

## SUMMARY OF THE ENSUING PROJECT

### I. THE PROJECT

#### A. Rationale

1. **Poverty.** Balochistan is the largest of Pakistan's four provinces. It covers 44% of the total geographical area of 796,096 square kilometers and has about 6% of Pakistan's population of 207.7 million.<sup>1</sup> The per capita income of Balochistan is around \$1,106, 38% below the national average of \$1,798 and the lowest in the country.<sup>2</sup> Balochistan's human development index is a 0.473, compared to the national average of 0.570 between 2018–2019.<sup>3</sup> The agriculture sector accounts for one-third of the provincial gross domestic product. It provides livelihood for about 68% of the population.<sup>4</sup> Despite the dependence on agriculture, malnutrition is prevalent. More than half of all children under 5 years of age are stunted and 16% of the population was malnourished in 2017. Scarce perennial water resources, recurring floods and droughts, and limited farm and off-farm employment opportunities are contributing factors to rural poverty.

2. **Limited water resources.** Balochistan's annual water availability per hectare (ha) averages 560 cubic meters (m<sup>3</sup>). It is significantly lower than the 2,500 m<sup>3</sup> average of Pakistan's other three provinces.<sup>5</sup> Balochistan has 18 river basins, and its water resource comprises of flood water (57%), water from the Indus Basin (39%) and groundwater (4%). Floodwater has greater development potential as only 40% is used for irrigation and 60% flows towards the sea.<sup>6</sup> Agriculture accounts for 93% of total water use in Balochistan.<sup>7</sup> Water resources management remains underdeveloped resulting in low water productivity. Balochistan has limited number of perennial rivers. Peak water flows do not coincide with crop water requirements. Water storage, particularly for managing flood waters is limited.

3. **Climate change impacts.** Balochistan is highly vulnerable to climate change impacts given its inherent aridity and low and erratic precipitation. Severe droughts occurred most recently in 2018 and major floods in 2021 and 2022. In August 2022 Pakistan received more than 3 times its usual rainfall, making it the wettest August since 1961. The two southern provinces, Sindh and Balochistan received 7 and 8 times their usual monthly rainfall totals. The rainfall is considered to be a 1 in 100 year event – demonstrating the extreme event – and estimated to be made 50% more intense by climate change.<sup>8</sup>

4. Climate change projections indicate further increases in average temperatures and precipitation. These will increase and alter flood intensity and frequency which will directly impact

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<sup>1</sup> Government of Pakistan, Finance Division. 2022. [Pakistan Economic Survey 2021–2022](#).

<sup>2</sup> Government of Pakistan, Planning Commission. 2016. *Multidimensional Poverty in Pakistan*. Islamabad. Poverty rate is 71% compared with 39% for Pakistan as a whole.

<sup>3</sup> United Nations Development Programme. 2020. [Overview: Pakistan National Human Development Report 2020. The three Ps of inequality: Power, People, and Policy](#). Islamabad.

<sup>4</sup> Proposed Balochistan Agriculture Policy 2021.

<sup>5</sup> ADB. 2018. [Report and Recommendation of the President to the Board of Directors: Proposed Loan and Administration of Grants and Technical Assistance Grant to the Islamic Republic of Pakistan for the Balochistan Water Resources Development Sector Project](#). Sector Assessment (accessible from the list of linked documents in Appendix 2). Manila.

<sup>6</sup> R. Benmessaoud. 2013. *Islamic Republic of Pakistan—Balochistan: Development Issues and Prospects, Part II – Water and Agriculture*. Washington, DC: World Bank. Floodwater mainly includes sailaba (spate irrigation) and khushkaba (rainwater harvesting).

<sup>7</sup> ADB. 2008. *Balochistan Irrigation Department and Basin-wide Water Resources Availability and Use in Balochistan*. Consultant's report. Manila (TA 4560-PAK).

<sup>8</sup> Otto et al. 2022. [Climate change likely increased extreme monsoon rainfall, flooding highly vulnerable communities in Pakistan](#). London.

livelihoods and infrastructure, in the absence of development interventions.

5. **Constraints in access to energy.** In 2021, only 36% of Balochistan province has access to electricity.<sup>9</sup> Electricity consumption is only 4% of national consumption, a large part of which (75%) is used for agricultural tube wells. Volatility in fossil fuel prices and an increasing energy supply-demand gap increases the relevance of alternate, low-cost renewable energy sources such as hydropower and solar.

6. **Significant gender disparities.** Although intensively engaged in agriculture, women are particularly disadvantaged by low literacy (only 36.8% of women are literate compared to national average literacy rate of 52.0%) (footnote 1). This negatively impacts skills development and off-farm employment opportunities. A lack of social mobility because of cultural norms further impedes women's access to effective agriculture extension services and inputs like agriculture credit.

## B. Proposed solution

7. The proposed ensuing project will offer a viable and sustainable solution to Balochistan's key development constraints. It will harness wet season waters generated by intense but highly episodic rainfall by creating a storage reservoir for longer-term use, particularly during dry seasons. The proposed project site at the Naulong gorge on the Mula river, Jhal Magsi district, represents the most technically feasible and economically viable opportunity for water resources development. The project's impact is aligned with the National Water Policy (2018), the National Climate Change Policy (2012), and Pakistan Vision 2025. The project is expected to develop reliable and climate resilient water resources in the project area. Tentative outputs of the proposed ensuing project are (i) climate resilient multi-purpose dam constructed; (ii) modernized irrigation system developed; and (iii) climate-smart agriculture productivity enhanced.

8. The proposed ensuing project will construct (i) 56.7-meter (m) high and 913 m long zoned earth fill main dam, and a 480 m long auxiliary dam; (ii) a gated spillway for 13,239 m<sup>3</sup> per second discharge; (iii) a fuse plug; (iv) 2 lead channels and headworks; and (v) about 30 kilometer (km) irrigation distribution canals and appurtenant structures. The dam will create a reservoir with total storage capacity of 298.5 million cubic meters (MCM), comprising 246.5 MCM of live storage and 52.0 MCM of dead storage. The project will also control the downstream flooding by storing and routing flood peaks through the reservoir. The dam storage enables (i) supply of reliable irrigation water to 19,000 hectares (ha), including 15,379 ha of newly developed land and 3,642 ha of existing irrigated land;<sup>10</sup> and (ii) a provision of 13.5 MCM for potable water supply for Jhal Magsi town and 13 villages. The project will also install 2 hydropower plants with an overall capacity of 4.4 megawatts. These will generate 26.6 gigawatt hours of electricity from renewable hydropower energy source to contribute to the main power grid.

9. To enhance the focus on renewable energy resources, solar power potential, with possible augmentation through floating solar panels on the reservoir, will be studied during the project readiness financing (PRF). Other project-level contribution will include (i) fisheries with net fishing stock estimated at PRs0.860 million annually; (ii) improved vegetation and afforestation cover in degraded watershed covering 30,000 ha; (iii) 24 km access roads development; and (iv) enhanced skills development and access to digital technology for operation and maintenance

<sup>9</sup> ANI. 2021. [No electricity in 64 per cent area of Balochistan, states report](#). News release. 24 September.

<sup>10</sup> The proposed irrigated areas are located 10,630 ha (27,000 acres) along the right bank of the Mula River and 7,874 ha (20,000 acres) along the left bank of the river. The entire existing cultivated area of 3,543 ha (9,000 acres) is located along the left bank.

staff. The project will benefit 8,248 households in the command area, or approximately 58,000 beneficiaries.

10. The project will support and ensure climate change resilience. Climate resilience measures and climate smart agriculture practices will be incorporated in the detailed design. This will be underpinned by a detailed and updated climate change risk assessment to (i) confirm reservoir size to ensure future reliability of water, (ii) incorporate dam safety measures under future estimated flood risks, and (iii) include elements of water-energy nexus in water security and climate adaptation. The project will ensure resilience to a range of possible climate change and alignment with global and national climate change adaptation and mitigation objectives and targets.

11. Socioeconomic benefits of the proposed ensuing project are substantial. The provision of a perennial source of water will enhance and diversify agricultural production, increase farm incomes, and improve livelihoods of beneficiary communities. Climate adaptive agriculture practices will increase community resilience to impacts of climate change and encourage sustainable agribusiness opportunities. Inclusive income generating activities will be developed to ensure women and other marginalized groups including landless, tenant and sharecropping farmers receive equal benefits and are empowered in decision making. Access to potable water supply will provide health benefits and reduce time burden on women who are responsible for managing domestic water. This can often require carrying water across long distances, adding to their time poverty.

12. The ensuing proposed project will also ensure efficient and integrated water resources management through capacity development and institutional strengthening of the relevant agencies of the provincial government and other key stakeholders, including beneficiary communities. Enhanced efforts will be made to apply international best practices and standards in the environmental impact assessment, land acquisition and resettlement planning, and preparation and implementation of socially inclusive gender action plans. The project will adopt a participatory approach for command area development and other community interventions. It will support social mobilization to ensure representation of all stakeholders in decision making. This will include women, sharecroppers, landless, and tenant farmers. Through the facilitation of institutional partnerships, steps will be taken to improve access to financial services, markets, and skills training.

### **C. Project Location and Linkages**

13. The proposed project will be in a downstream reach of the Mula river in Balochistan, Pakistan (Appendix 1). The Mula river basin is a dryland basin, which is characterized by significantly higher annual evapotranspiration (1,850 millimeters [mm]) as compared to average annual rainfall (194 mm) of the province. Due to the steep topography, flood flows are rapidly generated and dissipated. There is limited opportunity for a stable crop-based agricultural production system in the absence of storage or options to impede and divert flood flows. This area can only support a rangeland and livestock-based agro-ecological system.

14. Except for a small perennial base flow, rainfall accounts for a sizeable amount of annual river flows. Farmers divert part of this flow for irrigation in the upper part of the command area. A large proportion of the base flow is used for irrigation just downstream of the dam site. Livestock grazing and subsistence farming are the current source of rural livelihoods. Occasionally, small scale water diversions from the river support crop cultivation. The agricultural production system is deprived of two water management opportunities: (i) maximizing use of rainfall—over 60%

currently flows as runoff efficiency compared to 10% in large systems; and (ii) storing flood flows of lower frequencies for more sustainable uses.

#### **D. Proposed Financing Plans and Modality**

15. The proposed ensuing project is tentatively estimated to cost about \$350 million, of which Asian Development Bank (ADB) financing of \$100 million is anticipated. Suitable cofinancing sources will be considered for the remaining resources. The cost will be finalized after updating the detailed design under the proposed PRF.

## **II. PROJECT PREPARATION**

16. ADB has been proactively engaged with the Government of Pakistan since 2016 on the preparation of the project. The consultants engaged by the Water and Power Development Authority (WAPDA) completed the feasibility level studies in 1996, project's PC-1 was approved in 2009 by the Executive Committee of the National Economic Council and final detail design reports were completed in 2010. Due to financial constraints, the proposed project could not commence. ADB, in 2020, undertook a detailed review of the studies to identify any remaining gaps that need to be addressed. For a more rigorous understanding of the proposed project impacts and benefits, WAPDA undertook additional studies. These focused on assessing agriculture potential, establishing economic viability of the proposed project and climate risk and vulnerability assessment. A detailed designing of the command area was completed in July 2022.

17. Further refinement of social and environmental safeguards and climate change resilience, including adaptation and mitigation measures were also undertaken. All these studies completed by WAPDA-recruited consultants will be further validated and strengthened under the PRF.

18. The PRF will facilitate timely and cost-effective achievement of the project's outcomes. It will build on the project planning documents, including the feasibility study and associated studies completed by WAPDA-recruited consultants. The PRF will review and update the existing feasibility study, detailed engineering design, social and environmental safeguards documents and conduct other due diligence assessments. These will include detailed social and poverty assessments, with a deeper analysis of traditional institutions, tribal structures and how benefits may reach the most marginalized and vulnerable households of the community. Dedicated support under the PRF will also be provided to WAPDA to enhance its capacity and understanding of ADB's procurement, safeguard and financial management procedures. ADB's involvement in the project will ensure technical, economic, financial, social, and environmental due diligence necessary for sustainable management of scarce water resources.

19. ADB's support for the preparation of a quality project will be further enhanced through a collaboration between the proposed PRF and a transaction technical assistance (TA). A TA amounting to an estimated \$800,000 will be processed by ADB in the first quarter of 2023. The TA will oversee and provide advisory to the PRF consultants to bring international best practices and ensure integrated design of the ensuing project. The objective of the proposed TA will be to enhance the robustness of the design of the ensuing investment. It also aims at strengthening the capacity of the executing and implementing agencies based in the project area to ensure implementation of a holistic and integrated project.

20. The PRF and TA will promote holistic development of the project area by the ensuing investment. There will be particular focus on integrating sustainable and climate resilient agriculture practices within the command area. Social mobilization and a community participatory

approach will be institutionalized through water-user associations and other farmer-based networks. These organizations will lead on efficient water use management and support livelihoods opportunities for the communities in the project area.

21. With the inputs consolidated under the transaction TA and the PRF, ADB will process the ensuing investment for approval by (ADB and the Government of Pakistan) in 2024. The implementation of the proposed ensuing project is estimated at 6 years. This implementation period considers time required for the social mobilization and participatory processes for enhanced command area development and improved climate resilient rural livelihoods. The overall project formulation will be undertaken in close collaboration with the federal and provincial authorities. An appropriate scope, cost and financing plan will be developed to validate the existing design and fill in the knowledge gaps. An indicative project processing schedule is shown below:

#### **Indicative Processing Schedule**

ADB approval of the project readiness financing	October 2022
ADB approval of the technical assistance	Q1 2023
ADB approval of the project:	Q3 2024
Project effectiveness	December 2024

ADB = Asian Development Bank, Q = quarter.

### **III. SOCIAL AND GENDER**

22. The total population of Balochistan is 12.34 million, of which about 47.5% are women. Of these, about 70% reside in rural areas. About 26% of women participate in the labor force, largely in agriculture (including livestock rearing), seed cleaning, and crop storage. Women earn about 15% of their annual income from non-agriculture activities. It includes embroidery, rug manufacturing, agro-processing of edible products, etc. They perform these activities often without payment, or lower wages compared to male workers.

23. Extremely low literacy levels in the project area at 26% for women in 2019, compared to the national average of 46.5% in 2019 provides an indication of gender status. Mobility restrictions further impede the opportunities available to women for engagement in productive activities and for their empowerment.

24. Given the prevailing social norms of the area, women are excluded from participating in public settings. There is a possibility that there are also other groups within the community who have been marginalized and excluded from public life and access to benefits. Further discussions with the community to identify vulnerabilities and aspects of marginalization and measures to address these features will be developed as part of the project's technical assistance to support economic inclusion of the identified groups.

25. Some aspects of livelihoods and economic development and targeted support to women and other marginalized groups can include capacity development and training in climate and disaster risk resilience, nutrition and agriculture sector. For example, it could include the introduction of drought resistant crops for home agriculture production and backyard poultry for income generation. Other non-agriculture related activities can include identification of vocational skills training like agri-processing that can generate income.

26. The project scoping of economic opportunities will include discussion with communities to

identify skills and employment feasibilities linked to the construction of the dam and irrigation canals. The project's low and medium level of skills needs can be matched with the community's skills availability. Gaps in community skills to be employed by the project can be addressed through training and economic development undertaken by project technical assistance.

27. Collaborative activities and partnering with local water and health authorities or local, national civil society organizations could support community training on safe water use, hygiene, sanitation, personal health, and well-being. Opportunities for the community to access clean, safe drinking and daily use water will also be considered as part of the livelihood's improvement component of the project. Training opportunities will be extended to youth for their engagement especially on health and hygiene and other market-based skills development.

#### IV. SAFEGUARDS

28. **Environment.** The project is likely to be categorized A for environmental safeguards as it may have significant, unprecedented, and irreversible impacts. The environmental impact assessment (EIA) for the Naulong Dam was prepared in June 2020 and revised in March 2021 by consultants engaged by WAPDA. It will be updated during the PRF. Separate environmental assessment studies for various project components, such as powerhouse, irrigation canals, roads, and transmission lines will also be prepared and finalized by the PRF consultants. Terms of reference and scoping report will be prepared prior to updating and/or preparing the EIAs and initial environmental examinations (IEEs). This study will provide the methodology for any additional baseline surveys, impact assessment and other details.

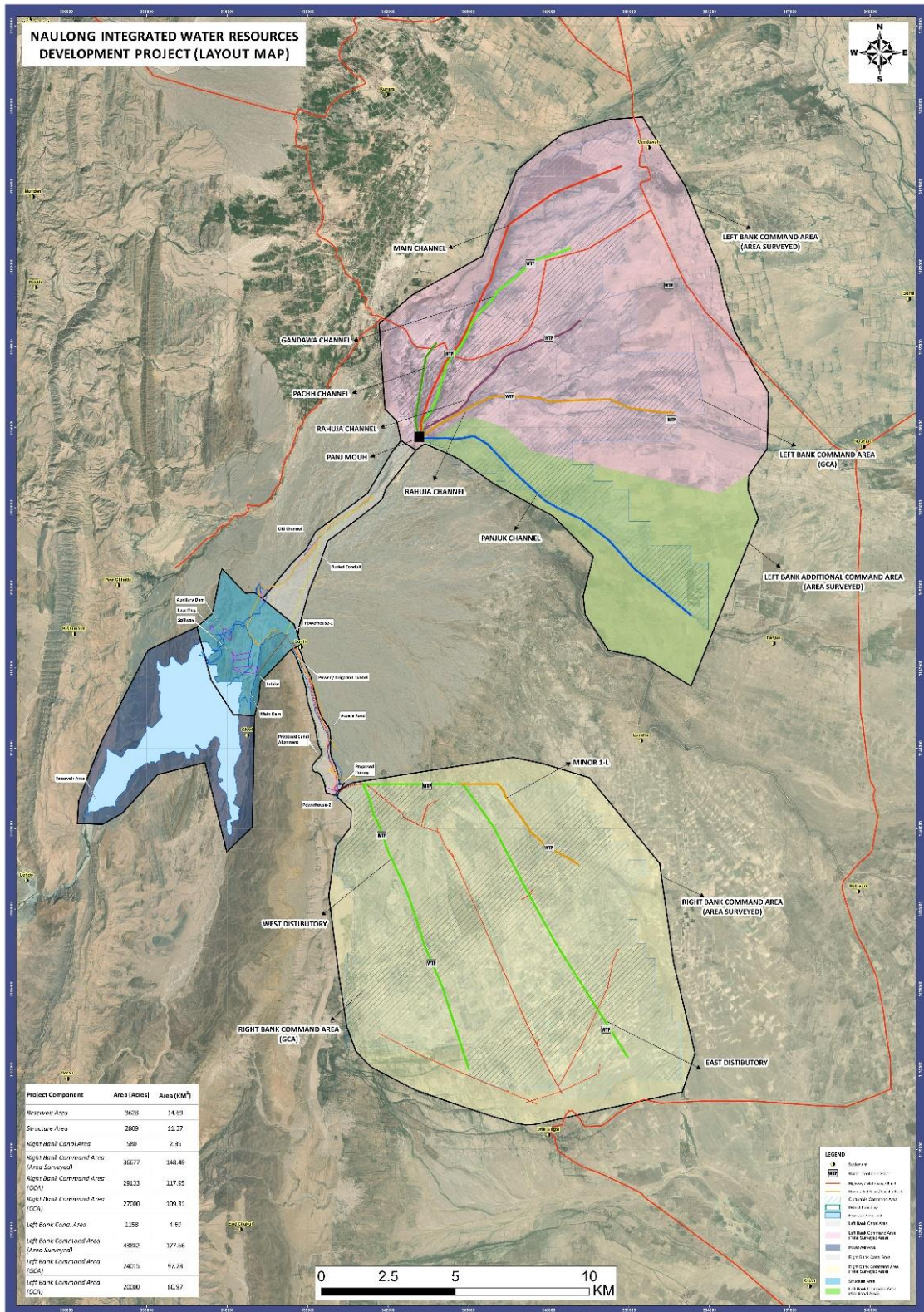
29. The baseline surveys including terrestrial and aquatic ecological surveys, will also be updated and/or prepared. A detailed critical habitat assessment will be prepared to ascertain if the project area can be considered as a critical habitat for any of the critically endangered species. These are as identified in the draft EIA. Based on the assessment a biodiversity action plan and biodiversity monitoring plan may also be prepared. Environmental flow (e-flow) assessment on water allocation, tradeoffs and conflict will also be carried out as part of the EIA's and IEE's, with consideration for interprovincial water resources allocation, relevant policy, transboundary impacts, and water usage. A stakeholder engagement plan will also be prepared as part of the EIA's and/or IEE's with robust stakeholder's consultation. It will include community, government departments, NGOs, and water user associations.

30. **Involuntary resettlement.** The project is likely to be categorized A. Initial assessments indicate that about 1,548 ha of productive land will be acquired and 31 households physically displaced. A preliminary assessment indicates that 96 households will be severely affected. The already prepared land acquisition and resettlement plan will be updated during the PRF.

31. **Indigenous people.** The PRF will undertake an indigenous people's assessment. This will be as part of the project preparation. It will inform the appropriate indigenous peoples' categorization of the ensuing project and associated impacts and approaches to mitigate risks and enhance project benefits.



### Location of Project and Dam Site



Source: Water and Power Development Authority, August 2016.