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PROJECT INFORMATION DOCUMENT (PID)
APPRAISAL STAGE

Report No.: PIDA20904

Project Name	ODRA-VISTULA FLOOD MANAGEMENT PROJECT (P147460)
Region	EUROPE AND CENTRAL ASIA
Country	Poland
Sector(s)	General water, sanitation and flood protection sector (100%)
Theme(s)	Water resource management (100%)
Lending Instrument	Investment Project Financing
Project ID	P147460
Borrower(s)	Republic of Poland
Implementing Agency	Ministry of Environment
Environmental Category	B-Partial Assessment
Date PID Prepared/Updated	16-Feb-2015
Date PID Approved/Disclosed	17-Feb-2015
Estimated Date of Appraisal Completion	20-Feb-2015
Estimated Date of Board Approval	02-Jul-2015
Decision	

I. Project Context

Country Context

Since the early nineties, Poland has consistently applied market-oriented reforms which have allowed the economy to experience sustained growth. Poland has weathered the financial crisis of 2008–2010 relatively well. In 2004, it acceded to the European Union (EU) and has been one of the best performing economies, not only among the new EU members but even across the whole Union. Its GDP has grown annually at about 3.6% (in the last 15 years), and Poland takes pride in its per capita GDP of US$12,970 (2013, Atlas method) and moderate unemployment (10.3%, 2013). The EU membership has been instrumental in modernizing many of the country's policies and administrative structures. Poland also has been one of the largest recipients of the EU's structural funds for roads and highways, urban development, environment, and, to a much lesser extent, water resources management.

The rapid economic growth has been constrained by a number of factors, notably the legacies of a command-and-control public administration system, weak entrepreneurial environment, and poor infrastructure, and its sustainability is tainted by lingering problems with environmental management and issues of government credibility. Where it concerns public infrastructure, the country has prioritized in the recent past the construction of transportation corridors and urban

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facilities. However, devastating flood episodes have reminded the country of its intrinsic vulnerability to water flooding caused by the mountainous and hilly landscape and by decades of neglect. The pace of urbanization and industrialization over the past half century—and especially since 1995—has far exceeded investment in water resources and flood management. Most dikes systems and much of the river infrastructure date back to the beginning of the 20th century. In the meantime, land uses have been altered, exacerbating the generation of flood waves, and damage from floods has become more costly. This vulnerability is forecasted to further increase as climate change projections indicate that, if not at a regional level then at the local level, the country will become subject to gradually increasing temperatures, and likely drier summers and more concentrated and more intensive precipitation.

Although these changes will evolve only slowly, the preparation of studies at the basin scale, the mobilization of the funds, the strengthening of the sectoral governance capabilities, and the implementation of the actual flood management measures, will require time horizons stretching over several decades. Therefore, these analyses should prioritize the immediate priority needs and at the same time be able to plan for the long-term land use and climate changes. The flood damages in terms of recovery costs and the economic losses from income foregone are significant and recurring; the recent floods have also claimed scores of casualties. The flood episode of 1997 affected primarily the Upper Odra river basin, especially the city of Wrocław, which is one of the country's growth poles. In both 1997 and 1998, the Nysa, a main tributary of the Upper Odra, was severely affected, with widespread devastation in the Nysa-Kłodzko Valley. In 2006 and again in 2010, the western and southern parts of Poland—which comprise 60 percent of the population and 80 percent of the economic productivity—were subjected to severe and prolonged inundations. In those years it was especially the Upper Vistula and the Lower Odra basins that were hit, as well as again the Nysa-Kłodzko Valley. In the Upper Vistula, in 2010, Cracow, Poland's second most important city, was partly inundated for two weeks and wide swathes of southern Poland came to a standstill for months, including the Sandomierz-Tarnobrzeg industrial center in the heartland of the country, at the more downstream end of the Upper Vistula. Successive governments have responded to these threats by launching dedicated investment programs to support recovery, improve the preparedness, and generally invest in more effective river and flood protection management. In 1997, the Odra 2006 Program and Law were developed to ensure the protection of the Upper and Lower Odra against 1-in-100-year floods, or better. To date, this program has helped restructure the administrative tools for flood protection and it has funded major investments in a variety of measures and infrastructure to achieve the specified protection levels. In 2011, a similar Vistula Flood Protection Program and Law were set up and the Voievod of Małopolskie appointed as plenipotentiary.

The World Bank, the Council of Europe Development Bank (CEB) and the European Commission (EC) have (co-)financed several of these initiatives. The most significant and ambitious of these is the Odra River Flood Protection Project (P086768)(2007–2017), that aims to increase flood protection levels along the Upper Odra and notably for the city of Wrocław, and that is under implementation. This project experienced a slow start in 2007 for a number of external reasons, notably the need to restructure the project documentation and institutions to align them with the new Polish policies and administrative structures after EU accession and adjust all documents under the project such as permits, designs, and tender documents to the newly imposed regulations. The project is currently performing satisfactorily with to date nearly full commitment of funds for the total cost of about US$1 billion. The project is also credited with having developed the institutional administrative structure and capacity in south-west Poland to implement very complex hydraulic

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works for which the cooperation of four ministries (Namely, the Ministry of Environment [MoE] for implementation, the Ministry of Administration and Digitization [formerly Home Affairs] for the flood protection budget, the Ministry of Finance [MoF], and the Ministry of Infrastructure and Regional Development for coordination of EC funds. Other key national-level agencies are the National Water Management Agency [KZGW], the Institute of Meteorology and Water Management [IMGW], the National Fund for Environmental Protection and Water Management and the State Rural Property Agency.) and about 24 local governments and agencies (Namely, the Voievods and Marshals of the involved Voievodeships, the District and Municipality Heads, and the Regional Environment Inspectorates. These government officers and agencies decide on environmental, water use, and construction permits, manage the land acquisition processes, and issue important permits for, for example, the use of roads for truck transports. They also are crucial in facilitation of relations with local communities.), and four financiers is required. In March 2014, the government requested the Bank to provide support for the preparation of a second initiative of national importance with the strategic aim to further complete the protection of all the most vulnerable areas in the Odra basin, and implement a first set of measures to start providing the same level of protection for the Upper Vistula basin. This new project would also create the platform to start mainstreaming, at national scale, the lessons learnt in policy and institutional development during the Odra project. Where the Odra region has been benefiting from numerous studies on the river basin system that took place over more than a century, the Vistula region, which features a larger and more complex hydraulic system, has not been studied equally thoroughly. Thus, the flood strategies for the Odra river basin exhibit a higher degree of readiness than those for the Vistula river basin. The EIB offered a financial contribution as well, as it has been a long-term partner of the government in its infrastructure and environment programs.

Sectoral and institutional Context

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With its accession to the EU, Poland has had to reform the policies and institutions in its water resources sector to comply with the EU acquis, in particular the Water Framework Directive (WFD) and the Flood Directive (FD). This has led to significant reorganizations since 2004 that have enhanced the sector's performance. Tasks on water and flood management are assigned by territory and divided between the Regional Water Management Agencies (RZGWs) and the Voievodship Boards of Land Reclamation and Waters (ZMiUWs). The RZGWs typically are responsible for the main water bodies and rivers within a hydraulically coherent region, such as a large part of a river basin; they operate under the KZGW, which is a semi-independent body under the MoE, and funded from the national budget. The ZMiUWs, on the other hand, are responsible for rural infrastructure and small water courses, and thus, for many of the dike systems. They are administrations of the Voievodeships (comparable to provinces) under the authority of the Marshal of the Voievodeship, and, therefore, funded largely from the regional government budget. The IMGW is responsible for meteorological forecasting and generic modeling of precipitation and run-off. It has four regional offices, often with specialized functions, among other cities, in Wrocław and Cracow.

The new Polish legislation requires the development of integrated river basin management plans (RBMPs) for each river basin; these plans are still under development and have taken the form, as the first approximation to be in compliance with WFD requirements, of the Updated Master Plans, complemented with Flood Hazard Maps and Flood Risk Maps. Although the first-generation RBMPs, prepared in 2012–2013 were considered incomplete, they laid the foundation for enhanced planning. Like the other EU member states, Poland will prepare the next set of RBMPs in 2015–

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2016, to be repeated every six years. The master plans were endorsed by the EC as intermediate plans in October 2014 to provide the prioritization of all measures—as infrastructure or other management measures—based on a broad feasibility analysis. While the RBMPs and maps are in their last stages of preparation, many measures have been identified and confirmed as 'no regret' measures for the areas that are most vulnerable to floods. The EC has specified an Annex 1 list of 2,100 measures that it considers as potentially eligible for EU Structural Funds in the Perspective 2014–2020, provided that the investments are further prepared taking into account all safeguards and based on sound economic analysis. An Annex 2 list identifies 240 proposed measures that are expected to have longer-range or more complex impacts and will require proper embedding in an RBMP before they are eligible. The implementation of the complete Vistula flood protection program may well take two to three decades, and will require numerous planning and consultation rounds to select and design the investments and measures. Many of those are confirmed already as high priority and feasible but others will require more in-depth analysis to allow a decision on the most cost-effective solution at (sub-)basin scale. The proposed project targets investments and measures that combine a high cost-effectiveness and a small, or at least, manageable ecological and hydraulic footprint. The project prioritizes areas, cities, and sub-basins that have a documented long history of substantial flood damage.

The main Polish rivers, the Odra and the Vistula, rise in the southern Carpathian mountains and flow to the north across, first, hilly areas and, thereafter, flat lowlands before discharging into the Baltic Sea. They count among Europe's longest rivers with the length of their main stems of 854 and 1,047 km, respectively. The catchment areas of the Odra and the Upper Vistula (comprising about one-third of the total Vistula basin) together cover 168,580 km2 or 54 percent of the Polish territory, underscoring the strategic significance of the proposed project. Institutionally, 3 RZGWs (of 6 nation-wide) and 6 Voievodeships and ZMiUWs (out of 17) will be directly involved and cooperate. Despite various investments in the 20th century, flood events have remained a constant and even worsening feature in the basins. However, as the basins have evolved into economic growth poles and asset values have increased dramatically, the economic damages warrant the costs of increased protection levels.

Floods in Poland can be classified as three types. First, most floods in the Upper Odra and Upper Vistula are typical high-water floods commonly occurring in spring and early summer. These summer floods are driven by stochastic precipitation events. The main f lood protection measure consists of passive dike systems for which the crest height can be calculated so that it can withstand all high-water waves smaller than the one that is calculated to recur once in, for example, 100 years (1 percent chance of occurrence per year), which is a common minimally desired protection level for most urbanized areas and compliant with EU directives. Protection levels in metropolises are typically against 1-in-500 or 1-in-1000 year floods, and it is the declared aim to achieve such level in the longer run for main cities such as Cracow, Wrocław, and Szczecin. While overtopping is a cause of much flooding, dike bodies are found to be breached even more often by lower flood waves if they are poorly designed, built, or maintained. Dikes need regular rehabilitation and upgrading to preserve their functionality. Most dikes along the Lower Odra and many along the Upper Vistula are more than half a century old, were designed and constructed applying lower technical standards, and are now in poor to modest shape.

Second, the Lower Odra is threatened by annual winter floods caused by ice floes that jam the waterway. On the Lower Odra, 8 to 9 percent of all days the river surface is freezing over; in about one-fifth of the years there is no ice formation but in other years there is up to 100 days of deep

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frost (for example, in 1996). On average, a serious winter flood condition occurs every six years. Nonetheless, ice-breaking needs to be carried out in almost every winter as it is a precautionary necessity. Ice floes damage and weaken the dike bodies and other structures in and alongside the river but, importantly, where the river banks provide protrusions or obstacles they can build up easily into large ice dams that hinder the flow of water and jam the river. Such ice jams create a triple hazard: (i) They cause the water to back up behind them, thus flooding areas as far as 30 km upstream from the jam; (ii) they create large water pools that, when the ice jam breaks, are released suddenly and create catastrophic waves rushing downstream; and (iii) they damage river infrastructure and dikes. The most cost-effective technology to demolish ice dams in a controlled way is by icebreaking ships that cut the ice preventively before it forms thick aggregates.

Third, many tributaries (torrents) of the main rivers, such as the rivers in the Nysa-Kłodzko Valley that are tributaries of the Upper Odra, originate in hilly or mountainous areas, and can create flash floods. These tributaries are very quick-moving and create short flood waves that require different technologies and management approaches. The response to flash floods remains poorly understood and is hard to address because of the very local nature of the flood.

A recent forensic analysis of about 600 flood events in Poland in the past 27 years showed, among other things, that the frequency and severity of flood events are increasing since the 1980s, caused by a combination of land use change and climate change at a very local level; and that about 10 percent of the events is caused by ice jams. The Polish government has the objective to develop its national expertise and institutions to better cope with the three flood types.

The Bank's Water Resources Policy (1993) and Strategy (2004) emphasize the comparative advantage of the Bank in integrated water resources management (IWRM) which includes flood protection and management. IWRM adopts the concept that, under conditions of growing scarcity of water and land resources (and increased likelihood of intensive rains), sustainable and cost-effective solutions must be designed in a cross-sectoral way, and where possible, must build with nature. Such operations are knowledge and dialogue intensive and require long time horizons to identify meritorious investments that are broadly supported and have clear economic significance. The Bank has a track record of promoting IWRM initiatives globally (Indonesia, China, Chile, Mexico, Morocco, and so on, Europe, and Central Asia), with several river basin management and resource management projects ongoing. In Europe and Central Asia, the Bank has supported several flood management operations and it has accumulated knowledge on the policy, strategy, capacity development, and investments for complex operations such as flood management. In Croatia, Serbia, Bulgaria, Bosnia and Herzegovina, and Albania, flood management is at the core of several operations. In Poland, the Bank is currently supporting the Odra River Flood Protection Project which is being implemented within the overall regulatory guidance of the EU WFD and FD.

The Bank has maintained a dialogue with the government and the EC on the institutional reforms and the next steps on the road toward IWRM in Poland. A consensus has emerged that the EC is better placed to influence the institutional and regulatory aspects of flood management, because of its acquis and the requirement that member states transpose the WFD. These arrangements are based on the following principles: (i) identification of investments and measures based on a prioritization within the context of a river basin-wide management plan; (ii) economic analyses to select cost-effective options including a risk-based approach to investments; (iii) creating ‘room for the river’ and flood wave retention capacity upstream, rather than constraining river flow by dikes; (iv) integration with environmental values; (v) management plans based on broad consultation with

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stakeholders; and (vi) sustained financing through fee collection and/or transfers from the national or regional budgets. The acquis is considered best-practice and compatible with the Bank's policies.

While Poland is not yet applying all principles to satisfaction, it is on the road to incorporate these principles in its legal and regulatory frameworks. The EC intensively monitors and assesses this development, is able to fund capacity building, and disposes of financial incentives to the reform. For example, the EC is the main financier of the national Flood Hazard and Flood Risk Maps, and of numerous studies and technical assistance (TA) relating to the legal drafting and RBMP preparation. The project will incrementally support these ongoing institutional strengthening activities. The EC and the prospective project co-financiers have confirmed their preference for technical and operational leadership by the Bank for new large investment programs with the partial aim to use the programs to bring the institutional innovations into practice and pilot initiatives that are less well-covered under EC support, such as the conversion of RBMPs into realistic investment programs. The project will therefore focus on (i) the support for the preparation of the RBMP and investment prioritization plans for key sub-basins of the Upper Vistula basin which has a complex hydrology; (ii) enhanced capacity for forecasting and early warning, and for real-time operational management; (iii) improved monitoring of impacts and citizen engagement; and (iv) improved national communication on flood risks and their mitigation.

II. Proposed Development Objectives

The project development objectives are to increase access to flood protection for people living in selected areas of the Odra and the Upper Vistula river basins and to strengthen the institutional capacity of the government to mitigate floods more effectively.

III. Project Description

Component Name

Component 1: Flood Protection of the Middle and Lower Odra

Comments (optional)

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Component Name

Component 2: Flood Protection of the Nysa-Kłodzko Valley

Comments (optional)

Component Name

Component 3: Flood Protection of the Upper Vistula

Comments (optional)

Component Name

Component 4: Institutional Strengthening and Enhanced Forecasting

Comments (optional)

Component Name

Component 5: Project Management and Studies

Comments (optional)

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IV. Financing *(in USD Million)*

Total Project Cost:	1641.00	Total Bank Financing:	468.00
Financing Gap:	81.00		

For Loans/Credits/Others	**Amount**
Borrower	182.00
International Bank for Reconstruction and Development	468.00
Council of Europe Development Bank	390.00
EC European Commission	260.00
EC European Investment Bank	195.00
POLAND Polish ECOFUND	65.00
Total	1560.00

V. Implementation

The PCU of the ongoing Odra Flood Project will initiate and coordinate the preparation activities. It will work with the prospective implementing agencies that will need to appoint their PIUs. For all the activities in Components 2 and 4, and for some of those in Component 1, the PIUs will be the same as under the ongoing Odra project, providing continuity, and ensuring that lessons from the current project will be used in the new project. During preparation, the Bank team worked with the experienced PIU staff and their TA teams, who are on the ground, to share the operational experience with the prospective, new PIUs. This arrangement will ensure effective sharing of implementation guidelines, training of staff, and optimizing the coordination and the coherence of actions.

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The project components are to be prepared and implemented by, depending on location and nature, the RZGWs and the ZMiUWs, and equivalent organizations. The RZGW of Wrocław and the Lower-Silesia ZMiUW have evolved over the Odra River Flood Project period as competent and reliable institutions with demonstrated capability to carry out the investment analysis and works preparation that define flood projects, including procurement, and works and safeguards supervision. These two institutions have successfully prepared works and have procured international-bidding contracts of high technical sophistication and size (several of €100 to 250 million). In addition, the IMGW has implemented a large component aimed at strengthening the national early-warning and data management systems, to satisfaction. The new project will build on the experiences and staff of these two institutions. Seven new prospective implementing agencies would be new to Bank-financed operations and their capacities will need to be strengthened; this is planned to be done through the existing national systems of coordination and supervision. The new agencies are the RZGWs in Szczecin and Cracow, and the ZMiUWs of the Voievods of Zachodniopomerskie (West Pomerania), Lubuskie, Małopolskie, Podkarpackie, and Swiętokrzyskie. Each PIU will be responsible for the implementation of the assigned project subcomponents/ activities. All PIUs will carry out procurement and supervision/monitoring of contracts, maintain effective internal control procedures, account for expenditures in their existing budgetary accounting systems, receive funds, make payments, and provide the PCU with documentations and information related to use of the loan proceeds, statement of expenditures (SOE) documentation of the eligible

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expenditures, project reporting, and monitoring. The PCU (with support from the regional PCU office in Cracow) will be responsible for gathering and consolidation of entire project financial information through an online reporting system, preparation of disbursement documentation (withdrawal application and SOE documentation), reporting (periodical and annual), financial planning and monitoring, and monitoring of flow of funds.

The preliminary assessment suggests that these agencies are technically and managerially capable; they have a tradition in managing medium to large investments; and they have expressed readiness to participate in the project. They have provided a series of preliminary conceptual designs for short listed works that seem adequate and are based on extensive analysis and review and rejection of alternative options. Still, the technical capacities, as well as their capacities with respect to procurement, FM, and environmental and social safeguards will be assessed and strengthened during preparation; this will be monitored closely in the first years of project implementation and additional training and supervision extended, if necessary.

The overall coordination, guidance, and quality control will continue to be delivered by the Inter-Ministerial Steering Committee, chaired by the Ministry of Administration and Digitization (formerly, Home A ffairs) and the MoE, and in which also the MoF and the Ministry of Infrastructure and Regional Development participate. At the operational level, the coordination and quality control will remain the responsibility of the PCU that is currently carrying out the same task for the Odra Flood Project. The PCU will be expanded for this purpose. The PCU will continue to report directly to the Minister of Environment, while administratively a part of the KZGW, an implementing unit of the MoE. This arrangement has proved effective in the ongoing Odra Flood Project.

VI. Safeguard Policies (including public consultation)

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Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	×	
Natural Habitats OP/BP 4.04	×	
Forests OP/BP 4.36		×
Pest Management OP 4.09		×
Physical Cultural Resources OP/BP 4.11	×	
Indigenous Peoples OP/BP 4.10		×
Involuntary Resettlement OP/BP 4.12	×	
Safety of Dams OP/BP 4.37	×	
Projects on International Waterways OP/BP 7.50	×	
Projects in Disputed Areas OP/BP 7.60		×

Comments (optional)

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