potential, Pakistan's

¹ The National Transmission and Despatch Company Limited (NTDC) was established as the transmission network owner, system operator and single-buyer. In 2016, single-buyer function was taken out of NTDC and a separate entity Central Power Purchasing Agency Guarantee Limited (CPPA-G) was established.



electricity supply is becoming more reliant on imported fossil fuels², incurring high costs and price volatility, and makes energy sector the largest contributor to Pakistan's greenhouse gas emissions³. In FY19, 40 percent of the total electricity generated (and 55 percent of thermal generation) was through imported fossil fuels, requiring US\$4 billion (or 7 percent of total import bill) in fuel payments for power generation. Moreover, the air quality situation in Pakistan is becoming worse due also to use of fossil fuels for power generation⁴. Because of high distribution losses electricity supply costs become even higher. As these costs were not transferred to consumers, the power sector runs a deficit every year affecting the country's national budget and economic growth. In June 2019, payables to the power generators, a measure used to estimate the sector's financial liabilities (and commonly known as circular debt), were approximately PKR812 billion (equivalent to 2.1 percent of GDP or US\$5 billion). This is in addition to the power sector debt of PKR806 billion (US\$4.9 billion equivalent) held by the Power Holding Company (established by the government to park these liabilities). The increasing level of arrears affects not only generation but also the investments needed to upgrade and expand the transmission and distribution network, thus compounding the problem.

6. Lack of access and poor reliability of electricity is causing significant losses to the Pakistan's economy. The most recent population census, in 2017, and electricity consumer data in the NEPRA State of Industry Report indicates an electricity access rate is just over 70 percent. Moreover, even those who have access to electricity do not enjoy reliable supply. In Ease of Doing Business 2020, Pakistan's rank on getting electricity indicator improved by 44 notches but at 123 out of 190 economies it is still ranked poorly. Lack of reliable access to electricity also has negative implications for a range of social and economic outcomes, such as limited educational achievement, health issues, and gender inequality.

C. Proposed Development Objective(s)

Development Objective(s)

7. Increase renewable energy generation and strengthen the capacity of associated institutions in Khyber Pakhtunkhwa.

Key Results

- (i) increase in renewable energy generation to shift the energy mix to domestic clean resources;
- (ii) mobilization of commercial financing and private capital to accelerate RE development in KP; and

² Electricity generation mix in FY18 was as follow: Hydro – 21 percent, Thermal (Oil, Gas/Re-gasified Liquefied Natural Gas (RLNG), Coal) – 69 percent, Nuclear – 7 percent and Renewable Energy – 3 percent. Share of hydropower used to be 60-70 percent and started declining in 1990s.

³ UNFCCC. 2015. Pakistan's Intended Nationally Determined Contribution (PAK-INDC). <http://www4.unfccc.int/ndcregistry/PublishedDocuments/Pakistan%20First/Pak-INDC.pdf>

⁴ One measure is the age-standardized loss of healthy life expectancy—disability-adjusted life years per 100,000 people—from exposure to fine particulate matter (PM). The PM concentration in Pakistan exceeds PM Concentration in Bangladesh and India and is 10 times the PM concentrate in the United States (Health Effects Institute 2017).



(iii) number of RE projects prepared for continued investment in the sector.

D. Project Description

8. Khyber Pakhtunkhwa Hydropower⁵ and Renewable Energy Development (KP Hydro and RE/KHRE) is a transformational program that would help in building capacity and institutions for harvesting vast renewable energy potential of the Province. It would start with the investments in Swat River Basin (SRB) (Component A and C) and in parallel provide planning and management capability to PEDO to transform it into a world class entity for development of renewable resources (Component B and D). The four components are briefly described below:

- a. Component A: Development of Hydropower and Renewable Energy Projects. This would cover an investment program in renewable energy generation covering hydropower and solar PV projects;
- b. Component B: Institutional Strengthening and Energy Sector Development. This would focus on planning and institutional development;
- c. Component C: Environment and Social Management. This is for implementation and monitoring of social and environmental safeguards related to the investment program (Component A); and
- d. Component D: Project Implementation Support and Technical Assistance. This is for project management, supervision, strategic studies, technical assistance and training.

9. Total World Bank financing proposed for the estimated project size of about US\$ 782 million is US\$ 425 million with following tentative breakup - US\$ 287 million of IDA Credit and US\$ 138 million of IBRD Loan. Private and commercial capital of about US\$ 223 million is expected to be mobilized through local commercial banks, Export Credit Agencies (ECAs) and private sources and remaining US\$ 134 million will be PEDO/GoKP equity. The financing plan is indicative, efforts would be made to mobilize as much commercial financing as feasible/possible and PEDO/GoKP share would depend upon the level of commercial capital mobilized.

E. Implementation

Institutional and Implementation Arrangements

10. The project will be implemented by Government of Khyber Pakhtunkhwa (GoKP) through Pakhtunkhwa Energy Development Organization (PEDO). Under the project, PEDO intends to develop run-of-river hydropower projects in the Swat River Basin (SRB) and other renewable energy projects.

11. PEDO will establish a Project Management Organization (PMO) for the implementation of the project and will be responsible for its overall management, supervision, and execution. PMO is to be headed by a Chief Engineer level officer who will be reporting to Chief Executive Officer (CEO) of PEDO. The

⁵ Hydropower is also considered renewable energy but in Pakistan there are separate policies for hydropower and other renewable energy sources therefore for clarity the project title mentions both. In this document, renewable energy refers to both hydropower and all other renewable energy technologies.



Environmental and Social Unit (ESU) of PMO will include several environmental and social specialists (two directors, four deputy directors and eight assistant directors). The staff of PMO will be responsible for overall supervision of the implementation of the project, including the safeguard instruments. The PMO will engage the services of independent consultants to conduct Environment and Social Impact Assessments (ESIAs) and prepare Resettlement Action Plans (RAPs) for projects which will be identified and designed during implementation. The Project Implementation Consultants (PIC) and contractors will have an adequate number of environmental, social, health and safety specialists to supervise and implement Environment and Social Management Plans (ESMPs), ESIAs and A/RAPs. The activities under the Program will be subjected to monitoring and evaluation. PEDO will be responsible for internal monitoring and will engage the services of an independent monitor for external monitoring.

F. Project location and Salient physical characteristics relevant to the safeguard analysis (if known)

The project area includes Upper Dir and Swat districts, which are part of the Malakand Division of Khyber Pakhtunkhwa province in Pakistan. The topography of the area is dominated by high mountains, located among the foothills of the Hindukush mountain range. Total hydropower potential of SRB is more than 2,000 MW including several run-of-river hydropower projects of varying capacity ranging from 10 to 200 MW. An 88 MW run-of-river Gabral-Kalam hydropower project (GKH) on Gabral tributary of Swat River for which feasibility study has been conducted will be tendered first followed by construction of two to three additional hydropower projects on the SRB based on their detailed design studies and environmental and social assessments to be carried out during implementation. GKH consists of a concrete gravity weir of about 21 meters in height and 145 meters in length and a water conveyance system of 5.5 km including 4.7 km head race tunnel of 5.8 meter in diameter. It will produce 340 giga-watt hours (GWh) of electricity per annum. The Swat River is a perennial river in the northern region of KP, its source is in the Hindukush Mountains and Himalayas and fed by glacial waters. The river commences in the Kalam Valley of Swat Kohistan with the confluence of two main tributaries Ushu and Gabral (or Utrar) and runs with high velocity downstream in a narrow gorge up to Baghdheri. Then the river enters the plain areas of Swat Valley where it is a meandering river and receives drainage from the entire Swat Valley. The river flows southwards and then westwards; once again, it enters a narrow gorge and is joined by the Panjkora River at Qalangi. The united stream then flows southwestward into the Peshawar Plains and joins the Kabul River at Charsadda after a 320 kilometer (km) course. The Kabul river then joins the Indus River at Attock (Punjab) below Tarbela reservoir.

G. Environmental and Social Safeguards Specialists on the Team

Imran-ul Haq, Social Specialist

Ahmad Imran Aslam, Environmental Specialist



SAFEGUARD POLICIES THAT MIGHT APPLY

| Safeguard Policies | Triggered? | Explanation (Optional) |
|-------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environmental Assessment OP/BP 4.01 | Yes | <p>The project activities involve construction of run-of-river hydropower projects and installation of Solar PVs. Such activities are likely to cause adverse environmental and social impacts. Some of these impacts are expected to be permanent and irreversible. Therefore, the project has been categorized as Category A. Most of the impacts would be during construction that would be addressed through a robust Environmental & Social Management Plans (ESMPs).</p> <p>Projected impacts from construction of hydropower project include changes in river ecology in the reservoir area, connectivity and alteration of downstream flows, change in fish habitat from present high velocity to slow velocity of a lake, chopping/cutting of forest trees and inundation of existing roads and water supply pipes as well as land acquisition and resettlement related issues. Construction related impacts could include dust and noise generation, all types of wastes (construction, MSW, hazardous waste), release of effluents and wastewater from construction camps as well as batching plants, impacts on physical cultural resources, vehicular traffic and crop damage. Construction related impacts also include safety hazards for surrounding communities and project workers including working in confined spaces and tunnels as well as working at heights and slopes.</p> <p>All of the identified hydropower projects of Swat River Basin except one are run-of-river projects. Information related to most of these proposed projects is not available at this time. Preliminary and initial cumulative impact assessment indicated that if these projects are run on peaking operations basis, there would be significant cumulative impact on river flows and down stream irrigation. These projects will also result in infrastructure developments such as electrification, development of water supply, educational and health facilities.</p> |



Furthermore, the projects may trigger induced developments such as urbanization, communication, business, tourism, industrialization, etc. These induced developments are expected to have both positive and negative impacts. As complete information is not available, CIA is recommending detailed cumulative impact assessment and ecological studies to better understand environmental and social impacts from the proposed hydropower projects.

Potential impacts during operation and maintenance (O&M) activities include changes in river flows, ecology in the reservoir area and its impact on fish habitat, waste generation from repair and maintenance of power plant, offices and residential facilities, safety hazards caused by power generation facility as well as transmission lines, and electromagnetic radiation from transmission lines.

The location of solar panels is not yet identified, even for GKH. Potential impacts from solar panels are not expected to be significant as the panels would be installed within the existing areas of the proposed hydropower projects such as along the river banks and on project infrastructure. During the construction period it may lead to contamination of water and soil, light and noise pollution, clearing of vegetation, and during the operational phase it is expected to cause obstruction of light penetration into water affecting organisms that depend on light for their existence (photosynthesis and fins), reflection of light from panels, and damaged/disused solar cells from the solar PV systems as well as contamination of water from cleaning of solar panels.

While ESIA has been prepared for GKH, ESIA for the other sites will be prepared during the implementation and are covered under project ESMF. The World Bank will review and clear ESIA and RAP for other sites covered under this project.

Performance Standards for Private Sector Activities OP/BP 4.03

No



Hydropower and dams are known to have an impact on river as well as its tributaries and areas adjacent to project areas and fish habitat. Therefore, this policy has been triggered.

The Gabral River and its tributaries are characterized by relatively steep gradients and substrate sizes, fast-flowing, and turbulent waters. GKH will change river ecology from fast flowing to lake like slow velocity. The ecology of the adjacent areas may also change such as slope stability along the reservoir, development of quarry and borrow areas, etc. Similarly, fish habitat and migration patterns will be obstructed due to the construction of the weir and diversion of water for power generation. According to surveys carried out in the project area, two species of fish are noticed in the Gabral River - snow carp, an indigenous species and brown trout, an invasive fish species. Snow carp is widely distributed along the Himalayan foothills of Pakistan, India and Nepal. They thrive in the snow-fed river habitat (altitude of 1,200 to 3,000 meters above sea level (masl)) of clear, shallow water of stony substratum with an average depth from 0.5 to 3 meters, and river flows with low to high velocities (0.5 to 1.5 meters/second (m/s)). Snow carps are short distant migrants, and they migrate mostly within the tributaries (headwaters areas to lower elevations and to confluence areas of the major rivers such as the Swat River; and vice versa). The triggers for migrations are high flow, high sediment load, and low temperatures. Mitigation measures in the form of fish ladder and monitoring of any trapped fish, etc. have been put in place. CIA is recommending detailed cumulative impact assessment and ecological studies to better understand environmental and social impacts.

Environmental flows will be calculated using hydraulic modeling to assess adequate flows to meet habitat requirements. The assessment revealed that in case of GKH flows of 2.33 to 3.06 cubic meters per second (cumec) will maintain the adequate depths (0.4 to 0.5 m) and velocities (1 to 1.1 m/s) to support low flow winter habitat of snow carps. This requirement has been built into design of GKH.

Natural Habitats OP/BP 4.04

Yes



Project ESMF proposes mitigation measures to reduce impact on natural habitat such as control measures to avoid release of wastewater/sediments into river, relocation of trapped fish, compensation to replant trees, management plans to manage biodiversity, etc. ESIA of other hydropower projects will also have proper mitigation measures build into design and operational stage to minimize impact on natural habitats.

Further details related to ecological, habitat and biodiversity related impacts have been mentioned under Section A Summary of Key impacts.

The GKH area has forest cover which is expected to be impacted. Therefore, this policy has been triggered. GKH will only impact two small patches of forests. 48 trees owned by the community and 636 trees owned by the Forest Department are expected to be cut. The two forest patches affected by GKH do not constitute natural habitats as they already under anthropogenic use for development settlements and grazing of their animals. Appropriate mitigation measures such as replacement and compensatory plantation have been put in place.

For the other projects, the actual impact is not clear at this moment. However, hydropower construction normally leads to clearing of land and is expected in the other sites as well.

This policy has not been triggered as the project does not involve any activity related to purchase and/or usage of agro-chemicals. Nor does the project involve any activity which may lead to increased use of pesticides. Transmission and distribution companies do not use chemicals and pesticides to clear vegetation under the transmission lines.

The Swat Valley has a significant number of Physical Cultural Resources (PCRs) which are spread all over the valley. These PCRs include buddhist sites (stupas, monasteries, viharas, settlements) and rock carvings and inscriptions. Therefore, the policy has been triggered. However, the project is not expected to affect any PCRs. GKH ESIA revealed no

Forests OP/BP 4.36

Yes

Pest Management OP 4.09

No

Physical Cultural Resources OP/BP 4.11

Yes



| | | |
|------------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | PCR in the project area of influence. PEDO will include chance-find procedures in the contract documents. |
| Indigenous Peoples OP/BP 4.10 | No | There will be no impact on indigenous people as there are no indigenous people in the project area. People in three valleys of Kalash in Pakistan are the only indigenous people which are outside of the project area. Therefore, this policy is not triggered. |
| Involuntary Resettlement OP/BP 4.12 | Yes | <p>The policy has been triggered as the project activities will require land acquisition. The direct social impacts of the design ready GKH include land acquisition and resettlement. To mitigate these impacts, a Resettlement Action Plan (RAP) has been prepared.</p> <p>For the other potential projects, the designs have not started and will be undertaken during implementation. Therefore, a Resettlement Policy Framework (RPF) has been prepared to guide the preparation of Abbreviated/Resettlement Action Plans (A/RAPs) once the design details are available.</p> |
| Safety of Dams OP/BP 4.37 | Yes | <p>Projects are expected to fall into the category of large dams as described by the policy. Therefore, this policy has been triggered.</p> <p>An Independent Panel of Experts (IPOE) consisting of experts in the field of dam construction, hydraulics, geology, environmental and social will be engaged to review project design and construction activities. In addition, Dam Safety Reports will be prepared and warning systems would be put in place.</p> |
| Projects on International Waterways OP/BP 7.50 | Yes | <p>Since the hydropower projects for preparation of detailed design and construction are going to be located on the Swat River and its tributaries that flow into the Kabul River which is a tributary of the Indus River, an international waterway, the policy has been triggered. The policy also applies because the project may entail preparation of feasibility and design studies of hydropower projects on other rivers/international waterways in Khyber Pakhtunkhwa (KP). However, riparian notification is not required as explained below.</p> <p>No water flowing into the projects or Swat River comes from another territory than Pakistan, and no</p> |



water flowing out of the projects or Swat River goes to any other territory than Pakistan. Furthermore, the project consists of run-of-river power plants. Therefore, given the nature and location of the Swat River basin and the works envisaged under the project: (i) it will not adversely affect the quality or quantity of water flows to other riparians; and (ii) it will not be adversely affected by other riparians' water use. As the Project activities under these components will be carried out on a tributary to the Indus river that is entirely located within the territory of Pakistan and Pakistan is the lowest downstream riparian, therefore, the activities fall within the exception to the notification requirements of OP7.50 Paragraph 7(c). For planning and feasibility studies of the selected priority projects under Component B if they are on a river other than Swat River, or on a tributary that is not located entirely within Pakistan, requirements of the Policy will be met before proceeding with the design studies, and thus this component falls within the exception to the notification requirement of OP 7.50 Paragraph 7(b).

Projects in Disputed Areas OP/BP 7.60 No

The project site is not located in a disputed territory as defined by the policy. Therefore, this policy is not triggered.

KEY SAFEGUARD POLICY ISSUES AND THEIR MANAGEMENT

A. Summary of Key Safeguard Issues

1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:

The key component that has potential environmental and social impacts is Component A which includes the development of 88 MW Gabral-Kalam Hydropower Project (GKH) and two to three other hydropower projects of the Swat River Basin (SRB). Kalkot-Barikot-Patruk HPP (KBPH) and Patruk-Sheringal HPP (PSH) are the two candidate projects that meet the agreed criteria. However, other projects of the SRB can also be considered for inclusion and construction under Component A. The project also includes installation of Solar Photo Voltaic (PV) on hydropower assets and at other locations where possible.

The main impacts of the hydropower projects are related to river ecology in the reservoir area. The river connectivity will be impacted, and downstream flows will be altered. Furthermore, the weirs of the hydropower projects are expected to change fish habitat from present high velocity to slow velocity of a lake. It will also have an impact on fish migration and indigenous snow carps may have difficulty in migrating upstream and downstream during the breeding



periods. During the low flow season, there may be a dewatered section between weir and tailrace which can affect aquatic ecology. The project is also expected to have net reductions in GHG emissions.

The alpine and subalpine habitats of the Bhan Valley Community Reserve are located about 10 to 20 km from the project facilities of GKH. The key mammalian species in reserve include markhor, snow leopard, and black bear. According to surveys carried out by wildlife department in 2005, the mammals in the game reserve include markhors (10 to 15 numbers), ibex (up to 30 numbers), black bear (30 to 35 numbers), musk deer (10 to 13 numbers) and snow leopard (2 numbers). The mammalian species usually exist in the upper regions of alpine forest during summer and in the lower regions of alpine forest during winter. It also houses around 100 avian species which include passerine and non-passerine birds, winter visitors, summer breeders, passage migrants, and resident birds. The impact on the Bhan Reserve from GKH is not expected to be significant during the construction phase. During operation and maintenance (O&M), impact on the Reserve and wildlife can be expected due to easy access to the area. The project does not impact avifauna migration as there are no staging area for the migratory birds in GKH area and the migratory birds continue to fly over the River without descending down.

The project footprints are not expected to result in large scale loss of natural habitats and forest cover. However, chopping/cutting of forest trees will take place in the reservoir area. GKH will only impact two small patches of forest. The design for the other hydropower projects is not final so it is difficult to assess at this stage.

GKH footprint will comprise of about 11 km-long valley of the Gabral River from Kanai village (one km upstream of the weir site to cover the reservoir area and the Kanai village, which is affected by land acquisition) to Kalam town (10 km downstream of the weir site, where it joins the Ushu River to form the Swat River). The project related activities are not likely to have any impact beyond one kilometer upstream of the weir site, and hence has been considered the upstream boundary of the project area. The rationale for defining the 10-km downstream boundary is that all project facilities, including the temporary facilities and access roads, will be located within this boundary. The project activities will have minimal impact on the downstream hydrology and aquatic ecology beyond 10-km downstream of the weir site as River Ushu, a major tributary will fall into to the Swat River. However, GKH area of influence will comprise of area likely to be affected by the project as area mentioned (which will include temporary and permanent facilities, ancillary services), indirect as well as induced impacts including unplanned development. While it is difficult to quantify exact location of indirect and/or induced impacts, the area of influence varies according to the impact and can be spread over a larger area which can be even beyond 11-km long valley of the Gabral River.

Some community infrastructure and utilities are expected to be impacted. In case of GKH, some of the existing roads and water supply pipes will be inundated. A new 1.4 km road will be built to reroute existing road and PVC pipes will be relocated. During the construction phase, dust, noise and vibration is expected from blasting, excavation, traffic and other construction related activities. Excavation activities and tunnel construction will generate huge amount of spoils which needs to be disposed off properly. Similarly, huge amounts of aggregates and sand will be required for construction activities which may require development of quarries and borrow areas. This also has potential to impact both terrestrial and aquatic ecology. Wastewater discharges from tunnels and batching plants are highly alkaline and if discharged without treatment would impact aquatic ecology.

Contractors will use wide variety of hazardous materials such as fuels, chemicals, paints, and batteries. Explosives would also be used at different places for excavation and construction. Storage and handling of such materials carry significant risk to communities and construction workers as well as air, soil and water resources.

Construction camps and project colonies are expected to generate about 2 kilogram (kg) of waste per day per person



with most of this waste being organic. There are no municipal landfill sites in the project area and improper disposal will have significant health impacts on the local communities and project workers.

The hydropower projects are also expected to have significant Occupational Health and Safety (OHS) issues due to instream construction activities, underground tunnel construction activities as well as working on hillslopes and heights.

The project includes the development of small run of the river hydropower projects and other interventions for which land acquisition and resettlement impacts are not expected to be significant.

GKH, for which designs are ready, is also a run-of-river project with a limited foot print. Therefore, the land acquisition and resettlement impacts are not significant for GKH. These impacts are mainly due to weir, power house and their associated structures and transmission line (220 kV Transmission Line having 12 towers spread over a length of 2.7 km and Right of Way (RoW) width of 30 meters).

During the design of GKH, land and resettlement impacts were minimized by a thorough analysis of location and design alternatives. GKH will need about 200 acres of land out of which 157.5 acres will be needed permanently and remaining land will be required on a temporary basis. About 78 percent of the permanently needed land is rocky and barren land. Similarly, about 83 percent of temporary needed land has hilly and barren land use. GKH will affect a total of 171 households out of which 89 households will be affected due to the permanent loss of land and remaining will only be affected temporarily. Eight (8) structures consisting of 68 sub-structures, (i.e., living rooms, kitchens, animal sheds, and wash rooms) will be impacted due to construction of powerhouse and associated components. These structures are owned by eight (8) affected households (AHs) located in Chirat, Sher and Rashnail villages. These AHs will experience physical displacement due to loss of structures built on the agriculture fields. However, these AHs have alternate lands available in the nearby villages to relocate. Out of the total, 50 AHs will have an impact on livelihoods and will lose 10 percent or more of their land. In addition, a total of 19 privately owned fruit trees owned by four (4) AHs will be affected along with a total of 636 wood/timber trees owned by the Forest Department.

The impacts due to labor influx under the project are not significant. As the area is not very densely populated, therefore, interaction between the construction labor force and the communities is also expected to be limited, particularly with women due to the conservative culture in the region. The current level of Gender Based Violence (GBV)/Sexual Exploitation and Abuse (SEA) risk is quite low. The project is unlikely to have any significant labor influx. Only a small number of high-skilled workers are expected to travel to the construction sites. The likelihood of GBV/SEA is thus assessed as low. However, the Environmental and Social Management Framework (ESMF) provides a guidance to the PMO to screen the projects to be financed and institute proactive/preventive measures for GBV/SEA risks. Similarly, for GKH, the GBV/SEA related risks are assessed as low.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:

A cumulative impact assessment has also been prepared as part of the ESIA, to evaluate the impacts of hydropower projects to be financed under this project together with impacts from other planned hydropower projects within the Swat River Basin (including main stem and tributaries) which are considered likely to be developed within the next 15 to 20 years. The temporal and spatial scope of the Cumulative Impact Assessment is inevitably limited in order to ensure that the assessment remains relevant and adds value to the project-level assessment process.

Cumulative impact assessment carried as a part of ESIA for GKH had limitations because of lack of available data to do a comprehensive assessment. Therefore, it was felt that PEDO will conduct a comprehensive cumulative impact



assessment study to better understand the environmental and social impacts and opportunities for hydropower development in the Swat River basin, consistent with the principles of sustainability. The study will be carried out under Component B. The component involves the preparation of a long-term integrated plan for the development of renewable energy and hydropower resources in the province, and sequencing of the investment program over 10 years, 20 years and 30 years periods considering priorities. The study will be conducted during the first year of the project implementation.

Major impacts identified due to the development in the Swat River Basin are as under:

Hydrology and Ecological Flows: The free-flow of the rivers will be affected by construction of the run-of-river hydropower projects. It is expected that the main section of both rivers to be affected are going to be between weir and tailrace. In case of GKH, dewatered section is expected to be about 6 km. The Gabral River and its tributaries are characterized by relatively steep gradients and substrate sizes, fast-flowing and turbulent waters. This would change in the project area because of lake-like reservoir. When the average flow of the water is expected to be higher than flow required to run turbines, the excess water will be discharged through spillways. In the months of low waterflow, only ecological waterflows will be maintained. For the other hydropower projects, detailed design is yet to be undertaken.

Aquatic Ecology: Construction of weirs/dams will create a barrier that will impair the ecological connectivity in the river and affect migration of fish.

Terrestrial Ecology: The incremental impacts of the hydropower projects to be financed under Component A may not be significant. However, the cumulative effect of the construction of all hydropower projects may have a significant cumulative and induced impact on the high-altitude natural forests and wildlife of the area. There will be large influx of many thousands of people including construction workers, operational staff, and business people together with their dependents and over a period of 25 to 30 years. They will settle in the main urban centers in the area around Kalam and Mingora towns. This may result in more collection and commercial trade in fire wood and herbs, illegal deforestation, logging, reclamation of land for agriculture and other activities. Illegal practices such as poaching, trapping and hunting will increase.

Mitigation measures have been proposed to minimize long term impacts of the hydropower projects. Minimum ecological flows have been built into the project designs. Similarly, fish ladders have also been proposed. Detailed cumulative impact assessment has been proposed for proper designing of projects on SRB. In addition, detailed baseline studies to complement information presented in GKH ESIA for developing the Swat River and environmental management plans have been proposed to better manage cumulative impacts of all hydropower projects. For other hydropower projects, ESIA will be developed.

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.

At this stage, the design for only GKH has been finalized. During the project design stage, different types of alternatives were considered to avoid or minimize the adverse impacts including weir axis location, weir height and other design related alternatives.

Three (3) possible locations for weir and two (2) possible locations for powerhouse were identified during the design. Ranking of these options was done on the basis of power potential, geology, socio-economic and environmental impacts and planning and design aspects. After working on various aspects, final selection of weir axis and powerhouse site was made which minimized the impacts. Similarly, a dam of 70-100 m height is possible at the selected location due to high abutment on both banks of the river however, due to fear of inundation of Kanai and



Utror villages, the height of weir was set to a level that both the villages have no inundation and minimum impacts. Though, with increase in height of weir, the power potential of the selected layout could have been increased, however, to minimize the land acquisition and resettlement impacts, project was optimized at 88 MW.

Similarly, a peaking reservoir could have been recommended for economic reasons in the run off river GKH, wherein, water could have been stored in the reservoir for 20 hours and released during the peak electricity demand. However, during the study, it was learned that the Swat River flow is being utilized at Upper Swat and Lower Swat Canals, which irrigate 188,000 acres of land. If the peaking system is used in GKH, the 100-years-old irrigation system would be disturbed in terms of water distribution timings (warbandi), and would require additional infrastructure to be built to re-regulate irrigation water distribution. Therefore, peaking concept was dropped and a non-peaking reservoir has been adopted. For spillway design, analysis was done to select either gated or overflow spillway. Overflow spillway, though it has more cost implications, was selected because it avoids the risks to inundate the nearby areas in case of floods.

Similarly, three (3) different locations were considered for the project Employer's facility. An area which is safe from sloughing/landslides from hill slope and away from flood plain is selected. This is also closer to the community so that the facilities like school, hospital, and shops provided in colony are available for use of locals as well. The affected population has already expressed their expectations from the project to provide such facilities.

Similar analysis would be carried out for other two hydropower projects.

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.

PEDO has undertaken ESIA for GKH and ESMF for the other projects. To address the adverse project impacts and maximize projects, PEDO is developing a series of interventions on the basis of field surveys and consultations with the stakeholders.

Baseline ecological studies: ESIA of the GKH has recommended preparing to develop a sound ecological baseline for the project influence area to complement and strengthen baseline assessed during ESIA and carry out detailed monitoring during the implementation of the project to identify and address impacts on the local ecology. These baseline studies will update mitigation measures prepared as a part of ESMF and ESIA of GKH. It will prepare baseline and developing monitoring plans for aquatic ecology, terrestrial ecology, avian fauna (including avian survey for migratory birds), and development of a GIS-based ecological database. These plans would also cover Bhan Valley community Game Reserve.

Cumulative Impact Assessment Study: PEDO will conduct a detailed cumulative impact assessment study to better understand the environmental and social impacts and opportunities for hydropower development in the Swat River basin, consistent with the principles of sustainability. The study will be carried out in conjunction with Component B. The component involves the preparation of a long-term integrated plan for the development of renewable energy and hydropower resources in the province, and sequencing of the investment program over 10 years, 20 years and 30 years periods considering priorities.

Environmental Flows: The detailed design of the hydropower projects will have provisions for environmental flows. The environmental flows will be assessed for each project separately on basis of specific ecosystem components such as aquatic animals, flood plains, river sand, estuaries, groundwater aquifers, recreational and cultural features, irrigation and drinking, etc. In case of GKH, there is no human use of water (e.g. drinking, irrigation, cultural use, etc.)



in the river section between dam and tailrace. All the villages in the project area depend on springs for drinking water and irrigation requirements. The ecosystem that is likely to be affected in this river section due to reduced flows is the migration of snow carps and its habitat. A flow of 2.33 to 3.06 cubic meters per second (cumec) will maintain the adequate depths (0.4 to 0.5 meters) and velocities (1 to 1.1 meters per second (m/s)) to support the winter habitat of snow carps. Maintaining an environmental flow downstream of the weir could mitigate potential impacts on this habitat of snow carps. A comprehensive monitoring program will be in place during the operation and maintenance (O&M) to regularly monitor the release of environmental flows and downstream impacts. Furthermore, the environmental flows will be increased to mitigate any additional impacts are noticed.

A RAP for the GKH has been prepared to mitigate the direct social impacts. For land acquisition, PEDO has agreed to adopt a negotiated-price approach for the land taking and use based on the demands of AHs. Initial round of discussions and negotiations have taken place with the affected communities during the resettlement planning process based on rates negotiated by PEDO for another hydropower project which is currently under construction nearby. Based on these negotiations, rates have been proposed and agreed. The RAP explains the process and records the agreed rates and other agreements from these negotiations. All affected structures will be compensated at replacement cost and losses of crops and trees will be compensated at market value for two seasons required for construction. In addition to land compensation and resettlement assistance, a Livelihood Restoration and Improvement Plan (LRIP) has been developed to promote human and community well-being with a particular focus on vulnerable groups having an allocation of about US\$ 1 million. RAP also includes a Social Development Plan (SDP) committed at US\$ 5 million to share the project benefits and to compensate for the restriction in use of land under the Right of Way (ROW) of transmission line. The total budget for RAP is estimated at US\$ 25.17 million.

As designs of other projects have not been started and the scope and scale of impacts cannot yet be determined at the time of appraisal, a framework approach has been adopted. PEDO has prepared an Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) to guide preparation of detailed ESIA and A/RAP once the design details are available. The ESMF and RPF include the guidelines and procedures for compensation and/or resettlement in the event that future activities would require land acquisition, involuntary resettlement, or cause restriction of access to livelihoods or assets and resources. The RPF outlines the resettlement process in terms of procedures for preparing, approving, and monitoring A/RAPs where required; likely categories of affected people, eligibility and entitlement categories, methods of valuing affected assets, community participation, information dissemination and designing an SDP. The RPF has paid a particular attention to the development of the Grievance Redressal Mechanism (GRM) at the community level to ensure that it is accessible to all stakeholders.

Though the GBV/SEA risks are assessed as low, the project will undertake proactive measures to prevent and address potential labor- influx related risks, including GBV and SEA risk. The Project will strengthen the Contractors' obligations and capacity to address SEA, public health and safety risks, and ensure contractor supervision capacity to monitor mitigation of these risks. All Contractors will prepare and implement the Code of Conduct. All Contractors and security personnel who will be employed during construction or operation will receive training/sensitization on gender awareness, GBV/SEA.

The proposed funding by the World Bank will be the first engagement with the Government of Khyber Pakhtunkhwa (GoKP) in the hydropower Sector through its Executing Agency (PEDO). PEDO has some experience of working with the Asian Development Bank (ADB) that has financed two small projects of 17 MW and 3 MW for administering international financing institutions (IFI) funds and complying with their requirements regarding environmental and social due diligence, safeguards and oversight. Given its limited experience, borrower's institutional capacity to implement safeguard policies needs to be further strengthened. In addition, consultants will be engaged to monitor



and supervise implementation of the safeguard instruments during construction to ensure compliance with safeguard policies.

Overall responsibility to implement measures proposed in the safeguard instruments rests with PEDO. A Project Management Organization (PMO) has been established within PEDO. Overall responsibility for the project's safeguard activities, including safeguards management will be exercised through PMO. PMO will establish an Environment and Social Unit (ESU) based in PMO and the Head of PMO will be designated as Chief Safeguards Compliance Officer. The PMO Social, Resettlement and Gender Team will comprise one (1) Director Social Safeguards and two (2) deputy directors to be based at head office of PMO/ESU assisted by the social safeguards field team of four (4) Assistant Directors. The number of project specific social, gender and resettlement staff will depend on the scale and intensity of social impacts. The Director Social Safeguards of ESU will support the PMO/ESU Head and the ESU staff of site office of the respective projects with their work through liaising with relevant officials of Revenue Department and other relevant departments. The site offices of PMO/ESU will facilitate communication and coordination with APs, district and tehsil staff of Revenue Department and other relevant departments, and assist in A/RAPs implementation. The ESU field office staff will facilitate the A/RAP implementation activities and provide easy access for people who have concerns or grievances. The field staff will be provided with offices with adequate facilities including transport, computers and communication. The ESU staff will provide the necessary training and capacity building to field staff including contractor, consultant, Grievance Redress Committee (GRC) and APs. An independent monitoring consultant will also be engaged for the monitoring and evaluation of A/RAP implementation

PEDO/PMO will be assisted by the Project Implementation Consultants (PIC) who will act as Construction Supervisor Consultants (CSC). The CSC will be responsible for supervising the contractors for the implementation of ESMP. For this purpose, the CSC will appoint dedicated environmental, social, health and safety (ESHS) staff to ensure the implementation of environmental and social management plans during the project. They will supervise the contractor for the ESMP implementation, particularly the mitigation measures. They will also be responsible for implementing the monitoring of the effects of these measures. The ESHS staff of CSC will closely supervise the construction works to ensure that all environmental commitments are incorporated into the construction activities and work processes.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.

The project has a strong element of stakeholder engagement built in the design. Two types of stakeholders identified under this project are direct affectees who will be facing loss of land, livelihoods or other direct impacts as a result of project activities. The other key stakeholders include the concerned government departments, Environmental Protection Agency (EPA), District Collector/District and Tehsil Administration, KP Revenue Department, Forest Department, academia, print and electronic media and NGOs. Public consultations were conducted during the preparation of these safeguard instruments with all the relevant stakeholders to share the project details and invite feedback and input.

Preparation of safeguard instruments (ESIA, RAP, ESMF and RPF) followed a thorough consultative approach including interviews with relevant stakeholder groups, in particular local communities, potential affectees, including vulnerable groups such as women and local NGOs, and other interested parties.

Public consultations were also carried out during the preparation of the ESIA and A/RAP of the GKH and RPF and ESMF. In total, the consultation activities included 46 Focused Group Discussions (FGDs) with 249 male and 36 female in 7 villages, 7 meetings with government officials with 12 individuals, key informant interviews with 7 women and 18 men, and three (3) formal information disclosure workshops with about 94 male and 24 female participants after



preparation of safeguard instruments to present key finding of impacts and mitigation measures.

Stakeholder consultation will continue during implementation stage as well. Stakeholder consultations will continue to take place throughout the project implementation to obtain feedback to minimize the adverse impacts of the project. The ESMF includes a Stakeholder Engagement Framework (SEF) to guide consultations during preparation of ESIA and RAPs of other projects. ESIA also includes Stakeholder Engagement Plan (SEP) to guide consultations during implementation stage of the ESIA and RAP of GKH. Gender-balanced consultations will be conducted to ensure that both men and women are invited and enabled to participate (e.g. meetings scheduled at a convenient time and location, with separate meetings if needed).

The safeguard instruments have been disclosed on both PEDO and World Bank websites. Executive summaries translated into Urdu have also been published on the PEDO and World Bank websites, and hard copies of these documents will be made available at local government offices for public access. The ESIA and A/RAP documents to be prepared for future projects will also be consulted upon and disclosed on the PEDO and World Bank websites and will be made available to the local communities by placing them at local union council offices.

B. Disclosure Requirements

Environmental Assessment/Audit/Management Plan/Other

| | | |
|------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Date of receipt by the Bank 06-Dec-2019 | Date of submission for disclosure 31-Dec-2019 | For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors 10-Mar-2020 |
|------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|

"In country" Disclosure

Pakistan
31-Dec-2019
Comments

Resettlement Action Plan/Framework/Policy Process

| | |
|------------------------------------------------|------------------------------------------------------|
| Date of receipt by the Bank 02-Dec-2019 | Date of submission for disclosure 19-Dec-2019 |
|------------------------------------------------|------------------------------------------------------|

"In country" Disclosure

Pakistan
19-Dec-2019
Comments



C. Compliance Monitoring Indicators at the Corporate Level (to be filled in when the ISDS is finalized by the project decision meeting)

OP/BP/GP 4.01 - Environment Assessment

Does the project require a stand-alone EA (including EMP) report?

Yes

If yes, then did the Regional Environment Unit or Practice Manager (PM) review and approve the EA report?

Yes

Are the cost and the accountabilities for the EMP incorporated in the credit/loan?

Yes

OP/BP 4.04 - Natural Habitats

Would the project result in any significant conversion or degradation of critical natural habitats?

No

If the project would result in significant conversion or degradation of other (non-critical) natural habitats, does the project include mitigation measures acceptable to the Bank?

NA

OP/BP 4.11 - Physical Cultural Resources

Does the EA include adequate measures related to cultural property?

Yes

Does the credit/loan incorporate mechanisms to mitigate the potential adverse impacts on cultural property?

Yes

OP/BP 4.12 - Involuntary Resettlement

Has a resettlement plan/abbreviated plan/policy framework/process framework (as appropriate) been prepared?

Yes

If yes, then did the Regional unit responsible for safeguards or Practice Manager review the plan?

Yes

OP/BP 4.36 - Forests

Has the sector-wide analysis of policy and institutional issues and constraints been carried out?

NA

Does the project design include satisfactory measures to overcome these constraints?

NA

Does the project finance commercial harvesting, and if so, does it include provisions for certification system?

No



OP/BP 4.37 - Safety of Dams

Have dam safety plans been prepared?

No

Have the TORs as well as composition for the independent Panel of Experts (POE) been reviewed and approved by the Bank?

Yes

Has an Emergency Preparedness Plan (EPP) been prepared and arrangements been made for public awareness and training?

No

OP 7.50 - Projects on International Waterways

Have the other riparians been notified of the project?

NA

If the project falls under one of the exceptions to the notification requirement, has this been cleared with the Legal Department, and the memo to the RVP prepared and sent?

Yes

Has the RVP approved such an exception?

Yes

The World Bank Policy on Disclosure of Information

Have relevant safeguard policies documents been sent to the World Bank for disclosure?

Yes

Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?

Yes



All Safeguard Policies

Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?

Yes

Have costs related to safeguard policy measures been included in the project cost?

Yes

Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?

Yes

Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?

Yes

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APPROVAL

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Approved By

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| Practice Manager/Manager: | Demetrios Papathanasiou | 10-Feb-2020 |
| Country Director: | Puteri Natalie Watson | 12-Feb-2020 |