

FINANCIAL ANALYSIS

A. Introduction

1. The project will support the development of the State Agency for Hydrometeorology (Hydromet) into a sustainable and well-resourced state institution for meteorology and hydrology. It will (i) help address the key underlying institutional barriers and weaknesses of Hydromet that hamper its institutional capacity and development, and (ii) support improved forecasting services particularly for the Pyanj River Basin (PRB) area.

2. Hydromet is and will remain primarily funded by the core government budget, given its public service mandate, and its future viability will depend critically on this support. This is consistent with other similar meteorological agencies elsewhere, including those with some budgetary autonomy such as the United Kingdom's Met Office.¹ The project establishes and implements a framework for budget sustainability through the following activities:

- (i) Hydromet will establish and implement a sustainable operation and maintenance (O&M) management plan, including an annually updated 5-year budget forecast.
- (ii) The project covenants ensure that the government will make annual funds available to Hydromet for adequate staff salaries and other O&M, in line with the agreed annual sustainable O&M plan.
- (iii) The project will support transformation of Hydromet's legal status, after which it will be able to seek, retain, and use additional entrepreneurial income to support capital and O&M costs. Additional entrepreneurial income is expected to comprise (a) the rental of facilities, including office and conference space with high-speed internet; (b) the sale of fee-based specialty information and forecasting services; and (c) consulting services.
- (iv) A board of directors with responsibilities and composition appropriate for Hydromet's new legal status to provide oversight and guidance.
- (v) Hydromet staff will receive training in management, administration, and control, including financial management and planning, in line with its new legal framework. Organizational functions will be streamlined.

3. This financial analysis aims to provide an indicative assessment under alternative project options of projected (i) entrepreneurial revenues, (ii) expected required government support, and (iii) staff salary packages.

B. Project Costs

4. The project cost is estimated at \$12.8 million, comprising a \$6.5 million grant from the Asian Development Fund, a \$5.0 million grant from the Green Climate Fund, and a \$1.3 million government contribution of taxes and duties.

C. Project Alternatives

5. The key project cost, and cornerstone of Hydromet's institutional development, is the modernization of the new Hydromet operations center in Dushanbe. The full modernization comprises the completion of the unfinished six-floor office building, and the construction of a laboratory, conference hall, archive, visitor center, warehouse, and two mixed-use buildings. This will total about \$4.9 million, excluding design and supervision services, relocation costs, and

¹ Met Office. 2017. *Annual Report and Accounts 2016/17*. Exeter.

contingencies. The office and ancillary buildings will be Hydromet's new operations headquarters. The mixed-use buildings will include affordable housing for Hydromet staff to ensure critical staff can remain on call near Hydromet during extreme weather events and will act as an in-kind benefit.

6. The modernization of the Hydromet operations center underpins the achievement of a sustainable and well-resourced Hydromet that produces timely and accurate forecasts. A modern operations center will (i) ensure equipment and services are safely and securely operated; (ii) provide additional entrepreneurial income through the rental of facilities; and (iii) improve staff retention with more attractive salary packages through higher salaries and the in-kind benefit of housing. Higher staff retention and improved facilities, combined with the legal transformation of Hydromet and capacity building in management, marketing, and forecasting services, will help Hydromet improve the quality and relevance of its forecasting outputs. This will support additional entrepreneurial income from the sale of fee-based forecasting and consulting services.

7. Four options for operations center modernization were considered for the project:
- (i) Option A: Office tower (building 1), ancillary buildings (buildings 2, 3, 4) with landscaping, and two mixed-use buildings (buildings 5 and 6) plus nonstructural capacity building.
 - (ii) Option B: Office tower (building 1), ancillary buildings (buildings 2, 3, 4) with landscaping, and one mixed-use building (building 5) plus nonstructural capacity building.
 - (iii) Option C: Office tower (building 1) and ancillary buildings (buildings 2, 3, 4) with landscaping plus nonstructural capacity building.
 - (iv) Capacity building only scenario: project includes only capacity building for Hydromet forecasting services. The new office building (building 1) is completed in 2023 using state funds. No legal transformation of Hydromet (i.e., to seek and retain additional entrepreneurial income) is sought, as the opportunity for rental income and fee-based services would be limited in the absence of a modernized operations center during project implementation.

8. These alternative scenarios are compared against the without-project baseline scenario—no project and only new office building is completed only in 2023 using state funds.

D. Common Scenario Inputs and Assumptions

9. The scenarios employ a set of common inputs and assumptions:
- (i) Financial analysis is conducted for a period of 30 years (2018–2047 inclusive).
 - (ii) Actual base year (2017) core government funding for Hydromet is about \$900,000.²
 - (iii) Baseline core government funding grows at 5% real growth rate per year, in line with gross domestic product growth forecasts.³ This is more conservative than the approximately 7% real p.a. growth rate of Hydromet core funding from 2015 to 2017.⁴
 - (iv) Core salaries, O&M, utilities, and equipment purchase grow at about 5% real growth rate per year.
 - (v) Actual incremental capital investment in 2016 from the World Bank Central Asian Hydromet Modernization Project is about \$8 million.⁵

² State Agency for Hydrometeorology. 2017. Program Schedule and Production for 2017. Dushanbe. Converted from local currency using exchange rate of TJS8.68 = \$1.00.

³ ADB. 2017. *Asian Development Outlook 2017: Transcending the Middle-Income Challenge*. Manila.

⁴ State Agency for Hydrometeorology. 2017. Program Schedule and Production for 2017. Dushanbe.

⁵ World Bank. 2011. *Central Asia Hydromet Modernization Project*. Project appraisal document. Washington D.C.

- (vi) Incremental capital investments incur 1% O&M costs starting 2 years after investment.
- (vii) Hydromet's additional entrepreneurial revenues are taxed at 20% in line with local tax laws. Post-tax revenues are fully used each year to pay for incremental (increased) staff salaries above the baseline level and other O&M at a fixed ratio of 80:20. This ratio reflects the current ratio of core expenditure and is a conservative assumption, considering primary budget support from the government. Incremental salaries are subject to a 25% social contribution to be paid by Hydromet.
- (viii) In each year, incremental government funding will be provided to ensure all expenditures are covered. If core government funding and retained additional entrepreneurial revenues exceed total costs, the incremental government funding will adjust to ensure Hydromet does not make a surplus.

E. Scenario-Specific Inputs and Assumptions

10. **Capital investment.** The base costs of the capital investments from the additional financing, comprising civil works and equipment investments, under each project alternative are summarized in the Table below.

11. **Revenues from rental of facilities.** The scenarios consider two sources of rental revenue: (i) rental of office space in the main office building, and (ii) rental of commercial space and apartments in the mix-use buildings. The mixed-use buildings are expected to have commercial space on the lower floors and eight floors of residential apartments, totaling about 40 apartments, for low-cost housing for key Hydromet staff (i.e., 80 apartments across two buildings). The availability and reliability of formal statistics on historical, current, and projected rental rates in Dushanbe is extremely limited. As such, the project has taken a conservative approach with current rental rates based on a collection of online sources and informal surveys, and real unit rate growth (3.0% per year) significantly lower than gross domestic product growth rates.

12. **Revenues from services.** The scenarios consider two broad sources of revenue from services: (i) fee-based information and forecasting products and (ii) consulting services. A market research survey was conducted during project preparation to inform of prospective clients, products, and prices for fee-based services. The results informed the financial analysis cost assumptions for two sets of clients: institutions or companies and individuals. The assumed uptake of fee-based services and unit rates are conservative relative to the survey results. Consulting services are assumed to provide only marginal revenues.

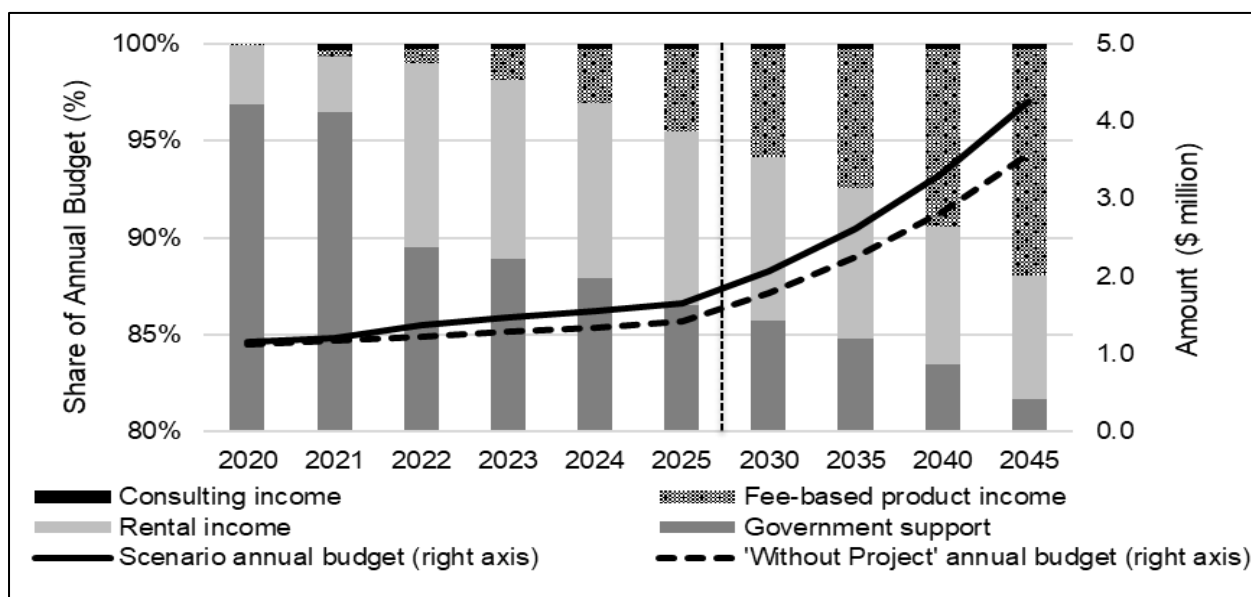
F. Scenario Results

13. **Entrepreneurial income and government contribution.** Under options A, B, and C, the total annual budget of Hydromet is expected to be higher than under the without-project baseline because of increased future O&M costs arising from the capital investments (Table). However, under options A, B, and C, these increased costs are compensated by additional entrepreneurial income. The share of entrepreneurial income in Hydromet's total budget is expected to reach about 10% in 2025 and 15% in 2045 under option A (Figure). Under options B and C, the share from rental income is diminished because of the reduced number of mixed-use buildings. By comparison, the Met Office receives about 15% from nongovernment sources (footnote 1).

14. As a result, the required government contributions under options A, B, and C are expected to be lower than the without-project baseline (Table). However, required contributions are higher

under the capacity building only scenario, as no additional entrepreneurial revenue is gained to offset the increased O&M costs.

Figure: Projected Annual Hydromet Budget and Source under Option A



Hydromet = State Agency for Hydrometeorology of Tajikistan.

Note: y-axis intersection at 80%.

Source: Hydromet and Asian Development Bank.

15. **Staff salary packages.** As of January 2017, Hydromet had 777 approved professional and technical staff positions,⁶ comprising 64 civil servants under the state agency structure of Hydromet and 713 other staff under the state institution structure of Hydromet (footnote 2). The civil servant positions represent the key professional staff in Hydromet. About 15% of all staff positions are unfilled because of difficulties in the recruitment and retention of qualified staff, and the qualifications and experience of existing staff are limited. This is driven in large part by the low Hydromet salaries: their civil servants (including senior management) receive on average \$150 per month and other staff on average receive \$50 per month (footnote 2). These levels are significantly lower than comparable civil servant positions in other state entities (indicative \$80–\$300 per month), the private sector (\$100–\$3,000 per month), and national consultants on externally-financed projects (\$1,000–\$5,000 per month).

16. Future increases in government support and additional entrepreneurial income will support increased salaries of Hydromet staff, as facilitated by Hydromet's legal transformation for more budgetary flexibility and autonomy. In this analysis, the number of staff positions is assumed to remain constant over the assessment period. Increases in the salary packages from the baseline will arise from (i) incremental salary bonuses from the distribution of entrepreneurial income profits to staff,⁷ and (ii) in-kind benefit of low-cost housing for Hydromet staff. Under option A, in-kind housing benefit is provided to all civil servant positions (64) and about 15 other staff positions. Under option B, in-kind housing benefit is provided to only 40 civil servant positions and no other staff positions.

⁶ Excludes support staff.

⁷ The distribution between civil servants and other staff is assumed to be weighted by salary level.

17. The total salary package for civil servants and other staff receiving in-kind housing benefit will rise to levels comparable to the private sector (Table). The in-kind benefit is estimated on current and expected future values of the rental property and is estimated to almost double the staff salary package. The incremental cash salary corresponds to increases of about 5%–10% relative to the baseline without-project level. The largest salary package increases arise under option A, wherein two mixed-use buildings allow for larger entrepreneurial income from rental of commercial space and for a larger number of staff to receive the in-kind benefit. No increase in the salary package arises under the capacity building only, as no additional entrepreneurial income is sought, and no low-cost housing is provided to Hydromet.

G. Summary and Conclusion

18. The key financial indicators for 2020, 2030, and 2040 for the alternative options and baseline are in the Table below.

Table: Summary Projected Financial Indicators of Alternative Project Options

Indicator	Without Project	Option A	Option B	Option C	Capacity Building Only
Additional financing capital investment (\$)	1,125,097	6,249,511	4,487,798	2,726,085	960,000
Post-tax entrepreneurial income (\$ per year)					
2020	0	35,883	35,883	35,883	0
2030	0	295,990	259,507	223,024	0
2040	0	549,611	500,581	451,551	0
Government contribution (\$ per year)					
2020	1,125,410	1,118,233	1,118,233	1,118,233	1,125,410
2030	1,784,082	1,776,128	1,765,807	1,755,486	1,793,682
2040	2,834,682	2,776,003	2,768,192	2,760,381	2,844,282
Total Hydromet budget (\$ per year)					
2020	1,125,410	1,154,116	1,154,116	1,154,116	1,125,410
2030	1,784,082	2,072,118	2,025,314	1,978,511	1,793,682
2040	2,834,682	3,325,614	3,268,773	3,211,932	2,844,282
Civil servant salary package (\$ per year)					
2020	173	433	433 ^b	179	173
2030	282	634	628	319	282
2040	459	872	864	534	459

^a Includes in-kind housing benefit under options A and B.

^b Only applicable for 40 of about 64 civil servant positions; the remainder will have salary packages comparable to those under option C.

Source: Asian Development Bank.

19. The project's contribution to the objective of a sustainable and well-resourced Hydromet will depend on the extent to which it can address key underlying institutional weaknesses and barriers. Current dilapidated operation center facilities and poor staff retention and development hamper Hydromet's achievement of its key public service mandates. Among the options considered, only option A fully addresses these issues. Option C and the capacity building only scenario provide only a limited increase in staff salary packages, and the Capacity building only scenario does not modernize the Hydromet operations center. It is unlikely that externally-financed investments under these scenarios will be sustainable in the medium term and thus are unlikely to develop Hydromet's level of forecasting services beyond current levels. Option B provides a modernized office operations center, but only a limited number of civil servants will receive a significant increase in their salary package. This will constrain and potentially hamper the sustainability of the benefits of the overall investment in the operations center modernization and capacity building. As such, option A was selected for the project. Financial internal rate of return was not calculated, as Hydromet will remain primarily government-financed with annual budget agreed on an annual basis.