



The World Bank

RUSSIA HYDROMETEOROLOGICAL SERVICES MODERNIZATION (P127676)

REPORT NO.: RES30139

RESTRUCTURING PAPER
ON A
PROPOSED PROJECT RESTRUCTURING
OF
RUSSIA HYDROMETEOROLOGICAL SERVICES MODERNIZATION
APPROVED ON SEPTEMBER 17, 2013
TO
GOVERNMENT OF THE RUSSIAN FEDERATION

ENVIRONMENT & NATURAL RESOURCES

EUROPE AND CENTRAL ASIA

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ABBREVIATIONS AND ACRONYMS

AANII	Arctic and Antarctic Research Institute
AF	Additional Funding
EA	Environmental Assessment
GGO	Voeikov Main Geophysical Observatory
IBRD	International Bank for Reconstruction and Development
ICT	Information Communication Technology
LA	Loan Agreement
NPO Taifun	Research and Production Association "Typhoon"
NHMS	National Hydrological and Meteorological Services
PDO	Project Development Objective
RHM	RosHydromet
RosHydromet	Federal Service for Hydrometeorology and Environmental Monitoring of Russia
Rosstat	Federal State Statistics Service of Russian Federation
RU-Hydromet-2	Second National Hydromet System Modernization Project
Supercomputer	High Performing Computer
WB	World Bank



BASIC DATA

Product Information

Project ID P127676	Financing Instrument Investment Project Financing
Original EA Category Not Required (C)	Current EA Category Not Required (C)
Approval Date 17-Sep-2013	Current Closing Date 31-Dec-2018

Organizations

Borrower Government of the Russian Federation	Responsible Agency RosHydromet
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Project Development Objective (PDO)

Original PDO

The development objective of the proposed Second National Hydromet System Modernization Project (RU-Hydromet-2) is to further enhance the national capacity to deliver reliable and timely weather, hydrological and climate information to the Russian public and economic sector and enhance Russia's capacity to integrate into the global system of meteorological services. As a result of the project Roshydromet will further modernize its services and improve the accuracy of information necessary to protect society and economy from a wide range of hydrometeorological and climate related hazards. The project will also support Russia's public institutions to make informed economic decisions related to climate information (both negative and positive impacts) based on comprehensive climate models and assessment capacity.

Summary Status of Financing

Ln/Cr/Tf	Approval	Signing	Effectiveness	Closing	Commitment	Net Disbursed	Undisbursed
IBRD-82910	17-Sep-2013	17-Jan-2014	08-May-2014	31-Dec-2018	60.00	24.92	35.08



Policy Waiver(s)

Does this restructuring trigger the need for any policy waiver(s)?

No

I. PROJECT STATUS AND RATIONALE FOR RESTRUCTURING

1. Russia Second National Hydromet System Modernization Project (RU Hydromet-2, US\$60 million) was approved on September 17, 2013, and became effective on May 8, 2014. The project's development objective (PDO) is to further enhance the national capacity to deliver reliable and timely weather, hydrological and climate information to the Russian public and economic sector and enhance Russia's capacity to integrate into the global system of meteorological services.
2. Progress towards achieving PDO has been Moderately Satisfactory since the project became effective. Implementation Progress has been upgraded to Moderately Satisfactory in June 2016. Most activities are underway, including the largest contract for High Performing Computer (Supercomputer) totaling US\$37.3 million which was signed in February 2017 and became effective in March 2017. Other activities also advanced as planned, reflecting the gradual progress toward the achievement of the PDO. For example, the number of Roshydromet's sectoral data users has seen an increase of 10 percent since June 2016. Based on initial findings of an independent survey completed in May 2017 the satisfaction of users with Roshydromet services has also increased, and reached 71 percent with the target of 75 percent. Finally, accuracy of warnings on natural hazards has also shown slight improvement in the last 12 months and now reaches 93 percent.
3. As of January 17, 2018, the project disbursed US\$24.9 million (close to 42 percent) of the US\$60 million IBRD loan. About 62 percent of the project's funds are committed. One activity that has a direct impact on the PDO and that has been delayed is "Modernization of Hydrological Network on Volga River Basin" under "Modernization of observation networks" component. The reason for the delay was that the technical specifications for this activity had to be revised as they were prepared in a drastically different economic environment in Russia. The economic downturn starting in 2014 has therefore had an impact on project implementation and the budget of Roshydromet, which was reduced significantly. The initial concept of modernization of Hydrological Network on Volga River could not have been implemented as originally planned, because Roshydromet would not have had sufficient funds to operate and maintain the network. New technical specifications address the issues of operation and maintenance as well as the the reduced scope and number of units.
4. On September 15, 2017, the Ministry of Finance, based on the earlier request of RosHydromet, addressed the Bank to consider (i) the project closing date extension by three years - from the current date of December 31, 2018 to December 31, 2021, which will allow to complete activities that cannot be completed under the current timeframe, and implement new activities; and (ii) an increase of the share of the Borrower's funding in the amount of US\$40 million, to cover existing cost overruns under the project and add new activities that reflect new emerging priorities for the country.
5. The implementation of the project is happening in different financial and economic conditions as compared to the period of preparation. Prices for raw materials and services have significantly increased since the preparation and commencement of the Project (2011-2014) affecting the prices for equipment to be supplied under the project. For example, according to Rosstat data, the price indices of manufacturers of industrial goods increased by 37.2 percent



over the last 5 years, and the cargo transportation tariffs increased by 39.73 percent for railway and by 25.9 percent for automobile transport. Also, financing of the RosHydromet has been reduced significantly.

6. In these new realities, several activities had to be reduced in scope, like “Modernization of Hydrological Network on Volga River Basin”, “Supply and installation of at least 500 teraflops supercomputer for the Main Computer Center of RosHydromet”, and activities related to modernization of observation network. Due to the shortage of funds, the modernization of the specialized meteorological centers in Novosibirsk and Khabarovsk as originally planned will cover only the basic needs of RosHydromet. Similarly, the project did not include activities on modernization of computing complexes at GGO, AANII and NPO Taifun. Several activities were cancelled due to insufficient funding, including modernization of marine observation network.
7. The project restructuring will not change the PDO, however it will allow to achieve higher targets and outcomes. These changes will be reflected in the revised Results Framework. There is no change of the project risk category.
8. There are no outstanding audits under the Project. Financial management arrangements continue to be satisfactory. Both Procurement and Safeguards compliance are satisfactory, and there were no safeguards related issues reported.

II. DESCRIPTION OF PROPOSED CHANGES

9. **Summary of Proposed Changes.** In line with the Borrower’s request, the project restructuring will include: (i) a 36-month extension of the closing date from December 31, 2018 to December 31, 2021; and (ii) a change in components and costs caused by the increase of the Borrower’s counterpart funding in the amount of US\$40 million to strengthen activities that were scaled back due to costs overruns and implement new activities; (iii) changes in the Results Framework to reflect new closing date, new target values of the indicators to reflect the progress of the expanded activities; (iv) changes in disbursement estimates and implementation schedule.
10. **The extension of the closing date** is required to (a) provide sufficient time to launch the procurement process and to implement one of the key activities under the project, namely “Modernization of Hydrological Network on Volga River Basin” which has a direct impact on the PDO; and (b) prepare and implement new activities suggested by RosHydromet as part of project’s scaling up. As for the “Modernization of Hydrological Network on Volga River Basin”, the contract will most likely be signed in early 2018. Implementation of this contract which is estimated to take two years would have gone beyond the original project closing date. New activities requested by RosHydromet will include modernization of several specialized meteorological centers, expansion of the modernization of observation network, including modernization of remote stations. The extension is requested for 36 month, which by the estimates of the Borrower and the Bank should be sufficient to complete all tasks.
11. **Change in Components and Cost.** The overall project amount will increase from US\$139,5 million (US\$60 million IBRD loan and US\$79.5 million Russian counterpart funding) to US\$179,5 million (additional US\$40 million of the Borrower counterpart funding). The share of the Borrower in the project financing will increase from 57 percent to 78 percent. While there is a change in percentage under disbursement categories caused by the overall change of the project amount, there are no reallocations between disbursement categories. New amounts per components will be as follows:
 - a. Component A “Strengthening Information Communication Technology (ICT) infrastructure and systems delivering weather, climate and hydrological data and information” will increase from US\$45.4 million to US\$64.14 million;
 - b. Component B “Modernization of observation networks” -from US\$73.6 million to US\$90.16 million;
 - c. Component C “Institutional and regulatory strengthening, improvement of service delivery to clients and better preparedness for emergencies” – from US\$13.95 million to US\$17.28 million; and



- d. Component D “Project Management” – from US\$6.65 million to US\$7.78 million.
12. The increase in co-financing from the Borrower will allow to bring the scope of the activities as originally planned and scale up several tasks to address the needs of the RosHydromet. Modernization of the centers in Novosibirsk and Khabarovsk (proposed activity A.1.b) will permit their usage at the full capacity. These are World Meteorological Organization (WMO) regional specialized forecasting centers. Installation of high-performing computers in GGO, AANII and NPO Taifun (proposed activity A.1.c) will increase the performance and consequently will improve the quality of the ensemble forecasting, modelling, and hydrometeorological observations in Arctic and Antarctic. Modernization of these regional centers in combination with the modernization of the supercomputer (A.1.a) will allow RosHydromet to come close to the level of the performance of leading NHMSs. New funding will also scale up preparedness of the regions to emergencies by further development of the situation centers. Originally, 96 situation centers would be funded under the project. Additional activity (proposed C.3.e) will increase the number of these centers up to 102 by 2021, and supply additional advanced equipment to 41 centers.
 13. One of the most significant, both in size and importance, activities that is proposed under the restructuring is the expansion of observation networks modernization, including the modernization of selected priority remote stations. The above described two activities account together for US\$24,5 million out of overall amount of US\$40 million, which is still below the existing needs of RosHydromet. The proposed scaling up of the observation network would include installation of additional automatic weather stations, rain gauges, agrometeorological equipment. This will increase the automatization, sustainability and efficiency of entire observation network.
 14. The modernization of remote stations of the observation network emerged as one of the top priorities in the last few years, and will be included as a new activity under Component B. These stations are isolated observation units located in uninhabited, undeveloped regions with complex physical, geographical and harsh climatic conditions. The extensiveness of the territory of the Russian Federation requires the need for maintaining of many such isolated stations. Additionally, the upgrading of these stations, including switching to a full automation as feasible, would result in improved observation network coverage at the national level, additional data input into global forecasting models, improved safety of these stations, and reduced operational and maintenance costs. Several priority remote stations will be identified by RosHydromet for modernization.
 15. In summary, the aforementioned amendments are needed to implement additional activities which, inter alia, would (i) help to re-equip ground meteorological network, including hard-to-reach stations; (ii) finalize modernization of regional specialized centers performing routine calculations and research in support of operations in the Arctic and Antarctic and assessing climate change impact on the Russian economy; (iii) increase regions’ preparedness to emergencies by building a network of situation centers; and (iv) help RosHydromet to fully meet its international commitments under the WMO. In fact most of these activities will contribute to RosHydromet’s ability to comply with its international commitments as well as to the delivery of global public goods by sharing critical data and forecasts.
 16. Schedule 1 of the Loan Agreement (LA) will be amended to include a revised description of components to reflect the addition of scaled up and new activities, as well as to delete the activities that have been cancelled, e.g. marine hydrometeorological observation network.
 17. **Changes in Results Framework:** Because of the project extension and increase of the total project amount, the results framework has been revised to reflect new target values (where applicable) and date. There are no new indicators as the new activities will contribute to already established indicators in the results framework, however two intermediate indicators (C.1 and C.2) have been modified in order to monitor progress using the cumulative target value instead of the annual for the remaining time of the project implementation. Throughout the Results Framework, the target values have been revised, and almost in all cases they have been increased. However, after



the restructuring, several indicators will retain the original end target value because implementation delays make the end target unachievable by the original project closing date.

18. **Change in Disbursement Estimates:** Disbursement estimates have been revised to reflect project extension.

19. **Environment and Social Safeguards.** The project restructuring will not trigger WB safeguards policies. It remains as Category C and no further EA activities are needed. The WB safeguards supervision done in December 2016 concluded no civil works have been conducted by RosHydromet under the project. There are no civil works specified among activities to be performed during the extended project period. The new computer and hydro-meteorological equipment to be procured for Moscow, Khabarovsk and Novosibirsk Hydromet Centers as well as for other sites of RosHydromet branches will be installed in the same premises with minimal refurbishing works. Similarly, in the case of upgrading of the hydro-meteorological network, including the large-scale modernization of hydrological posts in river basins of the Volga there have not been any civil works for preparing the stations for installing new equipment as all new equipment will be installed on the same locations and no civil works are envisaged. Furthermore, there will be no new hydro-meteorological posts created but rather modernization of a smaller number of existing posts.

III. SUMMARY OF CHANGES

	Changed	Not Changed
Change in Results Framework	✓	
Change in Components and Cost	✓	
Change in Loan Closing Date(s)	✓	
Change in Disbursement Estimates	✓	
Change in Implementation Schedule	✓	
Change in Implementing Agency		✓
Change in DDO Status		✓
Change in Project's Development Objectives		✓
Cancellations Proposed		✓
Reallocation between Disbursement Categories		✓
Change in Disbursements Arrangements		✓
Change in Overall Risk Rating		✓
Change in Safeguard Policies Triggered		✓
Change of EA category		✓
Change in Legal Covenants		✓
Change in Institutional Arrangements		✓
Change in Financial Management		✓
Change in Procurement		✓



Other Change(s)		✓
Change in Economic and Financial Analysis		✓
Change in Technical Analysis		✓
Change in Social Analysis		✓
Change in Environmental Analysis		✓

IV. DETAILED CHANGE(S)

RESULTS FRAMEWORK

Project Development Objective Indicators

Increased lead times of basic weather forecasts for major Russian administrative centers with reliability over 70%				
Unit of Measure: Hours				
Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	120.00	120.00	168.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	
Increased reliability of forecasts of seasonal water inflow to reservoirs in the Volga River basin				
Unit of Measure: Percentage				
Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	75.00	78.00	85.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	
Increased number of RHM sectoral data users				
Unit of Measure: Percentage				
Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	100.00	116.00	123.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	
Increased satisfaction of users with RHM services				
Unit of Measure: Percentage				
Indicator Type: Custom				



	Baseline	Actual (Current)	End Target	Action
Value	65.00	80.00	80.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	

Intermediate Indicators**A.1 Accuracy of warnings on natural hazards**

Unit of Measure: Percentage

Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	88.00	93.60	93.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	

A.2 Increased level of spatial resolution of weather forecasts with the lead time of up to three days (for large cities)

Unit of Measure: Kilometers

Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	15.00	15.00	5.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	

A.3 Number of oblast and territorial Roshydromet Centers providing remote client access to archived data

Unit of Measure: Number

Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00	7.00	10.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	

A.4 Number of Roshydromet centers providing operational access to observational data and products for internal and external RHM clients

Unit of Measure: Percentage

Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00	10.00	100.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	

B.1 Increased number of automated observation sites in pilot regions of the North-West of Russia



Unit of Measure: Percentage Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	83.00	84.00	92.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	
B.2 Availability of modern devices for measurement of soil moisture and heat regime of agricultural lands in the pilot regions (North Caucasus, West Siberia) Unit of Measure: Percentage Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	0.00	0.00	80.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	
B.3 Modernization of upper air observation network Unit of Measure: Percentage Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	64.00	78.00	87.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	
B.4 Reduction of error of water flow data in the Volga River basin Unit of Measure: Percentage Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	20.00	30.00	15.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	
B.5 Percentage of the Volga River basin territory corresponding to the minimum required number of hydrological observation sites Unit of Measure: Percentage Indicator Type: Custom				
	Baseline	Actual (Current)	End Target	Action
Value	81.00	81.00	100.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	

**C.4 Accuracy of warnings on hazardous hydrometeorological events delivered to regional authorities and the Ministry of Emergency Situations**

Unit of Measure: Percentage

Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	81.00	84.00	89.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	

C.5 Number of Roshydromet institutions where situation centers are deployed

Unit of Measure: Number

Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	25.00	96.00	102.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	

C.2 Re-training and professional upgrading of specialists from the Roshydromet's organizations

Unit of Measure: Number

Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	169.00	1614.00	9300.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	

C.1 Developed/updated regulatory, organizational and administrative documents aimed at improving the organizational, methodological, financial and economic activities of Roshydromet

Unit of Measure: Number

Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00	2.00	9.00	Revised
Date	01-Jan-2014	05-Dec-2017	31-Dec-2021	

C.3 Number of scientists and specialists participating in internships in leading universities and agencies outside Russia

Unit of Measure: Number

Indicator Type: Custom

	Baseline	Actual (Current)	End Target	Action
Value	0.00	2.00	10.00	Revised



Date	01-Jan-2014	05-Dec-2017	31-Dec-2021
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COMPONENTS

Current Component Name	Current Cost (US\$M)	Action	Proposed Component Name	Proposed Cost (US\$M)
Component A. Strengthening Information Communication Technology (ICT) infrastructure and systems delivering weather, climate and hydrological data and information	45.40	Revised	Component A. Strengthening Information Communication Technology (ICT) infrastructure and systems delivering weather, climate and hydrological data and information	64.14
Component B. Modernization of observation networks	73.60	Revised	Component B. Modernization of observation networks	90.16
Component C. Institutional and regulatory strengthening, improvement of service delivery to clients and better preparedness for emergencies	13.95	Revised	Component C. Institutional and regulatory strengthening, improvement of service delivery to clients and better preparedness for emergencies	17.28
Component D: Project Management	6.55	Revised	Component D: Project Management	7.78
TOTAL	139.50			179.36

LOAN CLOSING DATE(S)

Ln/Cr/Tf	Status	Original Closing	Revised Closing(s)	Proposed Closing	Proposed Deadline for Withdrawal Applications
IBRD-82910	Effective	31-Dec-2018		31-Dec-2021	30-Apr-2022

DISBURSEMENT ESTIMATES

Change in Disbursement Estimates

Yes

Year	Current	Proposed
2014	0.00	0.00



The World Bank

RUSSIA HYDROMETEOROLOGICAL SERVICES MODERNIZATION (P127676)

2015	350,000.00	0.00
2016	17,500,000.00	8,895,971.00
2017	35,500,000.00	18,913,916.00
2018	6,650,000.00	10,746,797.00
2019	0.00	9,383,040.00
2020	0.00	8,758,865.00
2021	0.00	3,301,411.00

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