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INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF US\$250.00 MILLION
(SDR177.8 MILLION, ESTIMATE)

TO

INDIA

FOR A

BIHAR KOSI BASIN DEVELOPMENT PROJECT

May 27, 2015

Social, Urban, Rural and Resilience (SURR) Global Practice
India Country Management Unit
South Asia Region

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CURRENCY EQUIVALENTS
(Exchange Rate Effective May 20, 2015)

Currency Unit = Indian Rupees (INR)
INR 62.89 = US\$1

FISCAL YEAR
April 1 – March 31

ABBREVIATIONS AND ACRONYMS

ABC	Agri Business Center	DEA	Department of Economic Affairs
AFRD	Animal and Fisheries Resources Department	DfID	Department for International Development it
ARCS	Audit Reports Compliance System	DGS&D	Directorate General of Supplies and Disposals
ASCI	Administrative Staff College of India	DoA	Department of Agriculture
ATMA	Agriculture Technology Management Agency	DPMU	District Project Management Unit
AWP	Annual Work Plans	EA	Environmental Assessment
BAPEPS	Bihar Aapada Punarwas Evam Punarnirman Society	EMP	Environment Management Plan
BKBDP	Bihar Kosi Basin Development Project	ERR	Economic Rate of Return
BKFRP	Bihar Kosi Flor Recovery Project	ESMF	Environment and Social Management Framework
BME	Benefit Monitoring and Evaluation	FIAC	Farmer Information Advisory Committee
BPL	Below Poverty Line	FM	Financial Management
BRPNL	Bihar Rajya Pul Nirman Nigam Limited	FMISC	Flood Management Improvement Support Centre
CAA&A	Controller of Aid, Accounts and Audit	FMM	Financial Management Manual
CAS	Country Assistance Strategy	FMSC	Financial Management Support Consultant
CBO	Community Based Organization	FMTSC	Financial Management and Technical Support Consultants
CCA	Cultivable Command Area	FIG	Farmer Interest Group
CID	Community Institution Development	FRBM	Fiscal Responsibility and Budget Management
CIF	Community Institution Fund	GIS	Geographic Information System
COM	Community Operations Manual	GoB	Government of Bihar
CPRs	Common Property Resources	GoI	Government of India
CTMIS	Computerized Treasury Management and Information Systems	GRS	Grievance Redress Service

IAS	Implementing Agencies	PFS	Project Financial Statements
IBRD	Internal Bank for Reconstruction and Development	PIU	Project Implementation Unit
ICB	International Competitive Bidding	PM	Project Management
IDA	International Development Association	PMGSY	Pradhan Mantri Gram Sadak Yojana
IEG	Independent Evaluation	PMU	Project Management Unit
IRC	Indian Roads Congress	RAP	Resettlement Action Plans
IUFRs	Interim Unaudited Financial Reports	RFP	Request for Proposal
M&E	Monitoring and Evaluation	RTDAS	Real Time Data Acquisition System
MIS	Management Information System	RWD	Rural Works Department
MoEF	Ministry of Environment and Forest	SBDs	Standard Bidding Documents
MOU	Memorandum of Understanding	SC/ST	Schedule Caste/Schedule Tribe
MWRD	Minor Water Resources Department	SNAGDP	State Net Agricultural Domestic Product
NAIP	National Agricultural Innovation Project	SRM	Supervision Reporting and Monitoring
NATP	National Agricultural Technology Project	STWs	Shallow Tubewells
NCB	National Competitive Bidding	TA	Technical Assistance
NDDB	National Dairy Development Board	TOR	Terms of Reference
NDP	National Dairy Plan	TPQA	Third Party Quality Audit
NGO	Non-Governmental Organization	UT	Union Territory
NRSC	National Remote Sensing Centre	VO	Village Organization
PA	Producers Association	VOC	Vehicle Operating Cost
PALS	Participatory Action Learning Systems	WFPC	Women Farmer Producer
PD	Project Director	WSG	Water Sharing Group
PDO	Project Development Objective	WUG	Water Users Group
PIP	Project Implementation Plan	WRD	Water Resources Department
PO	Producers Organization		

Regional Vice President:	Annette Dixon
Country Director:	Onno Ruhl
Senior Global Practice Director:	Ede Jorge Ijjaz-Vasquez
Practice Manager:	Bernice K Van Bronkhorst
Task Team Leader:	Deepak Singh
Co-Task Team Leader:	Edward W. Bresnyan/Saurabh Dani

INDIA
Bihar Kosi Basin Development Project
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PAD DATA SHEET*India**BIHAR KOSI BASIN DEVELOPMENT PROJECT (P127725)***PROJECT APPRAISAL DOCUMENT***SOUTH ASIA**0000009081*

Report No.: PAD289

Basic Information			
Project ID P127725	EA Category A - Full Assessment	Team Leader/co-TTL Deepak Singh/ Edward W. Bresnyan/Saurabh Dani	
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints []		
	Financial Intermediaries []		
	Series of Projects []		
Project Implementation Start Date 30-Jun-2015	Project Implementation End Date 30-Sep-2022		
Expected Effectiveness Date 31-Jul-2015	Expected Closing Date 30-Sep-2022		
Joint IFC No			
Practice Manager/Manager Bernice K. Van Bronkhorst	Senior Global Practice Director Ede Jorge Ijjasz-Vasquez	Country Director Onno Ruhl	Regional Vice President Annette Dixon
Borrower: Republic of India			
Responsible Agency: Bihar Aapada Punarwas Evam Punarnirman Society (BAPEPS)			
Contact: Dr. Deepak Prasad Telephone No.: +91-612-2545228	Title: Email:	Project Director bapepspd@gmail.com	
Project Financing Data(in USD Million)			
<input type="checkbox"/> Loan	<input type="checkbox"/> IDA Grant	<input type="checkbox"/> Guarantee	
<input checked="" type="checkbox"/> Credit	<input type="checkbox"/> Grant	<input type="checkbox"/> Other	
Total Project Cost:	376.50	Total Bank Financing:	250.00
Financing Gap:	0.00		

Financing Source		Amount							
RECIPIENT		125.00							
International Development Association (IDA)		250.00							
Community contribution		1.50							
Total		376.50							
Expected Disbursements (in USD Million)									
Fiscal Year	2015	2016	2017	2018	2019	2020	2021	2022	2023
Annual	00	20.00	30.00	40.00	50.00	40.00	40.00	25.00	5.0
Cumulative	00	20.00	50.00	90.00	140.00	180.00	220.00	245.00	250
Institutional Data									
Practice Area (Lead)									
Social, Urban, Rural and Resilience Global Practice									
Contributing Practice Areas									
Agriculture Global Practice (GFADR)									
Cross Cutting Areas									
[X] Climate Change									
[] Fragile, Conflict & Violence									
[X] Gender									
[] Jobs									
[X] Public Private Partnership									
Sectors / Climate Change									
Sector (Maximum 5 and total % must equal 100)									
Major Sector	Sector					%	Adaptation Co-benefits %	Mitigation Co-benefits %	
Water, sanitation and flood protection	General water, sanitation and flood protection sector					70	20		
Agriculture, fishing, and forestry	General agriculture, fishing and forestry sector					30	20		
Total						100			
<input type="checkbox"/> I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.									
Themes									
Theme (Maximum 5 and total % must equal 100)									
Major theme	Theme						%		

Social protection and risk management	Natural disaster management	70
Rural development	Other rural development	30
Total		100

Proposed Development Objective(s)

The project development objective is to enhance resilience to floods and increase agricultural production and productivity in the targeted districts in the Kosi River Basin, and to enhance Bihar's capacity to respond promptly and effectively to an eligible crisis or emergency.

Components

Component Name	Cost (USD Millions)
Improving Flood Risk Management	100.00
Enhancing Agricultural Productivity and Competitiveness	76.50
Augmenting Connectivity	173.00
Contingent Emergency Response	0.00
Implementation Support	27.00

Systematic Operations Risk- Rating Tool (SORT)

Risk Category	Rating
1. Political and Governance	Moderate
2. Macroeconomic	Low
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	Substantial
5. Institutional Capacity for Implementation and Sustainability	Moderate
6. Fiduciary	Substantial
7. Environment and Social	Substantial
8. Stakeholders	Moderate
9. Other	
OVERALL	Substantial

Compliance

Policy

Does the project depart from the CAS in content or in other significant respects?	Yes []	No [X]
Does the project require any waivers of Bank policies?	Yes []	No [X]
Have these been approved by Bank management?	Yes []	No []
Is approval for any policy waiver sought from the Board?	Yes []	No [X]
Does the project meet the Regional criteria for readiness for implementation?	Yes [X]	No []

Safeguard Policies Triggered by the Project	Yes	No	
Environmental Assessment OP/BP 4.01	X		
Natural Habitats OP/BP 4.04	X		
Forests OP/BP 4.36		X	
Pest Management OP 4.09	X		
Physical Cultural Resources OP/BP 4.11	X		
Indigenous Peoples OP/BP 4.10		X	
Involuntary Resettlement OP/BP 4.12	X		
Safety of Dams OP/BP 4.37		X	
Projects on International Waterways OP/BP 7.50	X		
Projects in Disputed Areas OP/BP 7.60		X	
Legal Covenants			
Name:	Recurrent	Due Date	Frequency
Implementation Units - I	Yes	N/A	Project duration
Description of Covenant			
BAPEPS shall be vested with the overall responsibility for project implementation, monitoring and evaluation, to this end, BAPEPS shall be granted the powers functions, competencies, staff and resources required for guaranteeing inter-departmental coordination, monitoring, supervision and implementation of project activities.			
Name:	Recurrent	Due Date	Frequency
District Project Management Units (DPMUs)	Yes	4 months as of effectiveness	Project duration
Description of Covenant			
BAPEPS to establish and maintain in each targeted district DPMUs adequately staffed with qualified personnel in order to coordinate the day to day implementation of project activities.			
Name:	Recurrent	Due Date	Frequency
Project Implementation Unit (PIUs) and District Project Implementation Units (DPIUs)	Yes	4 months as of effectiveness	Project duration
Description of Covenant			
Implementing Agencies (other than BAPEPS) to establish and maintain: (i) a project implementation unit to carry out daily planning and implementation activities, including liaising and coordinating the implementation of project activities with the DPMUs; and (ii) district project implementation units (in each targeted district), to carry out field-level day-to-day planning and implementation of Project activities, including liaising with DPMUs.			
Name:	Recurrent	Due Date	Frequency
Financial Management Consulting Firm	Yes	6 months as of effectiveness	Project duration

Description of Covenant			
BAPEPS to select, hire and retain a financial management consulting firm to assist BAPEPS and the implementing agencies with the carrying out of its fiduciary responsibilities.			
Name:	Recurrent	Due Date	Frequency
Third Party Quality Consulting Firm	Yes	N/A	Project duration
Description of Covenant			
BAPEPS to select, hire and retain a third party quality consulting firm to assist BAPEPS with the carrying out of quality monitoring of project related activities, including compliance with Safeguards Documents.			
Name:	Recurrent	Due Date	Frequency
Project Documents	Yes	N/A	Project duration
Description of Covenant			
BAPEPS and the Implementing Agencies to implement their respective parts of the Project in accordance with the Operations Manual.			
Name:	Recurrent	Due Date	Frequency
Matching Grants/Matching Grant Agreement	Yes	N/A	Project duration
Description of Covenant			
For the purpose of carrying out activities under components 2.1 and 2.2 of the Project, the ATMAs shall: (i) screen and subsequently select the proposals for Business Plans and/or ABC Business Plans submitted by FIGs and POs respectively for financing through Matching Grants; and (ii) enter into Matching Grants Agreements with the selected FIGs and POs for the financing of their respective proposals, in accordance with the terms agreed with the Association and detailed in the Operations Manual.			
Name:	Recurrent	Due Date	Frequency
Safeguard Documents	Yes	N/A	Project duration
Description of Covenant			
BAPEPS, the implementing agencies, the FIGs and POs to implement the Project in accordance with the ESMF, EMPs, RAPs (the "Safeguard Documents").			
Name:	Recurrent	Due Date	Frequency
Environment and Social Specialists	Yes	N/A	Project duration
Description of Covenant			
BAPEPS to maintain a qualified and experienced environment and social specialist to be responsible for (a) regularly updating the ESMF; (b) providing training and orientation to BAPEPS' and the Implementing Agencies' staff; (c) reviewing and/or clearing the environmental screenings/assessments of project activities, the EMPs and RAPs, and the monitoring reports submitted; and (d) carrying out regular field visits to review compliance with safeguard documents.			

Name:	Recurrent	Due Date	Frequency
Consulting Firm	Yes	Within 9 months of effectiveness	Project duration
Description of Covenant			
BAPEPs to select and hire a consulting firm for purposes of carrying out independent annual environmental and social audits, monitoring and supervision activities and validate the BAPEP's, the Implementing Agencies', FIGs', POs' and contractors compliance with the safeguard documents.			
Name:	Recurrent	Due Date	Frequency
Nodal Officers	Yes	N/A	Project duration
Description of Covenant			
Implementing agencies to appoint and maintain qualified and experienced social and environmental nodal officers, each responsible for applying the safeguard documents to the project activities, ensuring compliance with their provisions and obtaining the regulatory environmental clearances and permits, and reporting to BAPEPS on social and environmental aspects of the Project.			
Name:	Recurrent	Due Date	Frequency
Screening of Project Activities and Government Permits/Clearances	Yes	Prior to bidding for any civil works/selection of Business Plan or ABC Business Plan	Project duration
Description of Covenant			
BAPEPS, the Implementing Agencies, FIGs or POs to refrain from tendering any bids, selecting any Business Plan or ABC Business Plan for financing through Matching Grants, or requesting expressions of interest for the provision of technical services under the Project, as the case may be, unless: (i) the respective activities, Business Plans, or ABC Business Plans have been screened as per the ESMF and, if required the EMP or RAP have been prepared, cleared with the Association and publicly disclosed for 120 days; and (ii) all relevant government permits/clearances have been obtained, and/or any conditions imposed have been met prior to the commencement of such activities, including completion of all relocation assistance to Displace Persons, and/or full payment of any displacement compensations.			
Name:	Recurrent	Due Date	Frequency
Contractors' Safeguards Obligations	Yes	N/A	Project duration
Description of Covenant			
BAPEPS and the Implementing Agencies to include compliance with the Safeguard Documents as part of the contractors' obligations pursuant to the bidding documents.			

Name:	Recurrent	Due Date	Frequency
Mid-term Impact Evaluation Study	N/A	December 31, 2018	N/A
Description of Covenant			
BAPEPS and Implementing Agencies to carry out a mid-term Project social and environmental impact evaluation study identifying any weaknesses and/or delays, and setting out any necessary remedial measures.			
Name:	Recurrent	Due Date	Frequency
Project-end Social and Environmental Report	N/A	December 31, 2021	N/A
Description of Covenant			
BAPES and the Implementing Agencies to prepare an independent assessment report on BAPEPS and the Implementing Agencies' observance of/compliance with Safeguard Documents and the social and environmental impact of Project activities.			
Name:	Recurrent	Due Date	Frequency
Grievance Redressal/ Complaints Processing	Yes	N/A	Project duration
Description of Covenant			
BAPEPS and/or the implementing agencies shall maintain and operate district level grievance redressal and complaints processing cells for the handling of any stakeholder complaints arising out of the project implementation activities.			
Name:	Recurrent	Due Date	Frequency
Ineligible Expenditures	Yes	N/A	Project duration
Description of Covenant			
BAPEPS and/or the implementing agencies to pay for any land acquisition, and resettlement and rehabilitation cash compensations (payments) exclusively out of its own resources.			
Name:	Recurrent	Due Date	Frequency
Contingency Emergency Response (CER) Operations Manual		N/A	Project duration
Description of Covenant			
In order to trigger the CER component, Bihar shall: (i) prepare and furnish to the Association for approval a CER Operations Manual detailing activities, expenditures and implementation arrangements; (ii) identify and maintain a Coordinating Authority with adequate staff and resources; (iii) declare (jointly with the GoI and the Association) an eligible crisis or emergency; and (iv) prepare and disclose any required safeguard documents.			
Name:	Recurrent	Due Date	Frequency
Procurement Disclosure	Yes	N/A	Project duration

Description of Covenant			
BAPEPS and/or the Implementing Agencies shall disclose in a freely and publicly accessible website the updated procurement information related to the Project (e.g. procurement notices, invitation to bid, bidding documents, and status of bidding processes and any complaints).			
Conditions			
Source Of Fund	Name	Type	
Description of Condition			
Team Composition			
Bank Staff			
Name	Role	Title	Unit
Deepak Singh	Task Team Leader (ADM Responsible)	Senior Disaster Risk Management Specialist	GSURR
Edward William Bresnyan	Co-Task Team Leader	Senior Rural Development Specialist	GFADR
Saurabh Suresh Dani	Co-Task Team Leader	Senior Disaster Risk Management Specialist	GSURR
Heenaben Yatin Doshi	Procurement Specialist	Procurement Specialist	GGODR
Mohan Gopalakrishnan	Financial Management Specialist	Sr Financial Management Specialist	GGODR
Martin M. Serrano	Counsel	Senior Counsel	LEGES
Shankar Narayanan	Safeguards Specialist	Senior Social Development Specialist	GSURR
Alok Narayan Pattanaik	Team Member	Consultant -Disaster Risk Management	GSURR
Animesh Shrivastava	Team Member	Program Leader	SACIN
Harinath Sesha Appalarajugari	Team Member	Senior Environmental Specialist	GENDR
Helen Winifred Leitch	Team Member	Livestock Specialist	GFADR
Joop Stoutjesdijk	Team Member	Lead Irrigation Engineer	GWADR
Marc S. Forni	Team Member	Senior Disaster Risk Management Specialist	GSURR
Puneet Kapoor	Team Member	Consultant	GGODR
Ignacio M. Urrutia Duarte	Team Member	E T Consultant	GSURR
Christoph Pusch	Peer Reviewer	Lead Disaster Risk Management Specialist	GSURR
Manievel Sene	Peer Reviewer	Senior Rural Development Specialist	GFADR

Winston Yu	Peer Reviewer	Senior Water Resources Specialist	GWADR		
Vidya Mahesh	Team Member	Program Assistant	SACIN		
Latha Sridhar	Team Member	Program Assistant	SACIN		
Extended Team					
Name	Title	Office Phone	Location		
Abhijith Jayanthi	Solar Power Specialist		Hyderabad		
Alok Bhowmick	Consultant-Bridge Specialist		New Delhi		
BKD Raja	Consultant, Environmental Management		Hyderabad		
Luciano Andriamaro	Water Resources Specialist		Italy		
Paul Sidhu	Agriculturist		New Delhi		
Prabir Joardar	Embankments Specialist		New Delhi		
RK Sikri	Solar Power Specialist		New Delhi		
Sujit Das	Consultant		New Delhi		
V. Murahari Reddy	Consultant - Roads and Institutional Strengthening		Hyderabad		
Anindya Sarkar	Consultant-Architect		New Delhi		
Malini Nambiar	Consultant-DRM		New Delhi		
Locations					
Country	First Administrative Division	Location	Planned	Actual	Comments
India	Bihar	State of Bihar		X	

I. STRATEGIC CONTEXT

A. Country Context

1. With a per capita income at a quarter of national average (US\$360 in Bihar, compared to US\$1,477 in India) and 103 million inhabitants, Bihar lags behind other Indian states in human and economic development. If Bihar were an independent country, it would have the 12th largest population in the world, but its GDP per capita would be the 9th lowest. The poverty rate is 56 percent among the rural population, one of the highest in the developing world.¹ Literacy rates are at 73 percent among men and 53 percent among women, the lowest in India, compared to a national average of 82 percent and 65 percent, respectively.²

2. The economy of Bihar is largely agrarian, with a significant agricultural base and a limited industrial sector. Agriculture and allied activities employ approximately 80 percent of Bihar's total labor force, but contribute only 20 percent of the State's GDP.³ The proportion of women working in agriculture is roughly 21 percent, one of the lowest rates in the country.⁴ Within India, Bihar is an important agricultural state: it accounts for 8-10 percent of national production, is the second largest producer of vegetables, and is the third largest producer of fruits. However, agricultural productivity, cropping intensity, and access to markets are limited, evidenced by the fact that the average per worker income in Bihar's agriculture sector is one-half of the national average.

3. In Bihar, in recent years, there has been an economic revival in the State due to increased investments. Bihar's growth rate in the 1990s was just over 2.5 percent (compared to 6 percent for India as a whole), growth since 2005 has increased at an estimated 11 percent, making it the fastest growing state in India during that period. The Government of Bihar (GoB) has improved the rule of law, expanded physical infrastructure, enhanced the delivery of essential services, and increased fiscal resources. Progress achieved over the past several years has been significant, but Bihar continues to suffer from a plethora of problems including inadequate infrastructure, weak human capacity, power shortages, repeated flooding, low productivity in agriculture, and deeply entrenched poverty.

B. Sectoral and Institutional Context

4. Bihar's vast stretches of fertile plains in northern India make it one of the country's most agriculturally abundant states. It is drained by the Ganges River, including the northern tributaries of the Gandak and Kosi Rivers that originate in the Nepali Himalayas and the Bagmati River, which originates in the Kathmandu Valley. Abundant water resources imply extremely high agricultural potential; however, output is low due to: (i) low access to and adoption of new farming and post-harvest technologies; (ii) poor seed and other input packages; (iii) antiquated land distribution regulations; (iv) low investment in irrigation; (v) deficient electricity generation and transmission; and (vi) underdeveloped transportation facilities to bring crops to market. As a

¹ Perspectives on Poverty in India: Stylized Facts from Survey Data, World Bank 2010

² 2011 Indian National Census

³ Report of the Steering Group in Vision for Agriculture Development in Bihar 2010, Department of Agriculture

⁴ Employment, Wages, and Productivity in Indian Agriculture, Institute of Economic Growth, University of Delhi

result, Bihar's annual agricultural GDP growth rate of 5.9 percent from 2006 to 2013 lagged the state's overall growth rate of 12 percent. The state ranks sixth in India with respect to per hectare State Net Agricultural Domestic Product (SNAgGDP) and is the lowest with respect to per capita SNAgGDP.

5. Agricultural sector in Bihar has frequently suffered from significant flood events, which have washed away standing crops across hundreds of thousands of hectares of land, destroyed livestock and deposited silt on fertile lands. Given its geography, Bihar is India's most flood-prone state, with 76 percent of the total population living under a recurring threat of floods. High discharge and sediment loads are carried downstream into Bihar along the Gandak and Kosi Rivers, and the area has recorded the highest number of floods in India during the last 30 years.

6. Floods occur across a number of basins, with the Kosi River Basin being one of the most active areas experiencing flooding. Compounding the flood hazard, the State suffers from inadequate institutional capacity and technical expertise to effectively monitor the Kosi River and make investments in appropriate flood protection infrastructure, agricultural development programs, and improved road connectivity. Recurrent flooding and weak management systems have led to an environment in which investment in infrastructure, land, and agricultural productivity measures is limited and hinders the economic growth in the region and the State.

7. A portion of the Kosi embankment system breached on August 18, 2008 flooding large parts of the state. Inadequate maintenance contributed to the failure of the embankment. The 2008 Kosi River Flood was declared a national calamity by the GoI and was then the worst flood disaster in the last 50 years in India. The breach affected over 3.3 million people and caused over US\$1.2 billion in damage. Floodwaters brought huge quantities of silt that settled across the Kosi River Basin⁵, making agricultural recovery particularly challenging. According to the Post Disaster Needs Assessment⁶, more than 330,000 houses, 1,800 km of paved and unpaved roads, and 1,100 bridges and culverts were damaged. Approximately 600,000 acres of crops were ruined, impacting close to 500,000 farmers.

8. Following the 2008 Kosi River Flood, the GoB requested assistance from the Bank: (i) to address the short-term needs of the flood-affected population, and (ii) to tackle the longer-term challenges of enhancing capacity to manage floods and investing in economic development. As a result, the Bihar Kosi Flood Recovery Project (BKFRP, P122096) was approved and became effective in March 2011. The project is reaching 65,000 families through owner driven housing including toilet facilities. To enhance connectivity: 71 bridges and 37 roads are being constructed. Kosi river flood management studies are being undertaken along with restoration of flood channel works and embankment road improvement works by the Implementing Agencies and Bihar Aapada Punarwas Evam Punarnirman Society (BAPEPS).

9. In addition to the BKFRP, some of the other initiatives that aim to improve GoB's technical capacity to manage floods and enhance agricultural output include: Ganges River Basin

⁵ The Districts of Saharsa, Madhepura, and Supaul were most affected; Araria and Purnea were also impacted.

⁶Needs Assessment conducted by the World Bank and GFDRR in close cooperation with GoB in May-June 2010.

Project, Ganges River Basin Study, National Rural Livelihoods Project (Jeevika), and Department for International Development (DfID) funded Bihar Flood Management Information System technical assistance. Accompanying these efforts, the GoB has launched an Agricultural Road Map that outlines strategic investments in the agricultural sector over the next decade.

10. BAPEPS is responsible for implementing the BKFRP, and will also play the same role in the proposed project. During the first two years of BKFRP implementation, BAPEPS suffered from understaffing that slowed execution. However, BKFRP is now showing steady progress and has disbursed 36 percent funds. Due to the complex nature of the project, and the lack of institutional capacity required for systematic planning and integration of activities, the Bank restructured the project on June 2013 and again in January 2014 and placed an increased emphasis on supporting BAPEPS to successfully implement the project. The closing date for the BKFRP has been extended up to June 2016.

C. Higher Level Objectives to which the Project Contributes

11. The proposed project is aligned to the Bank's Country Partnership Strategy (Report #76176-IN, discussed by the Board of Executive Directors on April 11, 2013) to assist Bihar in integrating disaster risk management and enhanced agricultural production into the State's longer-term development process. The project is anchored within Strategic Engagement Area III of the India CPS (2013-17) – Inclusion. The Bank's work in this area will focus on: “(i) helping build institutional capacity to prepare for and manage the impact of natural disasters, and (ii) help people protect themselves from natural disasters and recover quickly from them.” The proposed project also supports the Strategic Engagement Area II - Transformation by facilitating technology transfer and investment in the agricultural sector to boost land, labor and water productivity, along with inclusive market access for rural producers.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

12. The project development objective is to enhance resilience to floods and increase agricultural production and productivity in the targeted districts in the Kosi River Basin, and to enhance Bihar's capacity to respond promptly and effectively to an eligible crisis or emergency.

B. Project Beneficiaries

13. The primary beneficiaries will be rural producers and households in the Kosi River Basin who are regularly exposed to floods.⁷ This includes farmers who lost their agricultural lands due to the silt deposits brought by the 2008 Kosi River Flood as well as farmers in the project area that are currently without access to irrigation and other technologies, improved agricultural practices and an adequate transport network. The project is expected to benefit approximately 10 million rural individuals who are mostly small, marginal and landless farmers. Approximately 48 percent of the beneficiaries will be women.

⁷ This includes the Districts of Araria, Madhepura, Purnea, Saharsa, and Supaul.

C. PDO Level Results Indicators

14. The achievement of the PDO will be monitored by the following indicators:
- Increased protection from floods in the project area of the Kosi River Basin;
 - Increase in average agricultural yields in the project area by 30 percent;
 - Increase in cropping intensity by 40 percent; and
 - Population⁸ with access to markets by roads and bridges in good and fair condition⁹ increased by 20 percent.

III. PROJECT DESCRIPTION

15. The project is developed under a multi-sectoral framework, with investments aimed at reducing the volatility of agricultural outputs and increasing overall economic productivity in the Kosi River Basin. To achieve the State's overall development objectives, the project will enhance the benefits gained from reduced flood risk by financing a series of complementary investments to unlock the agricultural potential of the area. Investments in irrigation will improve farmer's access to water and water efficiency. When coupled with agricultural extension services, training programs and demonstration plots, the provision of high-quality inputs, and the diversification of income sources, these investments will enhance agricultural productivity. Such investments will be inclusionary in design and attempt to reach women farmers, marginalized farmers and farmers with severely affected land quality. Furthermore, an improved road network will afford farmers greater access to market opportunities.

A. Project Components

16. The project will comprise the following five components: (i) Improving Flood Risk Management (US\$100 million); (ii) Enhancing Agricultural Productivity and Competitiveness (US\$76.5million); (iii) Augmenting Connectivity (US\$173 million); (iv) Contingent Emergency Response (US\$0 million); and (v) Implementation Support (US\$27 million).

Component 1 – Improving Flood Risk Management, US\$100 million with US\$ 66.67 million Bank Financing)

17. The objective of this component is to increase the capacity of the Water Resources Department (WRD) to manage flood risk and to decrease vulnerability to floods in the Kosi River Basin. This objective will be achieved by investing in flood management infrastructure to reduce vulnerability and by strengthening institutional capacity to better understand how the Kosi River system functions. The component has two subcomponents.

⁸ including that of women farmers, landless and farmers from socially excluded backgrounds.

⁹ Roads meeting the "Good and fair condition" guidelines of the Indian Roads Congress (<http://irc.org.in/ENU/Pages/IRC.aspx>)

18. *Subcomponent 1.1 – Reinforcement of flood control infrastructure (US\$95million with US\$63.33 million Bank Financing).* The objective of this subcomponent is to strengthen and reinforce the existing weak and vulnerable flood control infrastructure in the Kosi River Basin. Investments will primarily include: (i) restoration/strengthening critical stretches of Eastern and Western Kosi embankments, approximately 45 km; (ii) strengthening existing spurs that are severely damaged and protecting critical erosion-prone river banks; and (iii) procurement of dredgers for management of silt deposits in the river system. Alternative designs and construction materials including stone-filled machine-made gabions, Reno-mattresses, and geo-bags will be used for the infrastructure works to improve performance at competitive costs.

19. *Subcomponent 1.2 – Support to strengthen institutional capacity to manage flood risk (US\$5 million with US\$ 3.33 million Bank Financing).* The objective of this subcomponent is to strengthen and complement state-level capacity to understand, and manage, flood risks. Under this component the project will finance establishment of Center of Excellence, procurement of RTDAS (Real Time Data Acquisition System) and institutional strengthening. The project will ensure that the capacity building and community outreach process is gender-sensitive and gender-informed in its approach.

Component 2 -Enhancing Agricultural Productivity and Competitiveness (US\$76.5million with US\$ 50 million Bank Financing)

20. This component would work with organized farmers to increase agricultural production (which includes crops, horticulture, livestock and fisheries) and productivity by expanding their access to and adoption of innovative and climate-resilient farm technologies and practices (including irrigation) and extending their linkages to market infrastructure. Active farmer participation, including that of women farmers, landless and farmers from socially excluded backgrounds, in planning, implementing, and evaluating project interventions will enhance the relevance of crops/varieties selected for cultivation and marketing, increase technology adoption, and contribute to the sustainability of both technical interventions and the local institutions supporting farmers. The component has three sub-components.

21. *Subcomponent 2.1 – Intensification and Diversification of Agricultural Production Systems (US\$40million, with US\$26 million Bank Financing)*would promote agricultural intensification through: (i) technology demonstration and diffusion; (ii) increased water availability and efficiency via irrigation and other climate-smart approaches; and (iii) improved agricultural inputs and practices packages. Diversification would include market-led crop selection (e.g., horticulture) as well as options for livestock and fisheries, among other verifiable commercial opportunities. Business plans, financed through Matching Grants and prepared by farmer interest groups (FIGs) with support from service providers contracted under the project, would identify market potential and link it to investments needed to increase productivity and competitiveness. Business plans would consist of, *inter alia*: (i) fixed capital (e.g., plant and equipment, irrigation infrastructure); (ii) input and other technology packages; and (iii) capacity-building and technical assistance expenditures. The sub component will specifically target Farmer Interest Groups with substantial representation of women, SC/ST and marginal and landless farmers.

22. *Subcomponent 2.2 – Strengthening of Agricultural Value Chains (US\$24.5million, with US\$16 million Bank Financing)* would facilitate produce aggregation and value-added activity through Agricultural Business Centers (ABCs) which are proposed, owned and operated by Producer Organizations with support from service providers. ABCs would vary in terms of scope and content, based on needs expressed by the proposing Producer Organizations. It is expected that some 200 ABCs will be financed, about one-half of which will promote food grains, oilseeds and pulses, with the remaining one-half facilitating marketing of horticulture crops, livestock, dairy and other verifiable commercial opportunities. Specific to the dairy value chain, the subcomponent would converge with the ongoing activities of the National Dairy Plan (NDP-I), in which Bihar is already a participating state. Business plans would be developed for each ABC by eligible Producer Organizations and evaluated on technical criteria set forth in the Project Implementation Plan. Approved ABC business plans would be financed via Matching Grants, with cost-sharing on the part of Producer Organizations. Adequate representation of Scheduled Castes, Scheduled Tribes and other marginalized sub-groups within the chosen Producer Organizations and some Women Farmer Producer Companies will ensured to set off the disadvantages faced by such groups.

23. *Subcomponent 2.3 – Institutional Development for Market-led Extension (US\$12 million, with US\$8.0 Bank Financing)* would promote and strengthen the Agriculture Technology Management Agency (ATMA) in each of the five targeted districts. The Government of Bihar has already initiated actions to implement the ATMA model of agricultural extension in all the 38 districts of the state. The ATMAs would: (i) promote convergence among state- and centrally-sponsored schemes in the agricultural sector; (ii) facilitate inter-departmental coordination at the district, block and village levels;(iii) transform the production-centered extension system toward market-led agricultural development; (iv) field-test and scale-up climate-resilient good agricultural practices; (v) conduct market and value chain analyses for commercial options available to organized farmers; and (vi) build partnerships with allied services, such as financial institutions and insurance providers. Marketing extension would focus on enabling farmers (including landless, women and socially marginalized farmers) to learn for themselves (i.e., experiential learning) and empowering them to engage directly with the market. The subcomponent would also leverage the experience and lessons learned from the Bank-financed National Agricultural Technology Project (NATP), the National Agricultural Innovation Project (NAIP) and the Bank-supported agriculture competitiveness projects in Assam and Maharashtra.

Component 3 – Augmenting connectivity, US\$173 million (with US\$ 115.33 million Bank Financing)

24. The objective of this component is to improve farmers’ access to markets through the expansion of the local road network that connects rural roads to the main road network that improves connectivity of habitations to the market centers. To achieve this objective, the component will be structured in two subcomponents. These activities will be a continuation of the initiatives started under BKFRP, and will include the same specifications, implementation arrangements, and bidding plans already in place.

25. *Subcomponent 3.1 – Construction of roads (US\$80 million with US\$53.33 million Bank Financing).* This subcomponent will finance the construction of linking roads to major roads and

the upgrading of rural roads to provide small villages (population less than 500) greater access to local markets. The sub-component will be implemented in the targeted districts. An estimated 400 km of rural roads will be constructed as black top roads and will be built to the latest rural road standards followed under the GoI and Bank financed PMGSY Rural Roads Program.

26. *Subcomponent 3.2 -Institutional strengthening activities at Rural Works Department will amount to US\$3.0million (with US\$ 2.0 million Bank Financing)* that will focus on the development of asset management and maintenance system, as well as a road maintenance strategy. Activities will also be financed to support training in technical skills and management information systems for the staff of the Rural Works Department.

27. *Subcomponent 3.3 – Construction of bridges (US\$90.0 million with US\$60.0 million Bank Financing)*. This subcomponent will finance the construction of small and medium bridges to provide greater access to local markets. About 57 bridges will be constructed in the targeted districts. Bridges and culverts will be designed to withstand earthquake forces (per the guidelines of the Bureau of Indian Standards) and with regard to topography and hydrology (per the guidelines of the Indian Roads Congress, the Ministry of Road Transport and Highways, and projected demographic changes).

Component 4 – Contingent Emergency Response, US\$0 million

28. Following an adverse natural event that causes a major natural disaster, the GoB may request the Bank to re-allocate project funds to support response and reconstruction. This component would draw resources from the unallocated expenditure category and/or allow the GoB to request the Bank to re-categorize and reallocate financing from other project components to partially cover emergency response and recovery costs. This component could also be used to channel additional funds should they become available as a result of the emergency.

Component 5 – Implementation Support, US\$27.0 million (with US\$ 18.0 million Bank Financing)

29. This component would finance activities required for project implementation that would include incremental operating costs of BAPEPS and the IAs. These funds are available to BAPEPS and Project Implementations Units of the IAs to employ subject matter experts, consultants, safeguard and gender experts, financial management consultants/firms agents, and support staff to be housed within each IA and assist with the preparation, implementation, and supervision of project activities. In addition, training, exposure visits, documentation, and monitoring and evaluation, equipment like computer, furniture etc. and project offices, Project Management Consultants, MIS and Third Party Quality Audit (TPQA), internal & external audits, etc. will be financed out of this component. BAPEPS, in coordination with the IAs, will derive a detailed plan for each IA and help strengthening the PIUs for project implementation.

B. Project Financing

Lending Instrument

30. The lending instrument will be Investment Project Financing (IPF), and the implementation period for the project is seven years with a US\$250 million IDA credit.

Project Cost and Financing

31. A summary of the financing per component, in addition to counterpart contributions, can be found in the following table.

Table 1: Finances per Project Component

Components (in US\$ million)	Project cost	Bank contribution	GoB Contribution	Community' Contribution
Component 1: Improving Flood Risk Management	100.0	66.67	33.33	0.0
Component 2: Enhancing Agricultural Productivity and Competitiveness	76.5	50.0	25.0	1.5
Component 3: Augmenting Connectivity	173.0	115.33	57.67	0.0
Component 4: Contingent Emergency Response	0.0	0.0	0.0	0.0
Component 5: Implementation Support	27.0	18.0	9.0	0.0
Total	376.5	250.0	125.0	1.5

C. Lessons Learned and Reflected in the Project Design

32. According to a recent IEG Report¹⁰, in most cases, multi-sector lending has proven most effective for targeting state-level objectives. This approach enables the core ministries to assemble together and holistically tackle development priorities. Inter-sectoral synergies are realized during project conception and implementation, and this often leads to better results. Therefore, the project has been prepared as a multi-sector engagement.

33. Despite their potential for success, multi-sector projects do face considerable design risks given the high number of activities and geographic scope. Thus, the proposed project is designed to target all physical investments in a confined geographic area, resulting in more tangible impact. Further, the number of activities is limited to help ensure that institutional and capacity challenges are addressed through initiatives that promote management of complex systems.

34. Close engagement with the other multilateral/bilateral institutions is an important factor for the success of the project. For example, the Asian Development Bank (ADB) and the Bank are coordinating investments in transport and agriculture. The DfID-World Bank Trust Fund is financing the Flood Management Improvement Support Center (FMISC), which aims to utilize modern modeling tools and technologies to support improved hydrologic observations and information flow during the annual flood season. The outputs of FMISC, coupled with the ongoing efforts in inundation forecasts, floodplain mapping, flood management master plan, data acquisition systems, and other studies under BKFRP, will be complemented with the embankment strengthening works, de-siltation works, establishing a Center of Excellence and availing the Real Time data for related basins under the Project.

¹⁰World Bank Engagement at the State Level - The Cases of Brazil, India, Nigeria, and Russia, 2010

35. Lessons learned from both the initial project design and restructuring of BKFRP have been incorporated in the design of BKBDP. In particular, BAPEPS has served as the PMU for BKFRP since inception, but progress was slow during the initial few years due to a shortage of technical, procurement, and fiduciary personnel, capacity and expertise. After the restructuring in January 2014, there is an increased emphasis on supporting BAPEPS to successfully implement both BKFRP and the BKBDP.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

36. Under BKFRP, the GoB constituted BAPEPS to coordinate project implementation. BAPEPS will act as the State Project Management Unit (PMU) and will be supported by District-level set ups as District Project Management Units (DPMU). Three DPMUs are providing implementation support for the ongoing BKFRP project. The BKBDP will benefit from this existing arrangement. The DPMUs needs to be further strengthened with addition of a Regional hub in one of the target districts (Supaul) and to be expanded for the BKBDP for smooth coordination and implementation of BKBDP. BAPEPS will act as the PMU for all the project components and will be primarily responsible for the coordination, safeguard and fiduciary control, implementation monitoring, quality audit and providing technical support for the project.

37. While BAPEPS is responsible for coordinating between the IAs and the Bank, the IAs themselves are responsible for the overall design and implementation of their respective components/activities, both at the State and the field level. IAs will coordinate and carry out their responsibilities by setting up/strengthening their respective State Level Project Implementation Units (PIU) and set up adequate Field level set ups (District / Block / Gram Panchayat level Field Implementation Units such as DPIU/ BPIU etc.) . Each of the IAs, including WRD, BRPNL, RWD and DoA and AFRD will set up dedicated PIUs and DPIUs to implement the project activities and work in coherence with the BAPEPS. In the case of dairy development under Component 2, the program would converge with the ongoing National Dairy Support Project in partnership with the National Dairy Development Board.

B. Results Monitoring and Evaluation

38. The results framework in Annex 1 will be used to monitor and evaluate the achievement of the PDO and the outcome indicators. Project monitoring will occur as a periodic function, and will include process reviews, accounting audits, social audits, reporting of outputs, and maintenance of records. Broad thematic areas that will be supervised and monitored include the following: i) Social and Environmental including results and impacts; ii) Regular Quality Supervision & Independent Quality Control; and iii) Periodic Physical and Financial Progress.

C. Sustainability

39. **Physical Sustainability:** For flood control and transport infrastructure, good quality infrastructure works will be ensured by using international/national best practices for designs, construction supervision, and technical audits. For flood control works, these include the use of alternative materials such as stone-filled gabion mattresses and geo-bags/geo-tubes, which will

improve performance over the long term at competitive costs. All paved and unpaved rural roads and bridges will be constructed with environmentally friendly materials, and designed by meeting to the latest codes and standards prescribed by national institutions.

40. **Financial Sustainability:** The project will support the development of a long-term financing strategy for multi-sector economic development in the Kosi River Basin. The Flood Management investments financed under Component1 will enable WRD and the GoB to strategically budget and invest in flood control infrastructure on a more holistic basis. Similarly, a Road Maintenance Strategy will be created under Subcomponent 3.2, and it will focus on the development of an asset management and maintenance fund for the roads sector. The agricultural productivity and competitiveness investments under Component 2 are in the context of the GoB Agricultural Road Map, which aims to invest over US\$30 billion over the next five years and increase agricultural growth rate to a minimum of 7 percent annually.

41. **Institutional Sustainability:** A key outcome of the project will be improved capacity of the line departments to engage in long term planning to build and maintain infrastructure investments. Analytical and technical support will be provided to the WRD to improve its approach to flood control – from an ad hoc system of maintenance to a data driven decision making approach that involves long term planning. The Department of Agriculture will also receive institutional support to enhance its training programs for farmers, and to more holistically integrate irrigation and agriculture activities to enhance productivity. Also, the strengthening of district-level ATMAs (both staffing and infrastructure) signals GoB’s will to engage in long-term market-led extension for Bihar’s small-scale producers. The RWD and BRPNL will benefit from further institutional strengthening.

V. KEY RISKS AND MITIGATION MEASURES

A. Risk Ratings Summary Table

Table 2: Operational Risk Rating

Risk Categories	Rating (H, S, M or L)
Political and governance	M
Macroeconomic	L
Sector strategies and policies	M
Technical design of project or program	S
Institutional capacity for implementation and sustainability	M
Fiduciary	S
Environment and social	S
Stakeholders	M
Other	--
Overall	S

H= High; S= Substantial; M= Moderate; L= Low

B. Overall Risk Rating Explanation

42. The overall risk for achieving the PDO is Substantial, driven by implementation and complexity of project design risks.

43. *Capacity:* To implement the BKFRP, the GoB established BAPEPS that will act as PMU under the BKBDP, as well. Component 2 (Enhancing Agriculture Productivity and Competitiveness) will involve the joint participation of Departments of Agriculture, Animal & Fisheries Resources Department (including the creation & nurturing of large number of FIG's & ABC) which have limited implementation and management capacity.

44. *Project Design:* This risk is deemed Substantial because the project is complex and multi-sectoral, and brings together implementation by several line departments. To promote coordination between line departments, each participating department has identified a nodal officer to interact with BAPEPS. Organizational structures such as BAPEPS as the PMU with DPMUs will be put in place at the district and block levels to enhance coordination between the project stakeholders. The IAs will set up/strengthen their PIU and DPIUs as Implementation Units for rapid and efficient execution of activities with consistent capacity. Dairy interventions financed under Component 2 will leverage the institutional arrangements already in place with National Dairy Development Board (NDDB), as Bihar is already a participating state in the National Dairy Plan (NDP-I).

VI. APPRAISAL SUMMARY

A. Economic and Financial Analyses

45. The economic and financial analysis highlights the synergies unlocked through the multi-sectoral approach utilized in the BKBDP. The investments in flood control infrastructure will not only protect human lives, but also infrastructure and agricultural assets in the Kosi River Basin. As such, complementary investments in transportation, irrigation, and agriculture will have added value as a result of reduced flood risk. The main quantifiable benefits are: i) reduced flood damage to infrastructure in the Kosi River Basin due to flood control investments; ii) increased movement of people and goods due to transportation investments; and iii) increased annual output and productivity due to irrigation and agriculture investments.

46. Quantification for the above benefits is based on the following: i) value of assets in areas flooded, as measured by data gathered by the GoB on the frequency of occurrence and historical damages related to flood events; ii) savings in operational costs, time, and commercial gains achieved by all-weather roads built in good and fair condition, as measured by the data gathered through the GoI and Bank-financed PMGSY Rural Roads Project; and iii) increase in agricultural productivity due to greater availability of water and seed-input packages, as measured by data gathered through Bank-financed projects in nearby Assam and West Bengal. The project benefits are quantified in Table 3 below and further details can be found in Annex 5. With a 12 percent discount rate, the NPV of the project is Rs.4.1 billion, which implies an ERR of 22.4 percent.

Table 3: Summary of Project Benefits

Project Activities	ERR (%)	NPV (Rs. Billions)
Flood Control	20.8	3.5
Transportation	18.9	0.9
Irrigation + Agriculture	32.1	4.6
Overall Project	22.4	4.1

B. Technical

47. The Bank has been actively engaged in improving flood risk management in Bihar since 2007 through the DfID funded FMIS I and FMIS II; and the BKFRP since 2010. These activities have helped strengthen the institutional and technical capacities within the GoB to manage flood risk. As such, emphasis will be placed on improving the institutional capacity of the GoB through the capacity building of the Departments through training of staff, and the development of systems. While the investments will focus on critical flood control infrastructure to address immediate weaknesses, investments will assist WRD to understand new systems, materials, and technologies that can be utilized to better manage floods and mitigate their impacts.

48. Investments in agricultural productivity and competitiveness are designed in support of the GoB's Agricultural Road Map (2012-2017, 2017-2022). Among the highest priorities in the Road Map is the expected three-fold increase of land under irrigation, from 4.5 million to 13 million hectares. Investments in shallow tube wells for FIGs coupled with other improved agricultural technologies, would significantly contribute to the achievement of this plan.

49. New roads and bridges will be constructed to connect small villages (population less than 500) to larger state roads and to agricultural markets. Bridges and culverts will be designed to withstand earthquake forces as per the latest Bureau of Indian Standards guidelines with due regard to topography and hydrology as per guidelines of the Indian Roads Congress and the Ministry of Road Transport and Highways.

50. The project will make complementary and climate-resilient investments in agriculture to further water efficiency and soil fertility. Organized farmers will diversify into new crops and cropping techniques and adopt innovative seed-and-input packages with the aim of intensifying agricultural production. Mechanisms to simultaneously strengthen agricultural institutions including ATMAs and KVKs will ensure the long-term sustainability of such programs.

C. Financial Management

51. The project has an adequate system to account for and report project expenditures. The financial management arrangements builds on the existing arrangements and lessons learnt under BKFRP. The on-going BKFRP faced significant operational and financial control and reporting challenges in the initial years especially under the housing component. These included issues related to co-mingling of project and other funds at the block level, multiple bank accounts and rejection of fund transfers to beneficiaries due to incorrect bank account details and failure to monitor the same by way of regular bank reconciliations. This led to project's inability to prepare reliable financial reports and financial statements and consequent discontinuation of disbursement for over a year. These issues have since been addressed to a large extent by (i) new banking arrangements for the project, which ring fenced project funds & view rights to BAPEPS of all subsidiary bank accounts; (ii) appointment of FM support consultants to provide 'hand on' accounting support to the project; (iii) update of bank reconciliations and proper accounting for rejected fund transfers to beneficiaries; This has enabled BKFRP submit IUFR's till Dec 2014 and audit report for FY ended March 31, 2014 in a timely manner.

52. *Budget and Funds Flow:* The funds requirement for the project will be budgeted in the annual budget of the Planning Department and drawn by BAPEPS, based on their annual work plan, as grant in aid. In order to have an efficient funds flow mechanism, the ‘zero balance parent- child concept’ will be extended to the new implementing agencies and their subordinate agencies. This will provide payment rights to the implementing agencies and their subordinate units view rights with BAPEPS of all sub-bank accounts. This will allow BAPEPS to manage its funds better, have an oversight to detect any large cash withdrawals and validate reported expenditures with bank balances.

53. *Internal control, accounting & financial reporting:* The involvement of multiple IAs, their agencies and creation of large number of community based organization i.e. FIG’s and PO’s poses significant risks from an internal control and financial reporting perspective. Building on the lessons from BKFRP, the mitigating measures agreed include (i) use of electronic payments to community groups and individual beneficiaries; (ii) continuing with the services of a financial management support consultant to help BAPEPS and implementing agencies with day to day support in accounting, financial reporting and audit; (iii) development of an operations manual (reflecting the procedures for creation of FIG’s/ WSG and PO’s cost sharing, MOU’s, triggers for funds release and obligations of various stakeholders etc.) and update for the FM manual for the new component related agricultural productivity and competitiveness; .and (iv) internal audit firm to supplement the assurance function of external audit, whose ToR will include a sample review of FIGs and PO’s including physical verification of individual/community assets, in addition to audit implementing agencies, with focus on the agriculture productivity and competitiveness component. The finance function will be headed by a finance official on deputation from the state and will be assisted by a team of accounts and finance staff and supported by Financial Management Consultant. BAPEPS, based on monthly reporting from the accounting centers, will consolidate and submit quarterly IUFRRs and annual Project Financial Statements (PFS).

54. *Disbursements:* In line with GoI’s current practice no advance will be provided. Withdrawals from the designated account will be on the basis of withdrawal applications to the extent of reported expenditure in quarterly IUFRRs by the project. As per the standard Center-State mechanism of Additional Central Assistance, the GoI will transfer the funds from the Bank to GoB on a back-to-back basis.

55. *Audit arrangements:* An external audit of BAPEPS, including the PFS, will be done by an independent firm of Chartered Accountants as per terms of reference agreed with the Bank. The annual audit report will be submitted within nine months of the close of the financial year and in line with the disclosure policy will be made available in the public domain.

D. Procurement

56. Procurement of goods, works and services will be carried out in accordance with the Bank’s “Guidelines: Procurement under IBRD Loans and IDA Credits” (dated January 2011 and revised in July 2014); “Guidelines: Selection and Employment of Consultants by World Bank Borrowers” (dated January 2011 and revised in July 2014); and the provisions stipulated in the Project Agreement. The Bank’s Standard Bidding Documents, Requests for Proposals, and Forms of Consultant Contract will be used. The majority of the procurements will be carried out

by the respective implementing agencies but with approvals from BAPEPS. Some community-based procurement would be carried out by FIGs under Component 2.

57. *Procurement Risk Assessment and Mitigation:* The main procurement risks that can be perceived at this stage include: (i) normal fiduciary risks of transparency and fairness;(ii) limited capacity in developing right specifications for major equipment/goods, identifying right market, inability to influence the market in receiving appropriate pricing and delivery commitments; and (iii) inadequate record keeping. Further, some of the IAs have limited experience in implementing Bank financed projects or procurement. FIG capacity is low in regard to community-based procurement. BAPEPS will be supported by a Procurement and Finance Management Consultant with an arrangement of support to the PIUs and DPIUs in public and community procurement. The procurement procedure is detailed out in the Operations Manual for each activity.

58. *Procurement Plan:* The GoB, at appraisal, has provided a procurement plan for the first 18 months of project implementation. Procurement plans for the proposed schemes and investments in Component 1 and 3 have been prepared and entered in the Bank's online procurement system. Based on the procurement plan and DEA's readiness criteria, procurement processes have been initiated for Component 3 (Bridge and Road schemes). The procurement plans will be available in BAPEPS, GoB, and the Bank's external website.

E. Social (including Safeguards)

59. *Key Social Issues and Safeguards Policies:* Key activities proposed in the project include strengthening existing flood protection embankments, improving road connectivity and agricultural productivity affected by the floods. The key social issues involved in the project include: (i) involuntary resettlement impacts, which need to be prevented, minimized and mitigated where unavoidable, (ii) gender equity and social inclusion in order to address inclusion of the vulnerable sections of the community including the poor, landless and women and ensuring that they benefit adequately from project interventions. OP 4.12 has been triggered to make sure that project investments do not leave any person worse off in any way, be it on account of land taking for construction of embankments, road, bridges or any other infrastructure or on account of having to remove encroachments from areas where such infrastructure is to be constructed Community based activities enable effective involvement of the local people and measures to ensure the participation of the economically and physically weak and vulnerable provide opportunities for one and all to voice their choices and concerns. Strong, accessible and responsive grievance response mechanisms at the district and State level that work to improve the overall functioning of the project and its ability to address the needs of the most vulnerable are also an integral part of project design.

60. An Environmental and Social Management Framework (ESMF) has been prepared to identify, avoid, minimize, and mitigate, where unavoidable adverse social impacts and ensure that the sub-projects are designed sustainably. The ESMF identifies potential social impacts of sub-projects such as those related to exclusion, land acquisition and other forms of dispossession of the local communities, displacement etc. and is the framework for screening and categorization of sub-projects, requirements for carrying out Environmental and Social Assessments and institutional mechanisms for the implementation and monitoring of safeguard

management activities of the project. The ESMF, includes a Resettlement Policy Framework (RPF) that details the application of the provisions of the Bank Operational Policy 4.12 on Involuntary Resettlement in the context of the policies at the State and National level. BAPEPS will conduct assessments and ensure implementation of necessary measures as per the Entitlement Matrix agreed in the ESMF and RPF for the project including preparation of a detailed Resettlement Action Plan (RAP) that will be reviewed by the Bank prior to being implemented.

61. *Implementation Arrangements:* The PMU has established institutional capacity to implement the SMF including RAPs as necessary for proposed activities. The PMU will appoint a qualified Social Development Specialist and hire external consultants, as may be necessary, to ensure effective SMF implementation and monitoring. Concurrent quality assurance of the ESMF implementation shall be carried out with the help of Third Party Quality Audit (TPQA) Consultants hired for the Project. The GRM for the project will operate as follows: (i) LA related complaints shall be handled by the SDM (details in Annex-3) whereas the existing grievance redress mechanism of the state shall hear and address general complaints. The web-link for registering grievances online is (<http://www.bpgrs.in>).

F. Environment (including Safeguards)

62. Investments such as restoration of Kosi embankments, strengthening of transport network through upgradation of roads and bridges in the project area and agriculture modernization activities envisaged in BKBD Project, could have significant environmental impacts. Considering the nature of sub-projects and the potential impacts, the projects triggers OP 4.01: Environmental Assessment, OP 4.04: Natural Habitats, OP 4.09: Pest Management and OP 4.11: Physical Cultural Resources.

63. To mitigate these impacts and ensure that the sub-projects are designed sustainably, an Environmental and Social Management Frame Work (ESMF) has been prepared. The ESMF identifies potential environmental impacts of sub-projects, provides a framework for screening and categorization of sub-projects, requirements for carrying out Environmental and Social Assessments and institutional mechanisms for the implementation and monitoring safeguard management activities. The interventions for enhancing agricultural production and productivity triggers policy requirements of OP 4.09, as the component aims to sustainably increase agricultural productivity in the Kosi River Basin. To address the requirements of OP 4.09, the ESMF also includes a 'Pest Management Plan' that provides for the adoption of strategies that promotes use of biological/environmental control methods and reduce reliance on chemical pesticides, including issues related to handling, application, and disposal of waste products.

64. The draft ESMF was first disclosed locally on June 29, 2012 and at the Bank InfoShop on August 21, 2012. The revised draft ESMF after updating changes in the project activities was re-disclosed on February 4, 2015 and the final ESMF was disclosed on April 30, 2015 both locally and at the Bank's InfoShop.

65. BAPEPS will be responsible for the implementation of ESMF with support from its District/regional offices and the respective IAs will be responsible for the preparation and implementation of safeguard management plans for the sub-projects. BAPEPS will review the

safeguard management plans of each sub-project and ensure that the policies and procedures agreed in the ESMF are fully complied. Safeguard documents of all sub-projects categorized as category 'A' and sample of category 'B' subprojects will be shared with the Bank for review and approval.

66. To help with the implementation of ESMF and safeguard management plans, BAPEPS has deployed dedicated environmental and social specialists. Each implementing agency will also have nodal officers to ensure the implementation of safeguard management plans. BAPEPS will also carry out regular training, orientation and experience sharing programs to enhance the knowledge and capacity of various implementation partners and support the implementing agencies in preparing and implementing the ESMF. Budgetary provisions for safeguard activities are included in the project.

G. Other Safeguard Policies

67. The Kosi River and the aquifer AS80 are international waterways, and the Project has therefore triggered OP 7.50. Activities under the Component 1 of the Project (affecting the Kosi River) qualify for an exception to the riparian notification prescribed by OP 7.50, which exception has been granted by Management. The activities under Component 2 of the Project (affecting aquifer AS80) require notifying Bangladesh as per the policy. The respective notification has been issued by the World Bank (on behalf of India) on March 24, 2015.

H. World Bank Grievance Redress Service

68. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Results Framework and Monitoring

Project Name: IN: BIHAR KOSI BASIN DEVELOPMENT PROJECT (P127725)

Table 4: Results Framework

Project Development Objectives									
PDO Statement									
The project development objective is to enhance resilience to floods and increase agricultural production and productivity in the targeted districts in the Kosi River Basin, and to enhance Bihar's capacity to respond promptly and effectively to an eligible crisis or emergency.									
These results are at		Project Level							
Project Development Objective Indicators									
Indicator Name	Baseline	Cumulative Target Values							
		YR1	YR2	YR3	YR4	YR5	YR6	YR7	End Target
Area protected by improved flood protection measures (hectare)	0	0	0	500	1000	2000	3000	4500	4500
Increase in average agricultural yields in the project area by 30 percent (Percentage)	100	100	105	110	120	125	128	130	130
Increase in cropping intensity by 40 percent (Percentage)	100	100	105	115	125	130	135	140	140
Increased access	100	103	107	110	115	120	120	120	

of the population, to markets by roads and bridges in good and fair condition by 20 percent (Percentage)									120
Of which female farmers/excluded farmers (Number-Sub-Type: Supplemental)	50	52	53	55	57	60	60	60	60
Intermediate Results Indicators									
		Cumulative Target Values							
Indicator Name	Baseline	YR1	YR2	YR3	YR4	YR5	YR6	YR7	End Target
Direct project beneficiaries (Number million) - (Core)	0	0	0	2	3	5	7	10	10
Female beneficiaries (Percentage - Sub-Type: Supplemental) - (Core)	46	46	46	46	46	46	46	46	46
km of embankment strengthened	0	0	0	0	10	20	30	45	45
WRD staff trained to use	0	0	0	100	150	200	200	200	200

flood management technologies (Number)									
Farmers organized into FIGs (Percentage)	10	25	25	25	25	25	25	25	35
Female FIG members (Percentage - Sub-Type: Supplemental)	2	0	5	10	10	10	10	10	10
Farmers who have adopted an improved agriculture technology promoted by the project (Number) - (Core)	0	6000	12,000	19,000	26,000	31,000	31,000	31,000	31,000
Farmers who adopted an improved agriculture. technology promoted by project – female (Number - Sub-Type:	0	300	600	1,000	1,400	2,000	2,000	2,000	2,000

Breakdown) - (Core)									
Area provided with irrigation and drainage services (ha) Irrigated area (Ha)) - (Core)	0	13,200	33,200	50,400	67,400	68,000	68,000	68,000	68,000
Area provided with irrigation and drainage services – New Irrigation Area (ha) (Hectare(Ha) - Sub-Type: Breakdown) - (Core)	0	6,600	16,600	25,200	33,700	34,000	34,000	34,000	34,000
Area provided with irrigation and drainage services - Improved Irrigation Area (ha) (Hectare(Ha) - Sub-Type: Breakdown) - (Core)	0	6,600	16,600	25,200	33,700	34,000	34,000	34,000	34,000
Water users provided with	0	22,500	53,750	85,000	110,000	115,500	122,500	122,500	122,500

new/improved irrigation and drainage services (number) (Number) - (Core)									
Water users provided with irrigation and drainage services - female (number) (Number - Sub-Type: Breakdown) - (Core)	0	2,000	4,000	6,000	8,000	9,000	10,000	10,000	75,000
People with access to linking roads and bridges in good and fair condition (Number)	0	50,000	120,000	3,000,000	5,000,000	6,500,000	7,000,000	7,000,000	7,000,000
Roads constructed, Rural (Kilometers) - (Core)	0	20	70	150	350	380	400	400	400
New bridges constructed (Number)	0	5	10	30	50	55	58	58	58
Share of rural population women farmers	0	2	4	8	12	20	22	25	25

and socially excluded farmers, with access to an all-season road (Percentage) - (Core)									
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Table 5: Indicator Description

Project Development Objective Indicators				
Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Area protected by improved flood protection measures	Total area where agricultural production has been maintained through mitigation of flood risk. Steep increases in Cumulative Target Values beyond Year 1 are attributed to the time it takes to build capacity within the PMU and launch project activities. In addition, outcome related targets such as decrease in likelihood of flood loss are only achieved once the entire investment in flood management is complete.	Annual	Construction reports / field surveys	Water Resources Department
Increase in average agricultural yields in the project area by 30 percent	Increase in yield of five main agricultural crops	Annual	Field surveys	Department of Agriculture
Increase in cropping intensity by 40 percent	Increase in cropping intensity for a random sampling of farms/farmers	Annual	Field surveys	Department of Agriculture
Increased access of population to markets by roads and bridges in good and fair condition by 20 percent	Increases access of the population to roads meeting the "good and fair condition" guidelines of the Indian Roads Congress	Annual	Field surveys	BRPNNL/RWD
Of which female farmer, socially excluded farmers	Number of females and socially excluded farmers within the overall number of beneficiaries of the roads and bridges component.	Annual	Field surveys	BRPNNL/RWD

Intermediate Results Indicators				
Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Direct project beneficiaries	Direct beneficiaries are people or groups who directly derive benefits from an intervention (i.e., children who benefit from an immunization program; families that have a new piped water connection). Please note that this indicator requires supplemental information. Supplemental Value: Female beneficiaries (percentage). Based on the assessment and definition of direct project beneficiaries, specify what proportion of the direct project beneficiaries are female. This indicator is calculated as a percentage.	Annual	Survey reports	IAs/BAPEPS
Female beneficiaries	Based on the assessment and definition of direct project beneficiaries, specify what percentage of the beneficiaries are female.	Annual	Survey Report	IAs/BAPEPS
Km of embankment strengthened	Km of embankment that will be taken up and works completed towards protection	Annual	Survey Report	Water Resources Department
WRD staff trained to use flood management technologies	Number of WRD staff that successfully completed training in flood management technologies under the Project	Annual	WRD staff survey	Water Resources Department
Farmers organized in FIGs	Percentage of total farmers in the five targeted districts organized into FIGs(by gender)	Annual	Field surveys	Department of Agriculture

Farmers who have adopted an improved agriculture technology promoted by the project	This indicator measures the number of clients of the project who have adopted an improved agricultural technology promoted by the project.	Annual	Survey Reports	Department of Agriculture
Farmers who adopted an improved agriculture technology promoted by project – female	This indicator measures the number of female farmers’ of the project who have adopted an improved agricultural technology promoted by the project.	Annual	Field surveys	Department of Agriculture
Area provided with irrigation and drainage services (ha) – Irrigation area (ha)	This indicator measures the total area of land provided with irrigation and drainage services under the project, including in (i) the area provided with new irrigation and drainage services, and (ii) the area provided with improved irrigation and drainage services, expressed in hectare (ha).	Annual	Field surveys and Installation Surveys	Department of Agriculture
Water users provided with new/improved irrigation and drainage services (number)	This indicator measures the number of water users who are provided with irrigation and drainage services under the project.	Annual	Field Surveys and Installation Surveys	Department of Agriculture
Water users provided with irrigation and drainage services - female (number)	This indicator measures the number of water users (female farmers / users) who are provided with irrigation and drainage services under the project.	Annual	Field survey and installation surveys	Department of Agriculture
People with access to linking roads and bridges in good and fair condition	Number of people with access to roads and bridges constructed by the project	Annual	Field survey	Rural Works Department, BRPNNL
Roads constructed, Rural	Kilometers of rural roads constructed under the project. Rural roads are roads functionally classified in various countries below Trunk or Primary,	Annual	Construction reports	Rural Works Department

	<p>Secondary or Link roads, or sometimes Tertiary roads. Such roads are often described as rural access, feeder, market, agricultural, irrigation, forestry or community roads. Typically, rural roads connect small urban centers/towns/settlements of less than 2,000 to 5,000 inhabitants to each other or to higher classes of road, market towns and urban centers.</p>			
New bridges constructed	Number of new bridges completed under the project	Annual	Construction reports	BRPNNL
Share of rural population with access to an all-season road	<p>Percentage of rural people in the project area who live within 2 kilometers (typically equivalent to a 20-minute walk) of an all-season road. This indicator is also known as Rural Access Index (RAI).</p> <p>An all-season road is motor able all year by the prevailing means of rural transport (often a pick-up or a truck which does not have four-wheel-drive). Predictable interruptions of short duration during inclement weather (e.g. heavy rainfall) are acceptable, particularly on low volume roads. Please note that this indicator requires supplemental information</p> <p>Supplemental Value: Number of rural people with access to an all-season road</p> <p>The Supplemental Value is the total number of rural people with access to an all-</p>	Annual	Construction reports	Rural Works Department/ BRPNNL

	season road. An all-season road is a road that is motor able all year by the prevailing means of rural transport (often a pick-up or a truck which does not have four-wheel-drive).			
Number of rural people with access to an all-season road	Please indicate the absolute number of rural people with access to an all-season road.	Annual	Project Monitoring Reports, MIS	Rural Works Department& BRPNNL
Female FIG Farmers	Based on the assessment and definition of direct project beneficiaries, specify what percentage of the beneficiaries are female	Annual	Project Monitoring Reports, MIS	Department of Agriculture

Annex 2: Detailed Project Description

INDIA: Bihar Kosi Basin Development Project

1. Improving the overall economic development of the Kosi River Basin requires a multi-sectoral approach in which flood protection infrastructure reduces the volatility of production, and complementary investments enhance the productivity of the protected environment. Irrigation infrastructure that increases the availability and efficient use of water will enable farmers to plant multiple cropping cycles, and on-farm agriculture support will utilize technological advancements in crop variation and machinery to increase overall yields. In addition, transportation infrastructure will enable farmers to bring their crops to market. This holistic approach will not only protect the population of the Kosi River Basin from the constant threat of floods, but also enhance their livelihoods over the long-term.

2. The project will serve as the convening mechanism between the respective line departments to ensure that synergies among these investments are maximized. By integrating activities from several departments, the project seeks to take advantage of complementary actions. Flood risk management, improved access to water, improved connectivity to markets, and increased agricultural productivity will build on each other to help increase output in the targeted area. In addition, several activities will leverage each other. For example, rural roads will be used for evacuation in case of floods and off-grid diesel motors can provide electricity for other activities.

3. The project will utilize the implementation structure and technical capacity initiatives established during the BKFRP to augment the institutional capacities of various line departments. The project will address longer-term development challenges, and is prepared in the broader context of the State's five year plan for 2011-2016 and the preliminary results of the GoB Agriculture Roadmap for 2012-2022.

4. The project will comprise the following five components:

- Component 1 – Improving Flood Risk Management (US\$100 million)
- Component 2– Enhancing Agricultural Productivity and Competitiveness (US\$76.5 million)
- Component 3 – Augmenting Connectivity (US\$173 million)
- Component 4 – Contingent Emergency Response (US\$0 million)
- Component 5 – Implementation Support (US\$27 million)

Component 1 – Improving Flood Risk Management, US\$100 million (with US\$ 66.7 million Bank Financing)

5. The objective of the component is to increase the capacity of the Water Resources Department (WRD) to manage flood risk and to decrease vulnerability to floods in the Kosi River Basin. This objective will be achieved by investing in flood protection infrastructure to reduce vulnerability and by strengthening institutional capacity to better manage the flood protection infrastructure, and understand how the Kosi River system would behave. Activities will build on technical studies, flood forecast modeling, and pilot embankment strengthening

activities already underway in BKFRP and FMISC II. The component is broken into two subcomponents.

Subcomponent 1.1 - Reinforcement of flood control infrastructure (US\$95million)

6. The objective of this subcomponent is to strengthen and reinforce existing flood control infrastructure in the Kosi River Basin. Due to eroding infrastructure caused by an ad-hoc approach to maintenance and the damages caused by the 2008 and earlier Kosi Floods, major weaknesses exist in the flood protection and management system in the Kosi River Basin. A portion of the required investments have been pre-identified as critical, while the remaining investments will be informed by the ongoing flood modeling studies financed under BKFRP and FMISC II.

7. Critical investments will primarily include: (i) restoration/strengthening critical stretches of Eastern and Western Kosi embankments, approximately 45 km; (ii) strengthening existing spurs that are severely damaged and protecting critical erosion prone river banks; and (iii) procurement of 2 dredgers for management of silt deposits in the river system.

8. All civil works for embankment protection will be designed for a flood of 1 in 25 year frequency. All river bank erosion and spur protection works in critically vulnerable locations of both banks of the Kosi River will be designed using 0.5m thick stone-filled gabion mattresses as the main component of works. The apron for bank protection and spur works will be laid at the existing river bed level by preparing the bed and bank slope using sand filled geo-bags/geo-tubes/megabags (without wire cages) laid over geotextile filters. The work will be carried out by mobilizing barges, cranes, and divers for under-water launching of stone filled gabion aprons. The embankment protection works would include 0.5m cm thick stone filled gabion-mattress laid over geo-textile filters. These alternative materials and designs for infrastructure works are being piloted under the embankment strengthening activities financed under BKFRP and will be employed in BKBDP in order to improve performance at competitive costs.

Subcomponent 1.2 – Support to strengthen institutional capacity to manage flood risk (US\$5million)

9. The objective of this subcomponent is to strengthen and complement the studies and state level capacity to understand, manage, and communicate flood risks. Under this component the project will finance procurement of software/ equipment for the Center of Excellence currently being prepared in BKFRP, procurement of RTDAS (Real Time Data Acquisition System) for Bagmati basin and institutional strengthening at FMISC. The project will ensure that the capacity building and community outreach process is gender-sensitive and gender-informed in its approach.

Component 2 - Enhancing Agricultural Productivity and Competitiveness, US\$76.5 million (with US\$ 50 million Bank Finance)

10. This component would work with organized farmers to increase agricultural production (which includes crops, horticulture, livestock and fisheries) and productivity by expanding their access to and adoption of innovative and climate-resilient farm technologies and practices

(including irrigation) and extending their linkages to market infrastructure. Active farmer participation, including that of women farmers, landless and farmers from socially excluded backgrounds, in planning, implementing, and evaluating project interventions will enhance the relevance of crops/varieties selected for cultivation and marketing, increase technology adoption, and contribute to the sustainability of both technical interventions and the local institutions supporting farmers. All activities are complementary to the GoB Agricultural Road Map (2012-2017, 2017-2022).

11. The component is built on the following guiding principles:

- Demand-driven approach: Producer organizations, with technical assistance as needed, would identify and implement the investments necessary to increase farm productivity, market access and value chain entry.
- Investment planning: The component would package necessary interventions to small-scale and marginal farmers in the form of Business Plans that link investment to market opportunities.
- Climate-smart responses: The component would stimulate innovations that increase: (a) agricultural productivity; (a) the efficient use of scarce water; and (c) climate change resilience while reducing carbon emissions.
- Innovation: Rural producers must adopt new technologies and access greater commercial intelligence in order to thrive in dynamic markets. This will require fresh learning approaches to stimulate a “rural innovation culture” conducive to competitiveness.
- Collective action: Small-scale producers, working together under a shared objective, can reduce asymmetric bargaining power in markets traditionally dominated by intermediaries.
- Value chains: Producer-based organizations that participate in value chains can: (a) improve uptake of technological innovation through a scaled approach to technical assistance; (b) expand access to timely commercial intelligence through interaction with downstream actors (e.g., processors, institutional buyers, freight-forwarders); and (c) reduce individual risks through risk spreading across value chain actors.
- Knowledge transfer systems: Crop-specific and market-oriented training and extension is increasingly sourced from the private sector through integrated technology packages. Financially sustainable models are needed to open such extension to smallholders.
- Iterative learning and piloting: Progressive farmers on demonstration plots can facilitate technology uptake and transformation for other smallholder and marginal farmers and usher in their participation in value chains.
- Complementarity and leverage: Convergence will be sought with: (a) ongoing and proposed agribusiness initiatives; (b) existing agriculture/horticulture sector schemes funded by GoB and GoI such as Rashtarya Krishi Vikas Yojana, National Food Security Mission, National Horticulture Mission and National Dairy Plan in the five targeted districts; (c) the financial sector, including insurance schemes, to increase the long-term sustainability of smallholder value chain integration and increase their “bankability”; and (d) state agricultural universities and other research institutions, to develop practical applications to their knowledge generation and assist in market research.

12. The activities under this component will primarily target farmers organized into Farmer Interest Groups (FIGs), with mobilization support from contracted service providers and NGOs.

An intensive awareness campaign will be conducted in project areas to make potential beneficiaries aware of the overall component activities, expected outcomes, and procedures for FIG formation and subsequent participation. The component has three sub-components.

Subcomponent 2.1 – Intensification and diversification of production systems (US\$40 million, with US\$ 26 million Bank Financing)

13. Agricultural intensification would be promoted through: (i) technology demonstration and diffusion; (ii) increased water availability and efficiency via irrigation and other climate-smart approaches; and (iii) improved agricultural inputs and practices packages. Diversification would include market-led crop selection (e.g., horticulture) as well as options for livestock and fisheries, among other verifiable commercial opportunities. Business plans, financed through Matching Grants and prepared by farmer interest groups (FIGs) with support from service providers contracted under the project, would identify market potential and link it to investments needed to increase productivity and competitiveness. Business plans would consist of, *inter alia*: (i) fixed capital (e.g., plant and equipment, irrigation infrastructure); (ii) input and other technology packages; and (iii) capacity-building and technical assistance expenditures. The sub component will specifically target Farmer Interest Groups with substantial representation of women, SC/ST and marginal and landless farmers. Progressive (i.e., “lead”) farmers would be identified to participate in demonstration activities (on their respective land holdings) applying improved seeds and improved husbandry practices for high-yielding varieties of crops and vegetables, livestock and fodder management, scalable mechanization and good, climate-smart agricultural practices.¹¹ Successful demonstrations would then be showcased to the wider universe of small-scale producers through farmer field days and other dissemination efforts, with the aim of facilitating technological adoption.

14. Farmers – organized in Water User Groups -- would access shallow tube wells (STWs) for irrigation. An individual farmer owning a minimum of 1 (one) acre of land would be eligible for installation of a shallow tube-well, under the condition that irrigation is extended in the vicinity of 4 hectares on the basis of agreed rent. This will be part of the proposed 5lac private tube wells in the agriculture road map in the 12th five year plan 2012-17.

15. Business plans, financed through Matching Grants and prepared by FIGs with support from service providers contracted under the project, would identify market potential and link it to investments needed to increase productivity and competitiveness. Business plans would consist of, *inter alia*: (a) fixed capital (e.g., plant and equipment, irrigation infrastructure); (b) input and other technology packages; and (c) capacity-building and technical assistance expenditures. Cost-sharing with FIGs (and other interested parties, when feasible) would be a pre-requisite and would vary, depending on the proposed investments and as defined in the Project Operational Manual. In general, FIG cost-sharing would be a minimum of 10% (in the case of progressive farmer demonstration plots) up to a maximum of 50% (in the case of shallow tube wells).

¹¹This would include:(a) ICT solutions, leveraging soils mapping, precision agriculture, climate modeling and historical rainfall time-series to inform planting and input decisions; (b) Crop diversification solutions, incorporating drought-tolerant crops, and, where feasible, nanotechnologies; (c) Supplementary shallow tube well irrigation, such as next-generation drip and aspiration technologies and the reuse of treated wastewater, where possible; and (d) Optimization of available water for production.

Subcomponent 2.2 – Strengthening of Agricultural Value Chains (US\$24.5.0 million, with US\$16 million Bank Financing)

16. The subcomponent would facilitate produce aggregation and value-added activity through Agricultural Business Centers (ABCs) proposed, owned and operated by Producer Organizations with support from Service Providers. The Producer Organizations will be formed by federating FIGs. ABCs would vary in terms of scope and content based on needs expressed by the proposing Producer Organization. It is expected that some 200 ABCs will be financed, about one-half of which will promote food grains, oilseeds and pulses, with the remaining one-half would facilitate markets for horticulture crops, livestock and dairy, among others. Specific to the dairy value chain, the subcomponent would converge with the ongoing activities of the Bank-supported National Dairy Support Project, in which Bihar is already participating. Business plans would be developed for each ABC by eligible Producer Organizations and evaluated on technical criteria set forth in the Project Operational Manual. Approved ABC business plans would be financed via Matching Grants, with cost-sharing on the part of producer organizations.

17. Subproject Cycle - Business Plans (Subcomponents 2.1 and 2.2):

- Following mobilization of rural producers, interested FIGs and Producer Organizations (with support from technical service providers and ATMAs) would define their investment requirements for verifiable market opportunities in their respective value chains in the form of Business Proposals, which are submitted to the district-level ATMAs;
- Business Proposals are assessed for eligibility, according to targeting criteria set forth in the Project Operational Manual; if approved, Producer Organizations are authorized to develop Business Proposals into Business Plans, with support from technical service providers and ATMAs as needed and financed by the Project;
- Business Plans are evaluated by the ATMA for compliance with environmental, financial, institutional, social and technical guidelines (as per criteria in the Project Operational Manual);
- Subproject agreements are signed between Producer Organizations and BAPEPS/ATMA to support finance of that portion of approved Business Plans implemented by Producer Organizations, specifying the use of subproject resources, and the rights and responsibilities of the producer organization;
- Subproject resources are made available to the Producer Organization for subproject execution, according to the approved Business Plan;
- Producer Organizations contract goods, works and services, in accordance with the norms established in the Project Operational Manual, and prepare reports which they submit to BAPEPS/ ATMA to document the use of project resources transferred.

Subcomponent 2.3 – Institutional Development for Market-led Extension (US\$12 million, with US\$8 Bank Financing)

18. The subcomponent would promote and strengthen the Agricultural Technology Management Agency (ATMA) in each of the five targeted districts. The Government of Bihar

has already initiated actions to implement the ATMA model of agricultural extension in all the 38 districts of the state. The ATMAs would: (a) promote convergence among state- and centrally-sponsored schemes in the agricultural sector; (b) facilitate inter-departmental coordination at the district, block and village levels; (c) transform production-centered extension systems toward market-led development; (d) field-test and scale-up climate-resilient good agricultural practices; (e) conduct market and value chain analyses for commercial options available to organized farmers; and (f) build partnerships with allied services, such as financial institutions and insurance providers. Marketing extension would focus on enabling farmers to learn for themselves (i.e., experiential learning) and empowering them to engage directly with the market. The subcomponent would also leverage the experience and lessons learned from the Bank-financed National Agriculture Technology Project (NATP) and agriculture competitiveness projects in Assam and Maharashtra.

Component 3 – Augmenting Connectivity, US\$173 million (with US\$ 115.33 million Bank Financing)

19. The objective of this component is to improve farmers’ access to markets through the expansion of the local transport network that connects rural roads to the main road network. To achieve this objective, the component will be structured in two subcomponents. These activities will be a continuation of the initiatives started under BKFRP, and will include the same specifications, implementation arrangements, and bidding plans already in place.

Subcomponent 3.1 – Construction of roads and strengthening institutional capacity (US\$80 million with US\$53.33 million Bank Financing).

20. This subcomponent will finance the construction of linking roads to major roads and the upgrading of rural roads to provide small villages (population less than 500) greater access to local markets. The sub-component will be implemented in the targeted districts. An estimated 400 km of rural roads will be constructed as black top roads and will be built to the latest rural road standards/codes followed under the GoI and Bank financed PMGSY Rural Roads Program. In addition to the large scale investments, pilot projects will be conducted to demonstrate new technologies that promote cost effective, modern, climate resilient, and environmentally friendly road reconstruction.

Subcomponent 3.2 - Institutional strengthening activities at RWD (US\$3.0 million with US\$ 2.0 million Bank Financing)

21. This sub-component will focus on the development of an asset management and maintenance system, as well as a road maintenance strategy. Activities will also be financed to support training in technical skills and management information systems for the staff of the Rural Works Department.

Subcomponent 3.3 – Construction of bridges (US\$90 million with US\$60.0 million Bank Financing).

22. This subcomponent will finance the construction of small and medium bridges to provide greater access to local markets. About 57 bridges will be constructed at a cost of US\$90 million

in targeted districts. New cross drainage structures will be provided where new streams have formed and where these were missing earlier. Bridges and culverts will be designed to withstand earthquake forces (per the guidelines of the Bureau of Indian Standards) and with regard to topography and hydrology (per the guidelines of the Indian Roads Congress, the Ministry of Road Transport and Highways, and projected demographic changes).

Component 4 – Contingent Emergency Response, US\$0 million

23. Following an adverse natural event that causes a major natural disaster, the GoB may request the Bank to re-allocate project funds to support response and reconstruction. This component would draw resources from the unallocated expenditure category and/or allow the GoB to request the Bank to re-categorize and reallocate financing from other project components to partially cover emergency response and recovery costs. This component could also be used to channel additional funds should they become available through as a result of the emergency.

24. Disbursements would be made against a positive list of critical goods or the procurement of works, and consultant services required to support the immediate response and recovery needs of the Government. All expenditures under this component, should it be triggered, will be in accordance with BP/OP 8.0 and will be appraised, reviewed and found to be agreed with the Bank before any disbursement is made. In accordance with BP/OP 8.00, this component would provide immediate, quick-disbursing support to finance goods (positive list agreed with the Government), works, and services needed for response, mitigation, and recovery and reconstruction activities. Operating costs eligible for financing would include the incremental expenses incurred by the Government for early recovery efforts arising as a result of the impact of major natural disasters.

25. Goods, Works and Services under this component would be financed based on review of satisfactory supporting documentation presented by the government including adherence to appropriate procurement practices in emergency context. All supporting documents for reimbursement of such expenditures will be verified by the Internal Auditors of the Government and by the Project Coordinator, certifying that the expenditures were incurred for the intended purpose and to enable a fast recovery following the damage caused by adverse natural events, before the Application is submitted to the Bank. This verification should be sent to the Bank together with the Application.

26. Specific eligible expenditures under the category of Goods include: (i) construction materials; water, land and air transport equipment, including supplies and spare parts; (ii) school supplies and equipment; (iii) medical supplies and equipment; (iv) petroleum and fuel products; (v) construction equipment and industrial machinery; and (vi) communications equipment.

27. Specific eligible expenditures under the category of Works may include urgent infrastructure works (repairs, rehabilitation, construction, etc.) to mitigate the risks associated with the disaster for affected populations. Specific eligible expenditures under the category of Services may include urgent studies (either technical, social, environmental, etc.) necessary as a result of the effects of the disaster (identification of priority works, feasibility assessments, delivery of related analyses, etc.).

Component 5 – Implementation Support, US\$27 million (with US\$ 18 million Bank Financing)

28. This component would finance activities required for project implementation that would include incremental operating costs of BAPEPS and the IAs. These funds are available to BAPEPS and Project Implementations Units of the IAs to employ subject matter experts, consultants, safeguard and gender experts, financial management consultants/firms agents, and support staff to be housed within each IA and assist with the preparation, implementation, and supervision of project activities. In addition, training, exposure visits, documentation, and monitoring and evaluation, equipment like computer, furniture etc. and project offices, Project Management Consultants, MIS and Third Party Quality Audit (TPQA), internal & external audits, etc. will be financed out of this component. BAPEPS, in coordination with the IAs, will derive a detailed plan for each IA and help strengthening the PIUs for project implementation.

Annex 3: Implementation Arrangements
INDIA: Bihar Kosi Basin Development Project

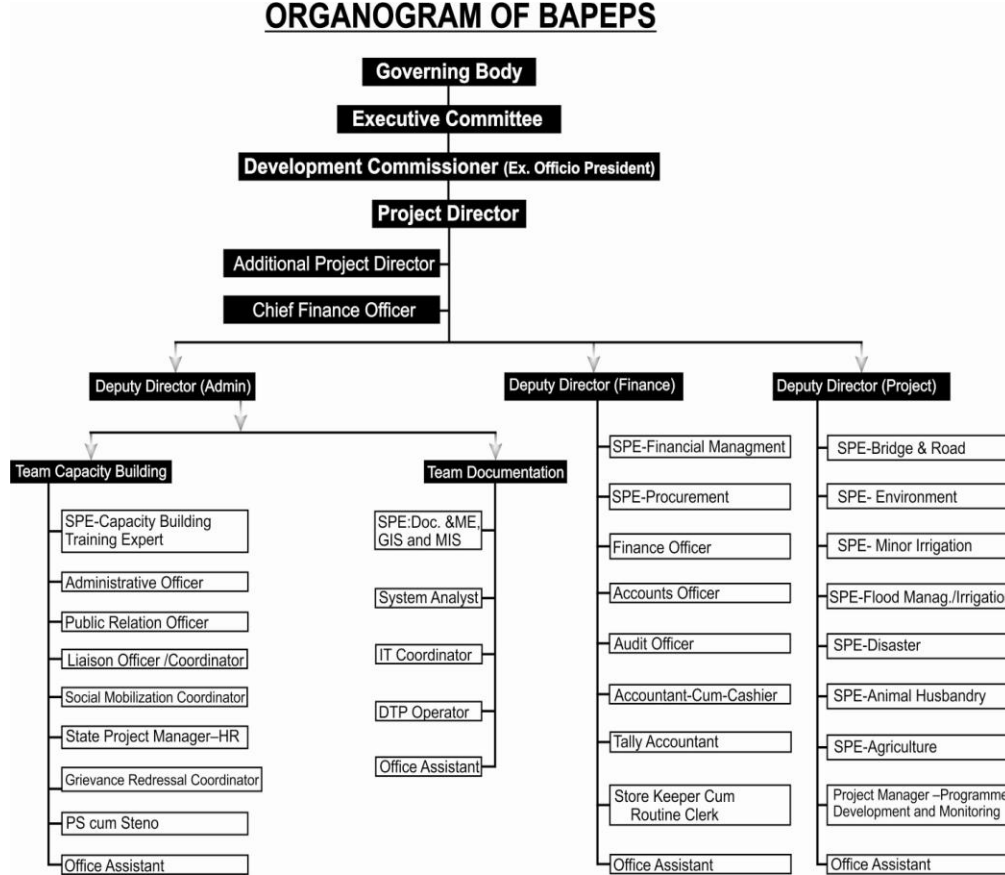
A. Institutional and Implementation Arrangements

1. Under BKFRP, the Government constituted the Bihar Aapada Punarwas Evam Punarnirman Society (BAPEPS) to coordinate project implementation. The BKBDP operation will benefit from this existing arrangement, along with the capacity building activities the Bank is continuing to support to ensure that BAPEPS successfully implements both projects. This society will act as the PMU for all components and will be primarily responsible for the implementation of BKBDP. To efficiently implement the Project, BAPEPS will rely on a State level office as well as 5 district level offices established under BKFRP. The ex-Officio Chairperson of the Society is the Development Commissioner, GoB.

2. BAPEPS will have the overall responsibility for the project implementation including, but not limited to: (i) procurement control, including the approval of bidding documents, contracts, and recommendations that are received through nodal officers of the Implementing Agencies; (ii) overall financial management i.e. budgeting for the project, liaison with state treasury for release of funds, funds management, consolidation of financial reports from various agencies, ensuring adherence with project FM manual by IA's and internal & external audit for the project;; (iii) appointment and management of technical consultants to assist with project activities; (iv) administration of third party audits ensuring quality of activities; (v) administration of financial audits and requisite reporting to the Bank; (vi) maintenance of MIS and quarterly reporting; and (vii) ensuring compliance with agreed implementation procedures and other Bank guidelines (Procurement, Financial, Environment, Social, etc.).

3. The structure of BAPEPS is indicated in Figure 1:

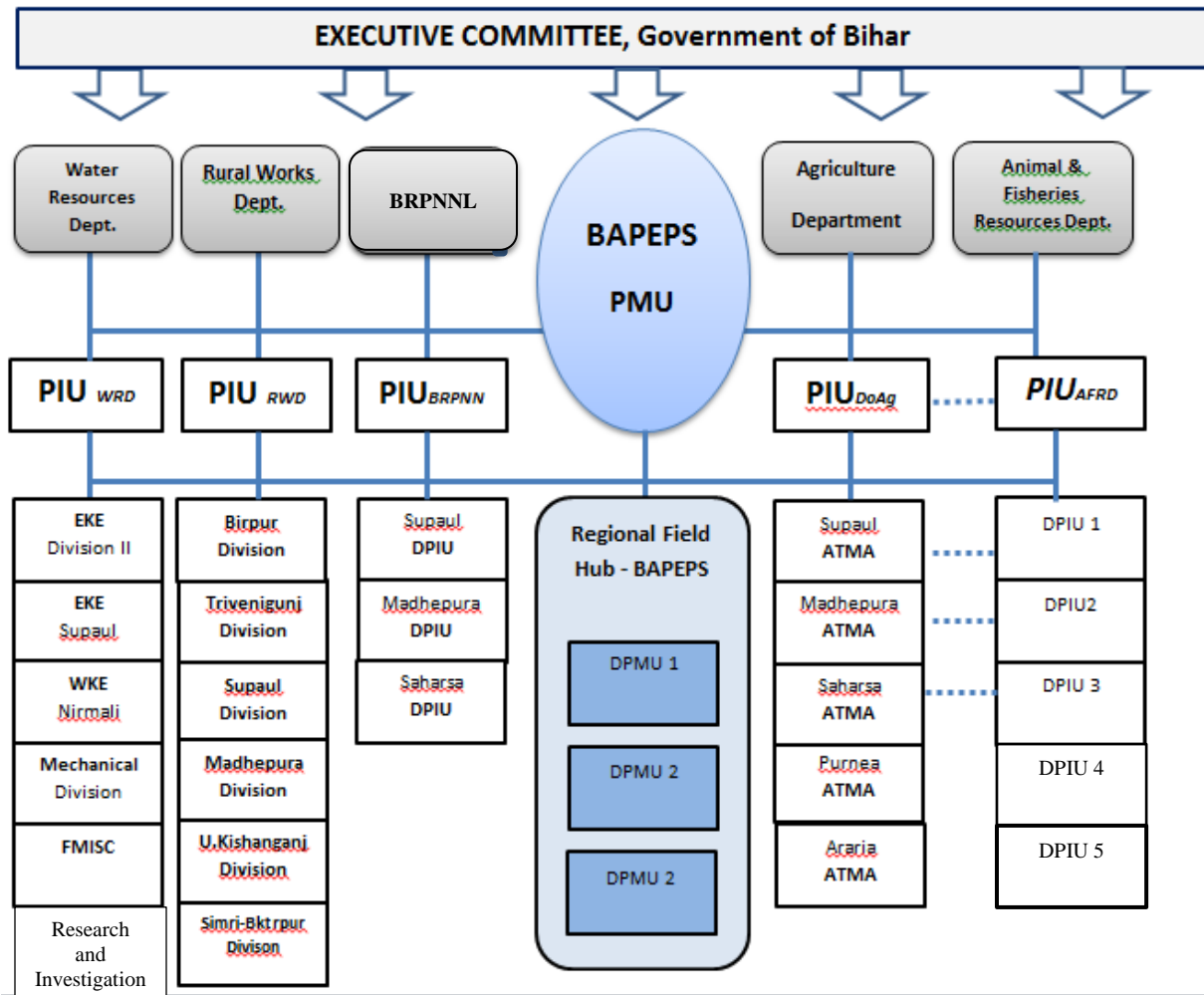
Figure 1: Structure of BAPEPS



4. While BAPEPS is responsible for coordinating between the Implementing Agencies (IAs) and the Bank, the Implementing Agencies themselves are responsible for the overall design and implementation of their respective activities. The specific tasks of the Implementing Agencies include, but are not limited to: (i) design and planning of the project activity, including preparation of cost estimates, DPRs, and bidding documents; (ii) procurement duties, including the tender of project contracts, review of tender bids, preparation of evaluation reports, and short-listing of bids for BAPEPS’ review and final decision; (iii) management and supervision of contracts; (iv) provision of quality assurance checks for each contract; and (v) financial management i.e. internal & operational control, payment to vendors, accounting and monthly financial reporting to BAPEPS.

5. The overall project implementation structure is depicted in Figure 2:

Figure 2: Project Implementation Structure



6. A total of six departments/agencies will serve as IAs for the project:

- Component 1 – Water Resources Department (WRD)
- Component 2 – Department of Agriculture (DOA), Animal and Fisheries Resources Department (AFRD)
- Component 3 – Bihar Rajya Pul Nirman Nigam Limited (BRPNNL), which will construct the bridges and Rural Works Department (RWD), which will construct rural roads
- Component 4 - the coordinating authority
- Component 5 - BAPEPS and all Implementing Agencies

7. Specific implementation arrangements for each component are as follows:

Component 1 – Improving Flood Risk Management

The Water Resources Department has set up a Project Implementation Unit (PIU) to be responsible for the design and implementation for this component. The PIU at the WRD will be a

dedicated cell to provide implement and coordination support to the Division / Field Units (DPIUs) the Kosi Embankment Divisions, FMISC, BAPEPS and the Bank. WRD will be supported by a Project Management Consultant to assist the Project Implementation Unit in project management of the sub-projects.

Component 2 –Enhancing Agricultural Productivity and Competitiveness

8. The Department of Agriculture will coordinate overall activities under Component 2 (Table 6). Specific to irrigation investments under subcomponent 2.a, the Department of Agriculture would also facilitate, through ATMAs and Service Providers, development of Business Plans as proposed and later implemented for FIGs and WUGs for intensification and diversification. Producer Organizations would similarly develop and implement subprojects under Business Plans for value-added activities under 2.b. Similarly, the Animal and Fisheries Resource Department and Horticulture would partner with Agriculture Department through the ATMAs on those investments proposed for livestock and horticulture (including dairy and vegetables, respectively). At the district level, as described above, the ATMAs would facilitate convergence among these three Departments covering crops, horticulture, livestock and fisheries production. The roles and responsibilities of the state-, district-, and block- level officials are described below, as are their respective institutions and associated project tasks. Specific to the dairy activities under Component 2, the project would converge with NDDB and its ongoing activities under the Bank-supported National Dairy Support Project, in which Bihar is already participating.

Table 6: Roles and Responsibilities in Component 2 Activities

Level	Official	Responsibilities
State	Secretary/ Principal Secretary, Head of Department of Agriculture	<ul style="list-style-type: none"> • Overall strategic guidance of the Component. • Coordination with BAPEPS. • Appoint officials at state-level PIU and district level IA. • Recruitment of technical consultants and technical assistants for project implementation.
State	Project Manager (Project Implementation Unit)	<ul style="list-style-type: none"> • Overall design and implementation of the Component. • Appointment and management of staff • Overall monitoring of Component implementation • Overall responsibility to coordinate all Component activities with the DPMU and support the department
District	District Project Manager (i.e., ATMA)	<ul style="list-style-type: none"> • Coordinate various line departments at the district level. • Develop district-level organizational structure for implementation. • Organize trainings and coordinate on-site demonstration activities. • Appointment and management of ATMA staff
		<ul style="list-style-type: none"> • Conduct baseline survey. • Introduce and promote suitable high-yielding varieties, improved seeds and cropping patterns and farm technologies and practices via subprojects that consist of demonstration activities with progressive farmers, training and technical assistance, exposure visits and Farmer Field Schools.

		<ul style="list-style-type: none"> • Liaise with KVK and SAU for training of farmers and extension officials. • With assistance from Service Providers, facilitate FIG formation and their federations at the Panchayat level into POs; strengthen FIGs and their linkages with financial and technical institutions and promote entrepreneurship development toward Business Plans and subprojects.
Block	Farmer Information Advisory Committee	<ul style="list-style-type: none"> • Provide linkage between ATMA and program activities at block level. • Coordinate with FIG, KVK, and members of the PACs so that interventions are implemented at block, panchayat, and village level according to farmers' needs.
Farmer Organizations	POs	<ul style="list-style-type: none"> • Develop and implement subprojects under Business Plans, with assistance from ATMAs, FIACs and Service Providers
SAU	Agriculture, Horticulture	<ul style="list-style-type: none"> • Technical support • On-farm research • Training to the extension workers.
KVKs	District-level presence	<ul style="list-style-type: none"> • Organize training programs and field visits for subcomponent activities
Service Providers	NGO, Consulting Firms, Technical Support Agencies, Advisors, Technical Experts, Academic Institutes	<ul style="list-style-type: none"> • Aid in FIG and PO formation • Assist FIGs and POs in Business Plan formulation • Assist FIGs and POs during subproject implementation

Component 3: Augmenting Connectivity

9. The investments for this component will be concentrated in 5 districts in the Kosi River Basin. These investments will be in addition to the normal work load of BRPNNL and RWD in those districts. It has been agreed that the implementation capacity of BRPNNL and RWD in the districts will be strengthened by deputing additional staff in the districts as required. BRPNNL and RWD will require dedicated staff at their respective PIUs at Patna for coordination, quality assurance and monitoring of the project activities as well as for coordination with BAPEPS. Each of the Departments will nominate a Nodal Officer for the subject project activities.

B. Financial Management, Disbursements and Procurement

Financial Management

10. The project has an adequate system of accounting and reporting for project expenditures in line with OP/BP 10.00.

11. **Budgeting:** The funds requirement for the project activities (Bank share and counterpart funding) will be budgeted under the Planning and Development Department for all components as Grant in Aid. This will facilitate transfer of funds to BAPEPS as grants, which shall not lapse at the end of the budget year. Each sub-IA will submit their Annual Work Plans (AWP) and projected funds requirement to BAPEPS who will review & consolidate them and after approval

from its General Body, will submit it to the Finance Department, through the Administrative Department, for budget provision in the state budget. The project has requested for a budget provision for FY 2015-16, which will be made in the 1st supplementary budget in July 2015.

12. **Flow of Funds:** Gob has been providing timely funds to the project. The project currently has approx. US\$ 60 million in its bank account. BAPEPS, through the Planning & Development Department, will draw funds from the state treasury, based on (i) project's fund requirement, in line with the approved annual plans and (ii) actual utilization of funds drawn earlier. Such funds will be deposited in separate dedicated project bank account at the state level. In order to have an efficient balance between (i) providing operational control to various implementing agencies to make payments to contractors, suppliers and beneficiaries and (ii) manage risk of idle funds, monitor non-reporting or inaccurate reporting of expenditures and address risk of cash withdrawals or co-mingling project funds with other funds, the concept of 'zero balance parent-child bank account' arrangement, which was introduced during implementation of BKFRP will be extended to the new implementing agencies and their sub-agencies. Accordingly project specific dedicated 'child accounts' will be opened by each subordinate office with one of the two banks with whom BAPEPS already has such a banking relationship. Based on the annual plan/ projected fund requirement for a quarter, a limit will be allocated for each unit, within which payments may be made by such units and honored by the banks. Such limits will be dynamic in nature and can be increased / decreased by BAPEPS. All payments to suppliers, contractors, community organizations and individual beneficiaries will be made electronically and not by cheques. Cash withdrawals will be limited for funding petty cash imprest for small office expenditures. This arrangement will provide 'view rights' of bank accounts of all subordinate units BAPEPS which will enable it to manage its funds better, have an oversight to detect any large cash withdrawals and validate reported expenditures with bank balances.

13. **Internal Controls:** as there are multiple implementing agencies, with varying set of activities, ranging from civil works to decentralized community based activities and benefits flowing to individual farmers, the internal control framework will be specific to agency/ activities:

- a) **Activities under component 1 and 3 which are largely civil works:** The implementing & sub-implementing agencies under WRD, BRPNNL and RWD, will be responsible for procurement, contracting, contract management, quality assurance and payments to contractors. The internal controls on certification of work done (measurement book), contractual deductions of advances & documentation requirements will be guided by the PWD code and payments to contractor's will be based on certified running bills. Sub implementing agencies will be responsible for statutory deductions such as TDS, sales tax, etc, for deposit of such deductions with the government authorities and issue necessary certificates to the contractors and for maintaining contract registers, guarantee registers and other essential records.
- b) **Activities under Component 2: (Enhancing Agriculture Productivity & Competitiveness):** the operations manual (a draft of which have been developed) provides for (i) selection criteria for various community groups (WSG, FIG, both of which will be at the village level, the Producer Organizations (which will be a federation of FIG's at the block

and district level and be legally registered entities); (ii) draft of MOU's with PO's /undertaking from individual beneficiaries, cost sharing, triggers for funds release and convergence arrangements. The operational manual provides the internal control framework for such activities. At the FIG/WSG level, while the farmer's will come together for common activities such as exposure visits, farmer's field days etc., inputs for demonstration plots, nurseries and irrigation pumps will be provided to individual farmers in the initial phase of the project and then gradually more to group based funding. This is in line with practices currently adopted in the states wherein inputs (kits/ boring/ STW etc.) are selected & purchased by the farmers in rural agriculture fairs from suppliers who establish kiosks. In this project in the absence of rural agricultural fair, the farmer can purchase the inputs from the licensed shops in the nearby market. Farmers make payments and seek reimbursement from the department. In line with existing practice, such reimbursements from the project will also be provided by way of a back- end subsidy, which will be paid by the district unit directly into beneficiaries bank accounts, based on certified list received from the block level. A key control will be regular up-date of beneficiary details in the existing MIS used by the department. Activities related to the producer organization (PO's) will be funded by way of sub-project financing, wherein sub-project (business plans prepared by PO's with the help of support organizations) will be technically & financially appraised and sub-project grants will be financed in tranches based on MOU's. The PO's will follow community procurement procedures for procurement of works, good and meet their operating costs and report back expenditures periodically and for drawdown of further advances. Activities relating to training, exposure visits, farmer field days will be managed by the block unit, which will receive monthly allocations from the districts and submit all bills and other supporting documents to the district unit for accounting & reporting purposes. Service providers/ Support organizations will be contracted for formation, building capacity/hand-holding of community groups, including their capacity on book keeping & governance etc. Contracting and payments to such service and support organization which will be done at the SPIU.

14. **Accounting & Financial Reporting:** there will be multiple accounting centers under the project which will follow a cash basis of accounting on a double entry system. The existing FM manual for the BKFRP is being updated to reflect the new activities under component 2, revised chart of accounts and the revised format for internal and external financial reporting. BAPEPS uses an off the shelf accounting software (TALLY). This is updated for actual expenditures incurred at BAPEPS and for monthly expenditures reported by implementing agencies. For component 2, which will have a large number of sub-implementing units at the block level, the SPIU and 5 DPIU are designated as accounting centers and an off the shelf accounting software will be installed in the SPIU and DPIU's. The Block level units (approx. 57) will submit their monthly manual accounts (with supporting documents) to DPIU for update of the system and enable consolidation at the state level. Grants to PO's against approved sub-projects will be treated as grant advance and reflected as expenditure (grant utilization) on submission of periodic expenditure reports from the PO's. The accounting & reporting arrangements will be as under:

Table 7: Accounting and Reporting Arrangements

Implementing Agency	No of Accounting centers	Manual/ Off the Shelf IT based Accounting system	Frequency of Reporting
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WRD	1 PIU and 6DPIU's	Manual**	All PIU's and DPIU's will submit monthly financial reports directly to BAPEPS, which will consolidate the same and report to the Bank on a quarterly basis.
BRPNNL	1 PIU	TALLY	
RWD	1 PIU and 6 DPIU's	Manual**	
Agri SPIU*	1 PIU and 5 DPIU's	TALLY ***	
COMFED	1 Federation & 1 Milk Union	TALLY	
BAPEPS	1	TALLY	

* blocks will operate on an imprest and submit monthly bills/ vouchers to the DPIU's

** since WRD/RWD PIU's and DPIU's operate through the office of executive engineer's only manual accounts are in use and working satisfactorily under BKFRP.

*** TALLY to be installed.

15. **Finance staffing, FM Support Consultants and internal audit:** A senior officer, on deputation from the government serves as the head of the finance function at BAPEPS. He is currently supported by a team of accounts staff and supported by FM Support Consultants on terms of reference agreed with the Bank. BKBDP will continue with the practice of engaging the services of a Financial Management Support Consultants (FMSC) to support them in finance and accounts matters. New positions of accountants at the state, district and block level under the Agriculture component have been proposed which will be recruited along with other technical specialists through a service agency. In addition there are a few vacancies in BAPEPS and WRD which need to be filled in. Given the large number of implementing agencies and involvement of community based organizations BAPEPS will also contract the services of an internal auditor who will also carry a sample review of FIG's and PO's including sample physical verification of assets, in addition to review of block & district implementing agencies.

16. **Financial Reporting & Disbursement:** Financial reporting will be through quarterly Interim Unaudited Financial Reports (IUFR) and annual Project Financial Statements (PFS) prepared by BAPEPS. The IUFR will provide component/sub component wise expenditure for the quarter, year - and cumulative - to date along with contract-wise expenditure which will also serve as the basis for disbursement. In line with GoI's decision of not taking advances, the project expenditures will be pre-financed by GoB and reimbursement sought on a quarterly basis.

17. **Audit Arrangements:** An external audit of BAPEPS, including the PFS, will be done by an independent firm of Chartered Accountants agreed with the Bank on an agreed ToR and included in the Financial Management Manual. The annual audit report will be submitted within nine months of the close of the financial year and in line with the disclosure policy will be made available in the public domain. The following audit reports will be monitored in PRIMA:

Table 8: Audit Reports

Implementing Agency	Audit Report	Auditors	Date
BAPEPS	Audit Report on the PFS of the Project	Firm of Chartered Accountants agreed with the Bank	31 st December each year

18. **Retroactive Financing:** Retroactive expenditure will be eligible for financing subject to compliance with Bank's procurement procedures, where applicable. For Retroactive Financing, BAPEPS will submit a separate stand-alone audited IUFR certifying the actual expenditure incurred on the project.

Implementation Support Plan

19. The project will require an intensive implementation support, especially for the agriculture productivity & competitiveness component in the initial years for ensuring implementation of the procedures documented in operational manual & FM Manual and reviewing its continuing adequacy. This will comprise, at a minimum, semi-annual implementation support missions. The audited PFS and IUFs will be reviewed and discussed with BAPEPS for mitigation of any issues raised by the auditors. At mid-term, a comprehensive review of FM performance would be conducted and mid-term corrections made, wherever necessary.

Procurement

20. Procurement for the proposed project would be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated January 2011 and revised in July 2014 and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated January 2011 and revised in July 2014, and the provisions stipulated in the Project Agreement. The Bank's Standard Bidding Documents, Requests for Proposals, and Forms of Consultant Contract will be used. Majority of the procurements will be carried out by the respective implementing agencies but with approvals from BAPEPS.

21. For each contract to be financed by the Loan and Credit, procurement methods or consultant selection methods, the need for prequalification, estimated costs, prior review requirements, and time frame are agreed between the Borrower and the Bank project team in the Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

22. *Procurement of Works:* Works procured under this project would include embankment strengthening and other flood control works by WRD, bridges and culverts by BRPNNL, rural roads by RWD, and agricultural competitiveness by DoA and AFRD. These works will be mostly procured following NCB and may involve shopping in some cases. The procurement of civil works is not likely to involve any ICB. The Standard Bidding documents of the Bank as agreed with GoI task force (and as amended from time to time) for all procurement under NCB will be used. If there are any ICB/ LIB contracts, then the Bank's latest Standard Bidding Documents (SBDs) will be used.

23. *Procurement of Goods:* Goods procured under this project would include dredger Hydrological equipment, office and IT equipment and specialized software like Arc GIS, ERDAS Imagine software, etc., by WRD and BAPEPS. While software being proprietary in nature will be procured by direct contracting, other goods will be procured by ICB, NCB, Shopping and or using DGS&D rate contract within shopping threshold. The Standard Bidding documents of the Bank as agreed with GoI task force (and as amended from time to time) for all procurement under NCB will be used. For ICB/ LIB contracts, the Bank's latest Standard Bidding Documents (SBDs) will be used.

24. *Selection of Consultants:* The consultants required for the project will be hired by BAPEPS and WRD, RWD, DoA and AFRD. Some of the consultants that may be hired are

Procurement and FM Consultant; External Auditor; Third Party Quality Consultant, External M&E Consultant; and Development of MIS. Short lists of consultants for services estimated to cost less than US\$800,000 or equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines. The Bank's Standard Request for Proposal Document will be used as a base for all procurement of consultancy services to be procured under the Project.

25. *Training:* Training will cover study tours, workshops, training for staff, etc. These shall be carried out in accordance with staff development plans prepared by BAPEPS and agreed with the Bank.

Assessment of the agencies' capacity to implement procurement

26. The nodal agency for implementing the project is BAPEPS, which has been implementing BKFRP since inception. The primary responsibility for procurement of works for strengthening flood risk management capacity and strengthening of embankments will be WRD, for construction of bridges, culverts and approaches will be of BRPNL, for construction of rural roads will be of RWD, and for agriculture productivity improvements, the Department of Agriculture, AFRD and the ATMAs.

27. The Bank team carried out rapid procurement capacity assessment of implementing agencies, including WRD, AFRD, BRPNL, RWD, and DoA and the ATMAs. Some of the deviations in comparison with Bank's Procurement Guidelines noticed in procurement procedure followed by these agencies are: (i) two envelope system: (ii) percentage contracts instead of item rate contracts, (iii) Maximum Liquidity Damages is 5 percent instead of 10 percent, (iv) provision to supply material instead of single responsibility basis; and (v) lack of provision for advance payment. The WRD, BRPNL, and RWD have previous experience in implementing projects following Bank Procurement Guidelines.

28. The BRPNL and RWD, have been implementing the BKFRP and have contracted a number of packages of work. However, the procurement capacity remains limited to procure following Bank Procurement Guidelines, despite the recent experience and inherent technical competency within these agencies. Therefore, the Bank has agreed on a procurement mechanism wherein the IAs will prepare the bidding documents and technical specifications; invite and receive bids on behalf of BAPEPS; prepare bid evaluation reports; sign the contracts and execute, supervise and monitor the works. BAPEPS will approve bidding documents before invitation and award recommendations before contract award. The project has prepared a robust procurement manual, which will guide the IAs during implementation.

29. The WRD has implemented FMIS – Phase I with the Bank funded grant and FMIS – Phase II has recently commenced. Under the Phase I (2006-08), the FMISC Cell was established and selected staff have been given training in World Bank procurement guidelines. In the current investment, using this expertise, the WRD would be responsible for procurement of goods, works and consulting services.

30. BAPEPS will be assisted by a consultants with procurement and FM specialists. The Project Director (PD) will be assisted by a Procurement Manager and Finance Manager in managing the procurement approvals. The PD will have full powers to approve all procurement decisions once procurement plan is cleared by the Empowered Committee (EC).

31. Wherever required, the goods will be pre-inspected by an inspection agency hired by the project. There will be third party Quality Audit consultants to assist BAPEPS in effective quality management of all civil works during implementation.

Procurement Risks and Mitigation Measures

32. *Procurement Risk Mitigation:* The main procurement risks that can be perceived at this stage, based on the general public financial management in the country and in the state and the assessment carried out, are that (i) procurement of goods, works and consulting services at state and district levels has normal fiduciary risks of transparency and fairness, (ii) low capacity in developing right specifications for major equipment/goods, identifying right market, inability to influence the market in receiving appropriate pricing and delivery commitments, and (iii) inadequate record keeping; Further, the implementing agencies such as MWRD, BRPNNL and RWD, and Agriculture PCU in the project have very limited experience or capacity in implementing Bank financed project/procurement.

33. The above and the other applicable deficiencies have been addressed by the following risk mitigation measures:

Table 9: Procurement Risk Mitigation Measures

Risk Factor	Initial Risk	Mitigation Measure	Residual Risk
Incomplete record keeping and documentation	Substantial	1. BAPEPS and implementing agencies will be trained in the beginning of the project. 2. Monitoring during post review by Bank team 3. BAPEPS to keep records in addition to implementing agencies	Moderate
Inadequate experience with Bank proc. procedures	Substantial	4. Use of the Procurement Support Consultants at BAPEPS and developing robust procurement manual	Moderate
No uniform procurement procedures and SBDs across the implementing agencies	Substantial	5. Bank Procurement Guidelines, SBDs will be used by all the implementing agencies to have uniformity in procurement under the project 6. Preparation and use of Procurement Manual	Moderate
Inefficiencies and delays in procurement process	High	7. Technical support to implementing agencies 8. Time line to finalize the tenders/selections has been specified in the Procurement Manual 9. The Project Director, BAPEPS will have full powers 10. Use of the Procurement Support Consultants in BAPEPS	Substantial
Insufficient competition in	High	11. Publishing the GPN close to project launch in the regional and national newspapers.	Substantial

Risk Factor	Initial Risk	Mitigation Measure	Residual Risk
procurement		12. Development of website for BAPEPS 13. Publishing all SPNs in the project website in addition to a national newspaper 14. Publishing procurement Plan and specifications of equipment in the website early 15. Agreement to disclose all contract awards of NCB in the BAPEPS and Implementing Agencies websites 16. Publishing list of purchase orders/contracts placed every month in the BAPEPS and Implementing Agencies websites	
Contract management	High	17. Inward goods inspections will be undertaken 18. Hiring third party QA consultant for civil works 19. A quarterly report of all ongoing contracts: a detailed status report including contract management issues such as delays, payments, etc will be submitted to the Project Director, BAPEPS for review (also submitted to the Bank) by implementing agencies	Substantial
Probability of staff handling procurements being transferred	Substantial	20. Transfer of Procurement staff after they have undergone training is a possibility. The implementing agencies will endeavor that the trained procurement staff will normally not be transferred during the project's life 21. Support consultants from BAPEPS will provide continuous support	Moderate
Fraud and corruption risks in contracting process	Substantial	22. Disclosure of contract opportunities, contract award decisions, internal/external procurement and financial audits 23. Measures to improve competition such as broad technical specifications, realistic post qualification criteria, appropriate contract packaging 24. Training in detecting fraud and corruption indicators to implementing agencies staff by hiring a consultant with requisite skills by BAPEPS	Moderate
Overall Risk	High		Substantial

34. In view of limited capacity and decentralized nature, the overall project risk for procurement is 'High'. After mitigation measures the residual risk will be 'substantial'.

35. *Disclosure:* The following documents shall be disclosed in the BAPEPS and in implementing agencies websites (until the website is ready, in the notice boards): (i) procurement plan and updates, (ii) invitation for bids for goods and works for all ICB and NCB contracts, (iii) request for expression of interest for selection/hiring of consulting services, (iv) contract awards of goods and works procured following ICB/NCB procedures, (v) list of contracts/purchase orders placed by IAs and BAPEPS following shopping procedure on quarterly basis, (vi) short list of consultants, (vii) contract award of all consultancy services, (viii) list of contracts following Direct Contract or Consultant Qualifications Selection or Sole Source Selection on a quarterly basis, and (xi) action taken report on the complaints received on a half yearly basis.

36. The following details shall be sent to the Bank for publishing in the DgMarket and UNDB: (a) invitation for bids for procurement of goods and works using ICB procedures, (b) request for expression of interest for consulting services with estimated cost more than US\$300,000, (c) contract award details of all procurement of goods and works using ICB procedure, (d) contract award details of all consultancy services when the short list included any foreign firm and all single-source selection contracts awarded to foreign firms and (e) list of contracts/purchase orders placed following SSS or CQS or DC procedures on a quarterly basis.

37. Further BAPEPS and the implementing agencies will also publish in their websites, any information required under the provisions of suo-moto disclosure as specified by the Right to Information Act.

38. *Complaint Handling Mechanism:* On receipt of complaints, immediate action will be initiated to redress the grievances. All complaints will be dealt at levels higher than that of the level at which the procurement process was undertaken. Any complaint received will be forwarded to the Bank for information and the Bank will be kept informed after the complaint is redressed in accordance with the relevant Consultants Guidelines and Procurement Guidelines.

Agreed Procurement Arrangements

39. *Procurement Plan:* The Borrower, at appraisal, has finalized a procurement plan for the first 18 months of project implementation. This plan has been agreed between the Borrower and the Bank's project team and is available in the project files. It is also available in the BAPEPS and in implementing agencies websites, and in the Bank's external website.

40. *Procurement Manual:* BAPEPS has prepared a procurement manual to guide the implementing agencies at all the levels in handling the procurement conforming to the Bank Guidelines for Procurement. No amendment to the procurement manual shall be carried out without review and clearance from the Bank.

41. *Procurement Staff:* Most of the Procurement would be carried out at the IAs with the support of BAPEPS. The IAs will identify the procurement staff and BAPEPS will hire ASCI to conduct procurement training. This training will be repeated every year. BAPEPS will have procurement manager who could be civil servant or a consultant.

42. *Standard Bidding Documents:* The Standard Bidding documents of the Bank as agreed with GoI task force (and as amended from time to time) for all procurement under NCB will be used. For ICB/LIB contracts Bank's latest Standard Bidding Documents (SBDs) only will be used. The following conditions must be met in order for the bidding process under NCB to be acceptable to the Bank:

- only the model bidding documents for NCB agreed with the GOI Task Force (and as amended from time to time) shall be used for bidding;
- invitations to bid shall be advertised in at least one widely circulated national daily newspaper or on a widely used website or electronic portal with free national and international access along with an abridge version of the said advertisement being

published in a widely circulated national daily newspapers inter-alia giving the website/electronic portal details from which the details of the invitation to bid can be downloaded, at least 30 days prior to the deadline for the submission of bids;

- no special preference will be accorded to any bidder either for price or for other terms and conditions when competing with foreign bidders, state-owned enterprises, small-scale enterprises or enterprises from any given state;
- except with the prior concurrence of the Bank, there shall be no negotiation of price with the bidders, even with the lowest evaluated bidder;
- extension of bid validity shall not be allowed with respect to Contracts subject to Bank Prior review, without the prior concurrence of the Bank (i) for the first request for extension if it is longer than four weeks; and (ii) for all subsequent requests for extension irrespective of the period (such concurrence will be considered by the Bank only in cases of *Force Majeure* and circumstance beyond the control of the Purchaser/Employer;
- re-bidding shall not be carried out with respect to contracts subject to Bank Prior Review, without the prior concurrence of the Bank. The system of rejecting bids outside a pre-determined margin or “bracket” of prices shall not be used in the project;
- Framework agreement using DGS&D rate contracts can be used to procure goods up to NCB threshold contracts will need to comply with the following :
 - Use of DGS&D rate contracts as Framework Agreement must be reflected in the procurement plan agreed by the Bank for particular goods.
 - Before issuing the purchasing order, the Task Team will have to advise the government on carrying out a price analysis on the specific good that is intended to be purchased. If after this due diligence the GoB concludes and Bank agrees that the DGS&D rate contract is not suitable, then the GoB will have to proceed using NCB or shopping depending on the value.
 - To meet the Bank's requirements for right to audit and F&C, these clauses may be included in the Purchase Orders, in case the purchasers are directly placing the purchase orders to DGS&D rate contract holders. On the other hand, if indent is placed through DGS&D, the Purchaser has the option to sign a separate undertaking with DGS&D rate contract holder, where Bank’s right to audit and F&C clauses could be mentioned; and
 - two or three envelop system shall not be used

43. *Methods of procurement:* The following methods of procurement shall be used for procurement under the project. It has been agreed that if a particular invitation for bid comprises of several packages, lots or slices, and invited in the same invitation for bid, then the aggregate value of the whole package determines the applicable threshold amount for procurement and also for the review by the Bank.

Procurement Methods

Table 10: Procurement Methods and Threshold

Category	Method of Procurement	Threshold (US\$ Equivalent)
Goods and Non-consultant services	ICB	>3,000,000
	LIB	Wherever agreed by the Bank
	NCB	Up to 3,000,000 (with NCB conditions

Category	Method of Procurement	Threshold (US\$ Equivalent)
	Shopping	Up to 50,000
	DC	As per Para 3.7 of the Bank Guidelines, wherever agreed and with prior agreement with the Bank
	Force Account	As per Para 3.9 of Guidelines
	Framework Agreements	As per Para 3.6 of Guidelines
Works and Supply and Installation	ICB	>40,000,000
	NCB	Up to 40,000,000 (with NCB conditions)
	Shopping	Up to 50,000 carried out through a qualified local contractor selected through shopping (after inviting a minimum of three quotations in response to a written invitation with a minimum of 15 days notice period)
	Force Account	As per Para 3.9 of Guidelines
	DC	As per Para 3.7 of Guidelines,
Consultants' Services	CQS/LCS	Up to 300,000 per contract
	SSS	As per Para 3.9-3.11 of Guidelines
	Individuals	As per Section V of Guidelines
	Use of NGO	As per Para 3.16 of Guidelines
	QCBS/QBS/FBS (i) International shortlist (ii) Shortlist may comprise national consultants only	For all other cases > 800,000 Up to 800,000

44. Prior Review by the Bank. The Bank will prior review the following contracts:

- Works: All contracts more than US\$ 10.0 million equivalent;
- Goods: All contracts more than US\$ 1.0 million equivalent;
- Non-Consulting Services: All contracts more than US\$ 1.0 million equivalent;
- Consultancy Services: All contracts more than US\$ 500,000 equivalent for firm; and
- Consultancy Services: All contracts more US\$ 200,000 equivalent for individuals.

45. First contract issued by each implementing agency will be prior reviewed by the Bank irrespective of value. In addition, the justifications for all contracts to be issued on LIB, single-source (>US\$ 50,000) or direct contracting (>US\$ 50,000) basis will be subject to prior review. These thresholds are for the initial 18 months period and are based on the procurement performance of the project, these thresholds will be modified. In addition, the Bank will carry out an annual ex post procurement review of the procurement falling below the prior review threshold mentioned above.

46. *Post Review by the Bank:* All contracts not covered under prior review will be subject to post review during supervision missions, and/or review by consultants to be appointed by the Bank.

E-procurement and use of SEPA:

47. *Currently* many undertakings of the government of Bihar following e-procurement system for State and centrally funded projects through portal system. The NIC portal system has been reviewed by the Bank and has been cleared to be used for Bank financed project. Therefore, e-procurement shall be adopted for this project. Further, use of procurement plan monitoring tool SEPA has also been discussed and agreed to be used for this project.

48. *Procurement Review by BAPEPS:* Independent review or audit will be undertaken for the project for BAPEPS's own internal due diligence, and as agreed in the implementation arrangements for the project.

1. BAPEPS will review procurement documents for procurement of works and goods by IAs for all post review cases. For prior review cases, BAPEPS will carry out initial review and then forward it to the Bank for no-objection.
2. *External audit:* The external auditor appointed by BAPEPS will conduct the audit of all implementing agencies and BAPEPS including procurement review/audit. In case there is any procurement related observation made by the external auditor in their audit report, the same shall be shared with Bank along with the comments of BAPEPS.

Frequency of procurement supervision

49. Given the large number of contracts, geographical spread and the general risks involved, a minimum of two implementation support missions a year is planned. In addition, the Bank will also carry out an annual ex-post review of procurement that falls below the prior review threshold. Bank will also carry out small thematic and focused Mission depending on the need and as required with agreement from the Project.

C. Environmental and Social (including safeguards)

Environment Safeguards and Management

50. The Project proposes to support multiple components such as construction/repair of embankments, flood control infrastructure, small-scale irrigation (i.e., shallow tube wells) for agricultural intensification, roads and bridges; strengthening of overall flood forecasting and flood/sediment management capacity. This will be accomplished through both structural and non-structural measures.

51. During the design and preparation of specific project sub-components related to reconstruction of roads, bridges, and structural interventions for improved flood risk management, alternatives to minimize adverse impacts will be explored. These could include minimum adjustments in the existing alignments, and/or use of alternative materials to enhance the sustainability of infrastructure created. Use of higher efficiency motors (where needed) will generate positive environment impacts, including possible carbon credits for the project.

52. The implementation of project components will include several construction activities, which have a potential to create adverse environment impacts, particularly if such activities are not properly managed. Although the general thrust and broad project interventions are, the specific details pertaining to planning and design of multiple sub-projects that the project envisages to support, will be known only later. In view of this an Environment and Social Management Framework (ESMF) approach has been developed for the project.

53. *Key Environmental Parameters considered in ESMF:* Some of the key environmental parameters/aspects considered in the preparation of the ESMF include – presence of sensitive natural habitats and ecological features (such as wetlands and forests); trees and vegetation; water resources and their use by people; water logging, flooding and drainage issues; soil resources including erosion and siltation; physiographic conditions; material sources and their requirement (bamboo, earth, sand, stone, water) for construction and; management and disposal of spoils and wastes.

54. *Environmental Issues/Impacts:* The project's potential adverse environmental impacts on human population and the project area will be largely minor, site-specific and reversible. As the investments are focused on the rehabilitation of existing infrastructure, potential large-scale, significant and/or irreversible impacts are not anticipated due to the project activities. However, the implementation of project components will include substantial amount of rehabilitation work, which has a potential to create some local level adverse environment impacts in the process. Such key adverse environmental impacts that may arise due to the proposed project have been listed, component-wise, below:

- i. *Improving flood risk management:* (a) impact on natural drainage pattern due to inadequate cross drainage works; (b) increase in local level water logging conditions due to substantial increase in embankment height or improper location of culverts; (c) possible diversion of small amount of forest land and/or plantation belt area or some tree felling for accommodating minor changes in alignment (primarily for improving the road geometry); (d) impact on physical environment (air, water, soil, noise) due to construction activities and setting-up of temporary camps and plant sites; (e) impacts associated with extraction and transportation of materials such as earth, sand, water and stones; (f) occupational health and safety issues related to various construction operations; (g) generation and improper disposal of construction debris and other wastes; and (h) disposal of silt and sand collected through dredging activities.
- ii. *Enhancing Agricultural Productivity and Competitiveness:* (a) Impact on natural drainage pattern due to inadequate cross drainage works; (b) increase in local-level water logging conditions due to substantial increase in embankment height or improper location of culverts; (c) possible diversion of small amount of forest land and/or plantation belt area or some tree felling for accommodating minor changes in alignment (primarily for improving the road geometry); (d) impact on physical environment (air, water, soil, noise) due to construction activities and setting-up of temporary camps and plant sites; (e) impacts associated with extraction and transportation of materials such as earth, sand, water and stones; (f) occupational health and safety issues related to various construction operations; (g) generation and improper disposal of construction debris and other wastes; (h) impact on surface

- water and groundwater resource; (i) Impact on natural drainage pattern due to inadequate cross drainage works; (j) impact on agricultural yields due to construction activities in other components; (k) soil erosion, depending on lithology, topography, soil type, and climatic condition; (l) compaction and contamination of soil; (m) depletion of groundwater and drinking water sources.
- iii. *Augmenting Connectivity*: (a) Impact on natural drainage pattern due to inadequate cross drainage works; (b) increase in local level water logging conditions due to substantial increase in embankment height or improper location of culverts; (c) possible diversion of small amount of forest land and/or plantation belt area or some tree felling for accommodating minor changes in alignment (primarily for improving the road geometry); (d) impact on physical environment (air, water, soil, noise) due to construction activities and setting-up of temporary camps and plant sites; (e) impacts associated with extraction and transportation of materials such as earth, sand, water and stones; (f) occupational health and safety issues related to various construction operations; and (g) generation and improper disposal of construction debris and other wastes.

55. If the rehabilitation and construction efforts are planned and managed well in line with the approach provided in the Environment and Social Management Framework, most of the environmental impacts are likely to be short-term or temporary in nature.

56. *Environmental Management Approach and Process*: An Environment and Social Management Framework (ESMF) has been prepared to address the issues likely to arise on account of project implementation. The ESMF supports the integration of environmental aspects within the decision making process of various sub-projects, as they will be identified, prepared and implemented. The systematic application and implementation of the ESMF will also assist in achieving compliance with the applicable laws and regulations of GoI and the GoB apart from meeting the requirements of the relevant Bank's Operational Policies on environment safeguards. The over-all environment management approach for the project under the ESMF includes the following key steps:

57. Environment screening, which helps in early identification of key environmental issues at the sub-project level. The screening process forms the first step in the environment management process for the project and will be carried out in parallel with the project identification/engineering studies for the proposed sub-projects. To the extent possible, proposed investments will be screened early-on during the DPR preparation process and sub-projects with no significant adverse environmental impact will be identified for execution.

58. For sub-projects with the potential for significant adverse environment impacts (as it emerges from the screening results), an Environment Assessment (EA) and sub-project specific Environment Management Plan (EMP) will be prepared in accordance with Bank's OP 4.01. The EA will include an assessment of baseline conditions, analysis of alternative options, assessment of potential impacts, identification of mitigation measures and preparation of sub-project specific environmental management plans. However, it is expected that sub-projects with the potential for significant adverse environment impacts will be few in number. These are expected to be

primarily limited to embankment works only. Such works would be taken-up after the due diligence requirements are met with.

59. Based on screening results, if a sub-project does not require an EA, the generic/standard activity-specific EMP, developed as part of the ESMF, will apply. These generic/standard activity-specific EMP provides an overall guidance on avoidance, minimization and mitigation measures to be adopted during the planning, design and implementation stages of the concerned sub-project.

60. The ESMF serves as a guide covering policies, procedures and provisions to ensure that the environmental aspects are given due consideration in the project and issues are systematically identified and addressed early-on in the project cycle. It attempts to respond to the needs of the reconstruction and the opportunity provided by it, and seeks to:

- Support the integration of environmental aspects into the decision making process related to planning, design and execution of sub-projects, by identifying, avoiding and/or minimizing adverse environmental impacts.
- Enhance positive environmental outcomes through improved/sensitive planning/selection and design of sub-projects.
- Minimize environmental degradation as a result of either individual sub-projects or through their indirect and cumulative effects.
- Protect human health.
- Minimize impacts on common property resources such as drinking and other water sources used by the people.

61. The ESMF will be an 'up-to-date' or a 'live document' enabling revision, as and when necessary, particularly to address issues resulting from changes in the component design or to meet challenges posed by unanticipated situations that may be identified during later stages of the project cycle. However, under normal circumstances, the ESMF will be reviewed once in a year and during the mid-term review cycle of the project to assess the need for any revision.

62. The ESMF provides for a public consultation process to be designed in a way that: (i) affected people are included in the decision making process of a sub-project; (ii) links between communities and their natural resource base adjacent to project location are not disturbed; (iii) public awareness and information sharing on project alternatives and benefits are promoted; and (iv) views on designs and local level solution/s from the communities are solicited. Public involvement process will continue through the project implementation stage as well.

63. *Statutory Clearances:* A summary of the key statutory clearances that may be required for the project is provided in Table 11 below.

Table 11: Key Statutory Clearances
(Requirement will depend on the area, type and extent of the sub-project)

No.	Clearance Required	Statute under which clearance is required	Statutory Authority
<i>Clearances Required to be taken by BAPEPS/State's Line Departments</i>			
1	Environment Clearance/NOC for the sub-project*	EIA Notification, 2006 (including amendments) issued under Environment Protection Act, 1986	State Pollution Control Board; MoEF, Govt. of India
2	Forest clearance	Forest Conservation Act, 1980	State Forest Department and/or MoEF, Govt. of India
3	Tree Cutting Permission	Forest Conservation Act, 1980	State Forest Department and/or MoEF, Govt. of India
<i>Clearances Required to be taken by the Contractor</i>			
1	Hot mix plants, WMM plants, Crushers and Batch Mix Plants	Air (Prevention and Control of Pollution) Act, 1981 and Noise Pollution (Regulation and Control) Rules, 2000	State Pollution Control Board
2	Storage, handling and transport of hazardous materials	Hazardous Waste (Management and Handling) Rules, 1989 and Manufacturing, Storage and Import of Hazardous Chemicals Rules, 1989	State Pollution Control Board
3	Location/ layout of workers camp, equipment and storage yards	Environment Protection Act, 1986 and Manufacturing, Storage and Import of Hazardous Chemicals Rules, 1989	State Pollution Control Board
4	Discharges from Labor Camp	Water (Prevention and Control of Pollution) Act, 1974	State Pollution Control Board
5	Permission for sand mining from river bed	Environment Protection Act, 1986	Water Resources Department, GoB

* Environmental Clearance may be required for some sub-projects such as for embankment work (subject to their location and proposed magnitude of work).

64. **Common Property Resources (CPRs):** Impacted common property resources (such as water sources and religious properties) will be either relocated in as good or better condition. Local communities/stakeholders will be consulted and involved in this process. The type and scale of impact on CPRs will be ascertained as part of the DPR preparation process. As far as possible, attempts will be made to minimize the impact through modification in design/alignment such that the existing CPRs are not disturbed and safety requirements are not compromised with. However, the impact on CPRs due to project interventions is likely to be minimal.

65. **ESMF Implementation and Monitoring:** For effective implementation, the relevant ESMF provisions will be appropriately integrated and cross-referenced in the project design documents, contract conditions and Bills of Quantities, as appropriate. The over-all supervision and reporting

requirements have been outlined in the ESMF. The IA shall award the civil works contract only after the required regulatory clearances/permissions have been obtained from the concerned ministry/department.

66. Report on ESMF implementation (as part of the over-all project's over-all quarterly/monthly reporting system) will be prepared by BAPEPS's Environment and Social Manager covering all project component/investment categories. A comprehensive monitoring and evaluation report will be prepared by the PMU at mid-term and end-term.

67. The key responsibilities of the Environment and Social Managers include: (a) updating of the ESMF document; (b) orientation and training of the PMU staff (both at headquarters and in the field offices) and IA teams on aspects covered under the ESMF; (c) leading/providing oversight on the EA/SA process and its output/s, including preparation of EMPs;(d) review of monitoring reports submitted by the implementing agencies on ESMF/EMP implementation; (d) conducting regular visits to project sites to review ESMF compliance during sub-project planning, design and execution; (e) providing guidance and inputs to the PMU and IA teams on environment and social management aspects. These specialists will also deal with matters pertaining to integration of ESMF into the sub-project design and contract documents; preparation of ToRs for studies (such as for EA/SA); reporting, documentation, monitoring and evaluation on environment and social aspects and will ensure over-all co-ordination with the Implementing Agencies and field offices of BAPEPS. The representative offices of BAPEPS at the district and block level will support the Environment and Social Manager in carrying-out the responsibilities listed above.

68. The Bank's monitoring strategy with regard to application and implementation of ESMF will include: (a) review of various outputs such as DPRs (including documentation of the stakeholder consultation process), Bidding Documents and EAs/EMPs (as required in sub-project in context) and; (b) review of status/quarterly reports and ToRs for various studies/activities and; (c) regular participation in supervision missions (once in six months and interim missions, if and as required).

69. *Institutional Arrangements for Environmental Management:* Staffing arrangements for environment management in the project are given below:

- BAPEPS shall implement the project components through the concerned line departments. Within BAPEPS, Environment and Social Specialists will be deployed to handle all matters pertaining to environmental management in the project. The key responsibilities of the Environment and Social Specialists will include: (a) updating of the ESMF document (as required); (b) orientation and training of BAPEPS's staff (both at headquarters and in the field offices) and IA teams on aspects covered under the ESMF; (c) review of EA, EMPs and monitoring reports submitted by the implementing agencies on ESMF implementation; (d) regular/monthly visits to project sites to review ESMF compliance during sub-project execution; (e) providing guidance and inputs to the PMU and IAs on environment and social management aspects. This specialist will also deal with matters pertaining to integration of ESMF into the sub-project design and contract documents; preparation of ToRs for studies

(such as for EA); reporting, documentation, monitoring and evaluation on aspects covered under ESMF and will ensure over-all co-ordination with the Implementing Agencies and field offices of BAPEPS. The representative offices of BAPEPS at the district and block level will support the Environment and Social Specialist in carrying-out the responsibilities listed above.

- Within the Implementing Agencies for each project component, a Senior Officer of the Department will be designated as the Nodal Officer will be designated, whose main responsibilities will include co-ordination with BAPEPS/other state agencies, as required to obtain regulatory clearances and ensure that regular supervision and monitoring of environmental aspects pertaining to the pre-construction and construction stages is carried out by the line department's field staff during the pre-construction and construction stages of the concerned sub-project.
- During implementation, the Third Party Quality Auditor (TPQA), who will provide independent assurance on technical quality issues, will review the implementation of the works in accordance environmental, health and safety management provisions set-out in the respective contracts. The contractor will be responsible for planning, executing and coordinating the implementation of the ESMF provisions as laid out in the contract documents; overseen by the line department staff.

70. *Training Support for ESMF Implementation:* A training plan will be prepared incorporating the project specific needs of BAPEPS, Line Departments and other associated entities/ contractors. An outline of this plan has been provided in the ESMF. The capacity building plan will also provide for induction modules to take care of staff turn-over issues during the course of the project.

71. *Disclosure of ESMF:* The draft ESMF was first disclosed locally on June 29, 2012 and at the Bank Infoshop on August 21, 2012. The revised draft after updating changes in the project activities was re-disclosed on February 4, 2015 both locally and at the Bank's InfoShop. Subsequently, the final ESMF (April 2015 version) has been disclosed locally at the BAPEPS web site and also in Infoshop on April 30, 2015. The final version of the ESMF has been made available to the designated Nodal Officers in the line departments at headquarters and will also be available in the field/district level offices of BAPEPS and line departments. The executive summary of the ESMF has also been translated in Hindi and disclosed locally.

72. Subsequent ESAs and other safeguard documents (as necessary in the sub-project's context and the ESMF) that would be prepared for proposed investments will also be disclosed on the Bank's Infoshop (Category A investments), locally at BAPEPS and implementing agencies government websites and other public places accessible to the local people and NGOs in English and in local language (Hindi) during the project cycle.

Social Safeguards and Management

73. While the project on the whole is designed to both benefit communities exposed to flood risk, as well as enhancing income from agriculture through rehabilitation of irrigation systems and investments in infrastructure and allied agriculture activities, the implementation of proposed components of the Project may result in adverse impacts on people and land, if not mitigated.

Bihar, with its large population size and high dependence on land for economic pursuits, has significant constraints in land availability for development works. Small land holdings and high density of population are other important features of Bihar. The 5 districts of the project area are amongst the poorest districts in India, with about 90 per cent of population dependent on agriculture. The proportion of people belonging to Scheduled Tribes is very small, but the proportion of Scheduled Castes is high, especially in the districts of Madhepura and Saharsa.

74. An assessment of project components indicates that the implementation of the sub-projects may not result in any significant adverse social impacts. Among the project components, it is only in case of *Component 1 – Improving Flood Risk Management*. Partial loss of land, structures, loss of standing crops and trees are possible impacts that may arise due to implementation of some sub-projects.

75. *Principles for Addressing Social Issues:* Subproject proposals that would require acquisition of productive lands and demolition of structures will be carefully reviewed to minimize or avoid their impacts through avoidance or minimization process. The principal objectives of resettlement are as follows:

- a) it will be avoided or minimized by exploring all possible options that have least impacts in terms of land acquisition and resettlement;
- b) in unavoidable circumstances, the affected persons irrespective of their legal status will be assisted in their efforts to improve their livelihoods and standards of living or at least restore them in real terms to the pre-affected levels; and,
- c) the compensation and assistance to the project affected people are based on the principle that people shall not suffer net losses as a result of the project.

76. *Land Acquisition and Payment of Compensation:* From review of preliminary design documents of roads and bridges and discussions with the concerned officials, it is assessed at few locations land may need to be acquired for approach roads, bridges and possibly for embankments. As first option, all attempts will be made to use vacant government lands.

77. Land acquisition can take place either through (a) voluntary donations or (b) by using the land acquisition process. Based on the resettlement support principles/entitlement matrix included in the ESMF, the individual entitlements will be proposed and included in the Resettlement Action Plan.

Support Principles/Entitlements

78. The project implementation agencies will ensure timely provision of compensation and resettlement assistance to the project affected people. The entitlements for broad category of impacts are summarized below.

79. *Loss of private agriculture land and assets:* These will be compensated at replacement cost if the affected do not volunteer to donate the land.

80. *Loss of private non-agriculture land and assets:* Both land and structures will be compensated at replacement cost along with shifting allowance. The titleholders belonging to

vulnerable groups losing complete residential structures will be assisted with an option of free house.

81. *Non-titleholders:* These will receive no compensation for land but replacement cost for vulnerable groups losing residential and commercial structures.

82. *Loss of livelihood/income opportunities:* Monthly subsistence allowance equivalent to 20 days minimum agricultural wages per month for a period of six months.

Project Preparation on Social Safeguards

83. *Social Screening - Identification of Impacts:* Screening check list will identify sub-projects with potential social issues that may need to be addressed through SIA and Resettlement Action Plan (RAP) at the planning stage. The outcome of the screening process will help prioritize the various investments and where required, start the clearance process in a timely manner.

84. *Preparation of Resettlement Action Plans (RAP):* The RAP provides a link between the impacts identified through screening and proposed mitigation measures to realize the objectives of involuntary resettlement. Full RAP will be prepared where the sub-project affect more than 200 people due to land acquisition and/or physical relocation; and an abbreviated RAP will be prepared if the affected people number is less than 200. No such RAPs need to be prepared in case the subprojects are not expected to have any land acquisition or any other significant adverse social impacts. There are no scheduled tribe communities (as defined in the Bank parlance of Indigenous Peoples) impacted by the project in the project area and therefore OP 4.10 on Indigenous peoples is not triggered by the project..

85. The IA shall not allow works to start until the compensation and assistance has been made available in accordance with the framework.

Other Aspects

86. *Consultation and information disclosure proposed:* Community meetings will be held in each affected village on the project and also to inform the local population of their rights to compensation and options available in accordance with these guidelines. Subsequent implementation plans, as well as studies for investments, will be disclosed on the government websites and other public places accessible to the local people and NGOs in English and local language.

87. *Grievance redress on land acquisition and compensation payment:* In case of a potential dispute on compensation, the local tehsildar/Sub Divisional Magistrate (SDM) shall hear and resolve the case in presence of (a) the affected party, (b) the in charge of line department who is acquiring the land/ in charge of the sub-project activity and (c) Pradhan of the village where the sub-project is being implemented. However, in case of non-satisfactory solution, the matter will be brought to the notice of the District Collector and he/she is the final authority to decide the case.

88. *Grievance Redress Service of the World Bank:* “Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB’s Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB’s independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank’s corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.”

D. Monitoring & Evaluation

Overall Project Supervision, Reporting and Monitoring (SRM) Framework

89. Project monitoring will occur as a periodic function, and will include process reviews, accounting audits, social audits, reporting of outputs, and maintenance of progressive records. Broad thematic areas that will be supervised and monitored include the following: i) Social and Environmental Monitoring; ii) Regular Quality Supervision & Independent Quality Monitoring; and iii) Periodic Physical and Financial Progress Monitoring.

90. *Social and Environmental Monitoring:* This will comprise the following sets of activities: i) monitoring compliance with environmental regulations, social safeguards and Environment and Social Assessment provisions; and ii) continuous Social Impact Monitoring at the Community Levels and oversight at the state/project level.

91. *Regular Quality Supervision and Independent Quality Monitoring:* This will be carried out by the respective Implementing Agencies (IAs) and BAPEPS. Third party quality monitoring by BAPEPS and independent certification of goods procured under the project shall form the Quality Management System. Detailed quality management guidelines would be evolved by BAPEPS and adopted by all IAs and other stake-holders.

92. *Periodic Physical and Financial Progress Monitoring:* Physical progress monitoring will be carried out by the implementing agencies on a monthly basis and reported to BAPEPS which will in turn share the reports on a quarterly basis with the concerned line agencies and the World Bank. IAs will be the nodal agencies for reporting to BAPEPS. Financial progress will be reported by the IAs through the quarterly IUFRRs. BAPEPS will create a detailed MIS for management of the information database which will be an online tool for gathering updates by the IAs. A portion of this database will also be uploaded on the project websites as part of regular information sharing with the public.

93. *Benefit Monitoring and Evaluation:* A three-stage Benefit Monitoring and Evaluation (BME) study would be carried out by BAPEPS in the Kosi Basin. The study will be outsourced and will have three clear-cut stages. Stage I will setup the baseline data, Stage II will conduct midterm evaluations and Stage III will be the end of the project evaluation. The study will

incorporate both qualitative and quantitative analysis and will also be used as a tool for mid-course corrections if necessary.

Arrangements for results monitoring

94. *Institutional issues:* The project monitoring and evaluation system will consist of a three tier system at BAPEPS, IAs, field level, and supplemented with consultants. The regular reporting of these agencies and updating of implementation progress data drawn from the duly completed questionnaires of all the stakeholders in the project at different levels/activities will assist BAPEPS in providing timely interventions at appropriate levels to remove impediments in project implementation and building capacity of stakeholders who are involved and benefiting from the project.

95. *Data collection:* Primary data relating to population, demography and other scientific and technical studies will be drawn from national accredited institutions and local administration to develop project plans. During implementation, project progress and impact data will be collected from various sources such as beneficiary communities, non-governmental organizations, community-based organizations, IAs, consultants, implementation progress reports. The costs towards supplementary support and impact assessment reports are financed under the Project Management and Implementation Support component of the project including costs of establishment of Management Information Systems (MIS) which is expected to generate reports based on the inputs drawn from all stakeholders in the project consolidated by BAPEPS, IAs, and field level data on a monthly and quarterly basis.

96. *Capacity:* Institutions engaged in the project have capacities to avail necessary information/data. To ensure timely completion of envisaged activities under the project, the institutions will also be supplemented by consultants, and other community level stakeholders proposed to be engaged in the project. The costs towards supplementary support will be drawn from the Implementation Support component under the project.

Annex 4: Implementation Support Plan
INDIA: Bihar Kosi Basin Development Project

1. The Implementation Support Plan (ISP) for BKBDP has been developed based on the specific nature of the project activities, lessons learned from past operations in Bihar through the BKFRP, Jeevika, and FMISC operations, and the project's risk profile. The plan will be regularly reviewed and revised as required.
2. The ISP includes frequent review of implementation performance and progress, especially given the developmental and institutional capacity challenges in Bihar. The Bank team will monitor progress on several fronts including: (i) key performance indicators as defined in the Results Framework; (ii) State, district, and block level project implementation plans; (iii) independent verification of project activities; (iv) proper fiduciary management of all activities carried out by BAPEPS and PIUs; (v) reconciliation of payments with contracts; (vi) supervision of State and District-level procurement activities, (vii) monitoring of key legal covenants.
3. Information from various sources will be used to assess and monitor the progress of the project throughout its implementation. In addition to the data generated through the project's MIS and M&E systems, the Bank will also review the findings and results of third party assessments and environmental and social audits which will be undertaken during the course of project implementation.
4. In addition to formal semi-annual implementation support missions and field visits to Patna and the districts in the Kosi River Basin, annual workshops with BAPEPS and the Implementing Agencies will be held to review progress against the implementation plan and take corrective actions as necessary. The semi-annual Implementation Status Reports will be produced to provide management with progress updates, tracking risk development and efficacy of mitigation measures. In addition, given that the entire Bank implementation team is based in Delhi, ad hoc visits can be made to provide targeted support to address emerging issues.
5. The Bank's procurement, financial management, and environmental and social safeguards specialists will also provide timely and effective support to the GoB. In addition to carrying out an annual ex-post review of procurement that falls below the prior review thresholds, the procurement specialist will lead thematic and focused missions depending on the procurement needs and as agreed to by the GoB. The financial management specialist will review all financial management reports and audits and take necessary follow-up actions as per Bank procedures. These team members will also help identify capacity building needs to strengthen procurement and financial management capacity. Semiannual inputs from the environmental and social specialists will be required throughout the project, and formal supervision missions and field visits will ensure that the ESMF is implemented in accordance with Bank safeguard policies.
6. The following Implementation Support Plan reflects the preliminary estimates of the skill requirements, timing, and resource requirements over the life of the project. Keeping in mind the need to maintain flexibility over project activities from year to year, the ISP will be reviewed annually to ensure that it continues to meet the implementation support needs of the project.

Table 12: Implementation Support Plan

Time (Year)	Focus	Primary Skills Needed	Number of Trips	Resource Estimate (US\$)	Partner Role	Comments
1	<ul style="list-style-type: none"> • Project launch • FM systems functioning effectively • Procurement practices following Bank norms • ESMF is in place 	<ul style="list-style-type: none"> • Team lead • FM, Procurement • Safeguards Specialist • Water Resources Specialist • Transportation Specialist • Agriculture/ Rural Development Specialist 	<ul style="list-style-type: none"> • June 2015 • December 2015 	<ul style="list-style-type: none"> • 45,000 • 45,000 	<ul style="list-style-type: none"> • Staff up BAPEPS • Contract consultants • MOU signed with partner organizations 	<ul style="list-style-type: none"> • Project will likely become effective in July 2015 • Task team to support smooth start-up following effectiveness
2	<ul style="list-style-type: none"> • Monitor implementation of flood control and transport activities • Support launch of irrigation and agriculture activities • FM, Procurement, Safeguards 	<ul style="list-style-type: none"> • Team lead • FM, Procurement • Safeguards Specialist • Water Resources Specialist • Transportation Specialist • Agriculture/ RD Specialist • NGO/CSO 	<ul style="list-style-type: none"> • June 2016 • December 2016 	<ul style="list-style-type: none"> • 45,000 • 45,000 	<ul style="list-style-type: none"> • Scale up of pilot activities • Prepare comprehensive project progress report in advance of each mission 	<ul style="list-style-type: none"> • Support PIU at local level as necessary • Ensure safeguards arrangements are built into implementation plans
3	<ul style="list-style-type: none"> • Monitor implementation of project activities • Mid-Term Review • FM, Procurement, Safeguards 	<ul style="list-style-type: none"> • Team lead • FM, Procurement • Safeguards Specialist • Water Resources Specialist • Transportation Specialist • Agriculture/RD Specialist • NGO/CSO 	<ul style="list-style-type: none"> • June 2017 • December 2017 	<ul style="list-style-type: none"> • 45,000 • 45,000 	<ul style="list-style-type: none"> • Prepare comprehensive project progress report in advance of each mission 	<ul style="list-style-type: none"> • Mid-Term Review
4	<ul style="list-style-type: none"> • Monitor implementation 	<ul style="list-style-type: none"> • Team lead 	<ul style="list-style-type: none"> • June 2018 	<ul style="list-style-type: none"> • 45,000 	<ul style="list-style-type: none"> • Prepare 	<ul style="list-style-type: none"> • Support to monitor

	<ul style="list-style-type: none"> of project activities • FM, Procurement, Safeguards 	<ul style="list-style-type: none"> • FM, Procurement • Safeguards Specialist • Water Resources Specialist • Transportation Specialist • Agriculture/RD Specialist • NGO/CSO 	<ul style="list-style-type: none"> • December 2018 	<ul style="list-style-type: none"> • 45,000 	<ul style="list-style-type: none"> comprehensive project progress report in advance of each mission 	<ul style="list-style-type: none"> progress of activities, provide technical oversight, ideas for improvement, etc.
5	<ul style="list-style-type: none"> • Monitor implementation of project activities • FM, Procurement, Safeguards 	<ul style="list-style-type: none"> • Team lead • FM, Procurement • Safeguards Specialist • Water Resources Specialist • Transportation Specialist • Agriculture/RD Specialist • NGO/CSO 	<ul style="list-style-type: none"> • June 2019 • November 2019 	<ul style="list-style-type: none"> • 45,000 • 45,000 	<ul style="list-style-type: none"> • Prepare comprehensive project progress report in advance of each mission 	<ul style="list-style-type: none"> • Support to monitor progress of activities, provide technical oversight, ideas for improvement, etc.
6	<ul style="list-style-type: none"> • Project withdrawal and closure • Scaling up of successful models with GoB 	<ul style="list-style-type: none"> • Team lead • FM, Procurement • Safeguards Specialist • Water Resources Specialist • Transportation Specialist • Agriculture/RD Specialist • NGO/CSO 	<ul style="list-style-type: none"> • June 2020 • November 2020 	<ul style="list-style-type: none"> • 45,000 • 45,000 	<ul style="list-style-type: none"> • Prepare comprehensive project progress report in advance of each mission 	<ul style="list-style-type: none"> • ICR Mission

Annex 5: Economic and Financial Analysis
INDIA: Bihar Kosi Basin Development Project

1. The economic and financial analysis highlights the synergies unlocked through the multi-sectoral approach utilized in the BKBDP. The investments in flood control infrastructure will not only protect human lives, but also infrastructure and agricultural assets in the Kosi River Basin. As such, complementary investments in transportation, agricultural productivity (including irrigation) will have added value as a result of reduced flood risk. The main quantifiable benefits are: i) reduced flood damage to infrastructure in the Kosi River Basin due to flood control investments; ii) increased flow of goods and people due to transportation investments; and iii) increased annual agricultural production and productivity due to investments under Component 2
2. Quantification for the above benefits is based on the following: i) value of assets in areas flooded, as measured by data gathered by the GoB on the frequency of occurrence and historical damages related to flood events; ii) savings in operational costs, time, and commercial gains achieved by all-weather roads built in good and fair condition, as measured by the data gathered through the GoI and Bank-financed PMGSY Rural Roads Project; and iii) increase in agricultural productivity due to greater availability and efficiency of water and seed-input-technology packages, as measured by data gathered through Bank-financed projects in nearby Assam and West Bengal.
3. The project benefits are quantified in Table 13 below, and further details on each of the components are provided in the following sections. With a 12 percent discount rate, the NPV of the project is Rs.4.1 billion, which implies an ERR of 22.4 percent.

Table 13: Summary of Project Benefits

Project Activities	ERR (%)	NPV (Rs. Billions)
Flood Control	20.8	3.5
Transportation	18.9	0.9
Irrigation + Agriculture	32.1	4.6
Overall Project	22.4	4.1

Component 1: Improving Flood Risk Management

4. The flood control investments amount to US\$100 million, including US\$95 million for infrastructure works. To quantify the benefits of these investments, an analysis of the expected reduction in the costs of flooding has been undertaken using a well-proven methodology of damage assessment of historical flood events of certain intensity and size by frequency of occurrence (i.e. return period). Flood damages were modeled in a risk based fashion as a product of hazard and vulnerability, where $D = H * V$. Given the complex relationship between the hazard and vulnerability, the variables were constructed as probability distributions within the model. Existing data for the past 10 years, presented below, was utilized to build and calibrate a model which was then used to generate expected loss data over a 25-year horizon going forward. Damage estimates for different flood frequencies ranging from every year up to 1 in 100 years were calculated for pre-project and post-project scenarios, and the difference between these

provides the expected benefit of reduced flooding due to project investments in flood control infrastructure.

Table 14: Flood Damages in the Kosi River Basin, 2001-2010

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Villages affected	549	1,591	1,083	1,833	196	31	748	1,292	243	187
Population affected (millions)	0.62	2.45	1.49	3.59	0.30	0.00	1.46	3.86	0.56	0.14
Agricultural (affected area thousands km ²)	0.34	2.97	2.31	6.02	0.15	0.00	1.00	2.93	0.15	0.20
Non agricultural (affected area thousands km ²)	0.70	2.46	1.29	2.30	0.16	0.00	0.28	1.10	5.99	0.01
Total (affected area thousands km ²)	1.04	5.43	3.60	8.32	0.31	0.00	1.28	4.03	6.14	0.21
Cropped (affected area thousands km ²)	0.24	1.36	1.84	4.03	0.13	0.00	0.79	1.59	0.02	0.04
Crop Damage (Rs. millions)	90	209	116	767	9	0	726	1,222	11	20
Houses damaged	9,556	23,650	12,798	172,829	1,475	911	47,838	239,278	3,399	10,522
Value house damaged (Rs. millions)	20	212	20	745	12	2	483	3,060	30	46
Public property damaged (Rs. millions)	3	388	18	416	4	0	499	4,656	3	2
Lives lost	20	68	27	73	5	3	158	553	18	21
Total losses (Rs. millions)	135	897	208	2,068	38	3	1,803	9,242	85	83

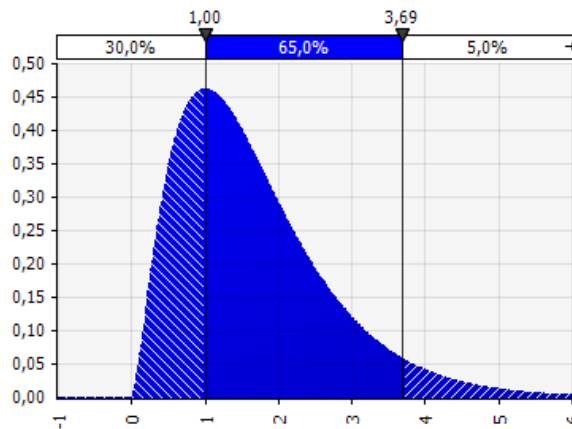
Source: Government of Bihar, Disaster Management Department

Flood damage distribution model

5. The model accounts for the flood hazard by calculating a distribution based on the intensity of the river discharge, and for each discharge level, a probability of occurrence is assigned. The distribution starts from 0 (no discharge) and can increase up to infinity with decreasing probability. The discharge is also dissymmetric and rightly skewed, with the mean larger than the mode. The Gamma of parameters 5/2 and 2/3 (respectively known as shape and scale parameters or also α and β) were utilized to determine the intensity-frequency ratios.

6. The distribution of the flood hazard is presented below in Figure 3. It shows that almost one out of three years, one should expect to have less discharge than what is most commonly observed, as 30 percent of the curve surface lies between 0 and 1. A flood of return period 20 years (corresponding to a P95, or the remaining 5 percent on the right part of the graph) has an intensity that is 3.69 times that of the most commonly observed hazard.

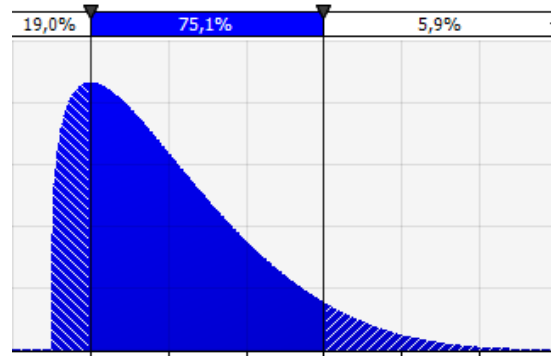
Figure 3: Distribution of a Gamma Function Modelling Flood Hazard



7. The vulnerability distribution is similarly calculated and presented below in Figure 4. For a given level of hazard, the vulnerability factors depend on a number of parameters: location and

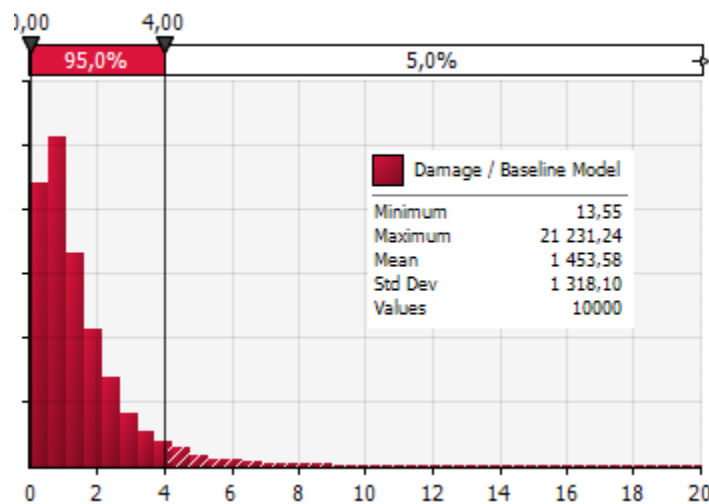
number of breaches, topography, density of crops, people, public and private assets in the affected areas, etc. The large number of factors leads to a wider distribution, which is then calibrated and scaled to fit the available data series.

Figure 4: Distribution of a Gamma Function Modelling Flood Vulnerability



8. The flood damage distribution model, shown in Figure 5, takes the expected shape of a risk function. The range of damages is from INR. 0 to INR. 20 billion depending on the intensity of the hazard and the associated vulnerability, with a mean of INR. 1.45 billion. The damages are greater than INR. 4 billion only 5 percent of the time. The available data shows that this only happened once between 2001 and 2010, during the 2008 Kosi Flood, which resulted in damages of over INR. 8 billion. A lower frequency flood of a 20 year return period occurred in 2007, but caused only INR. 1.8 billion of damages, which was less than the 15 year return period flood of 2004 that resulted in damages of INR. 2 billion. This is another demonstration that the vulnerability accounts for a greater part of the damages than the sole hazard level, further justifying the investments to strengthen the flood control infrastructure.

Figure 5: Flood Damage Distribution Model



9. Based on the above information, cash flows of costs and benefits were projected over a 25-year period to estimate the Net Present Value (NPV) at a discount rate of 12 percent and the

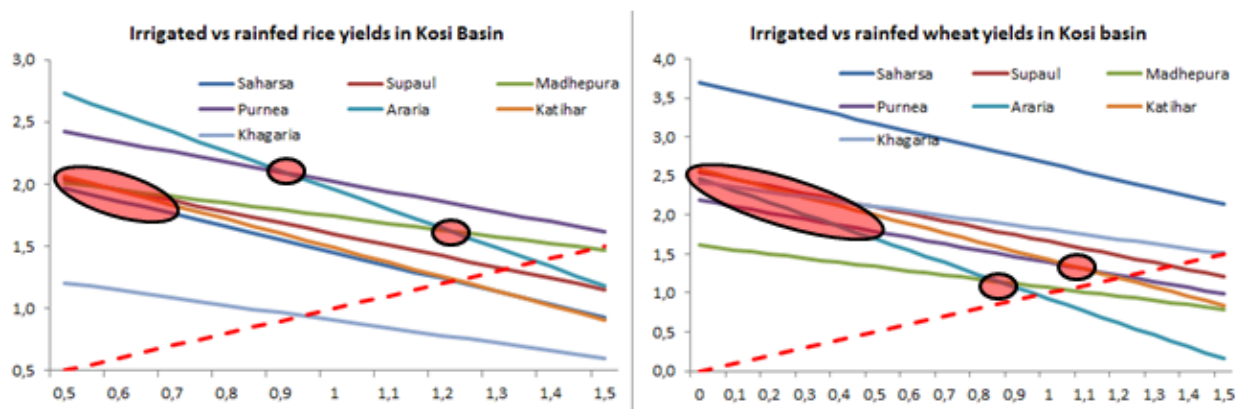
Economic Rate of Return (ERR). The NPV is Rs. 3.47 billion, with an ERR of 20.8 percent. The expected reduction in flooded areas on average per year is 300,000ha.

Component 2: Enhancing Agricultural Productivity and Competitiveness

10. The irrigation and agriculture investments under this Component total US\$76.5 million and comprise the following: (a) improved availability and efficiency of water resources through shallow tube wells (STWs); (b) agricultural intensification through seed, input and technology packages for producer organizations; (c) good agricultural practices through technical training and demonstration activities to targeted farmers; (d) greater market participation through farmer mobilization (i.e., FIGs) and ABCs; and (d) staffing improvements through capacity building within Department of Agriculture, Minor Water Resources and Animal Husbandry. The main benefits are expected gains from increased crop production and productivity and a shift into higher-value crops due to: (a) increased irrigated area; (b) increased cropping intensity and diversity; and (c) greater market access for producer organizations.

11. A farm model was developed to cover farm sizes of less than 1 ha and 1-2 ha, as well as high siltation levels and low-siltation levels resulting from the 2008 Kosi River Flood. Crop budgets were prepared for paddy, mustard, fruits (oranges and bananas) and vegetables (cabbage, cauliflower, and tomato). Across the five targeted districts, aggregation of these inputs was conducted using the proposed area expected to be brought under intensification and irrigated by STWs. In addition, intensified (i.e., irrigated) vs. rain fed yield ratios were calculated for rice and wheat growth in the Kosi River Basin, as shown in Figure 6 below, demonstrating the benefit of the proposed small-scale irrigation infrastructure on crop yields.

Figure 6: Irrigated vs. Rain fed Yields in the Kosi River Basin Rice and Wheat Production



12. As observed under Bank-financed projects in Assam and West Bengal, each STW increases irrigated area by 2.2 ha. Hence, the installation of 23,000 STWs as proposed under the project would potentially increase net irrigated area by 25 percent. Average cropping intensity can be expected to increase by 40 percent over the project period and cropping patterns to shift from kharif season ahu paddy to relatively higher-yielding garma season boro paddy in 80 percent of the irrigated area with diversification towards oilseeds, fruits, and vegetables in the

remaining 20 percent of the area. The projected increase in crop yields is shown below in Table 15.

Table 15: Crop Yields (tons/ha)

Crop Type	Pre-Project	Post-Project
Ahu paddy	1.4	1.8
Sali paddy	2.6	2.7
Boro paddy	3.7	4.1
Pulses	-	1.8
Oilseeds	-	1.6
Maize	-	2.9
Fruits (mango, litchi, banana)	10.4	14.3
Vegetables (brinjal, tomato, okra)	13.6	18.2

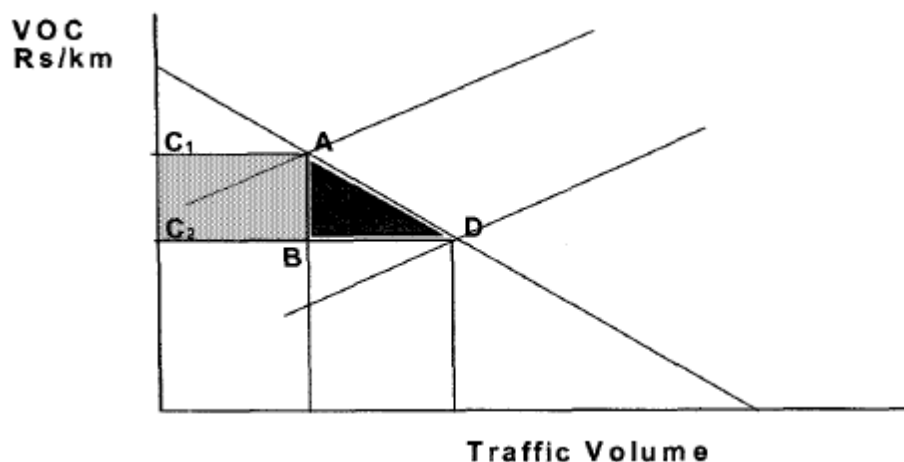
13. For traded commodities (e.g., rice, fertilizers), economic prices were estimated based on import/export parity levels. For all non-tradable commodities, including labor, a standard conversion factor (SCF) of 0.9 was used to estimate economic costs and benefits. In the case of rice, since India is neither a consistent exporter nor importer but keeps varying between the two, the economic price used was the average of the export parity and import parity levels. For other crops like mustard, fruits and vegetables, which are produced in limited quantities in the project area, world market reference prices were not available and hence these crops were treated as non-tradable and their economic prices were derived using the SCF. In sum, the NPV is Rs. 4.6 billion, with an ERR of 32.1 percent.

Component 3: Augmenting Connectivity

14. The transportation investments amount to US\$173 million, of which US\$80 million will finance the construction of 400km of roads, US\$90 million for the construction of 57 bridges, and US\$3 million for increasing the institutional capacity of the Road Construction Department. To quantify the benefits of these investments, analysis was undertaken to determine the savings in vehicle operational costs (VOC), the savings in travel time, and the commercial gains for marketing agricultural goods. Estimates were also derived from the PMGSY Rural Roads Program for benefits linked to improvements in health, education, and other services.

15. The first quantifiable benefit of black-top roads and bridges is a reduction in VOC. A downward shift in the cost curve coupled with a resulting movement along the demand curve results in two types of benefits: (i) VOC savings in traffic volume carried on existing gravel roads; and (ii) the consumer surplus relating to additional traffic carried by the improved road. Assuming linear relationships between relevant cost and demand variables, the former equals VOC savings on half the traffic volumes. In Figure 7 below, (i) and (ii) respectively correspond to the rectangle given by the points [C1, C2, B, A] and the triangle given by [A, B, D].

Figure 7: Incremental Benefits from Reduced Vehicle Operating Costs



16. VOC savings for different types of vehicles are taken from the standard parameters provided by the Indian Roads Congress, updated to 2012 prices, as shown in Table 16 below. Traffic volumes for pre-project and post-project scenarios are derived from a sample of 25 roads surveyed under the PGMSY Rural Roads Program, as shown in Table 17 below. Traffic volumes in the pre-project scenario are expected to grow at 2 percent per year, while in the post-project scenario they are expected to growth at 5 percent per year over the course of a 25-year project period.

Table 16: Vehicle Operating Costs and Passenger Density

Vehicle Type	Vehicle Operating Costs on Black-Top Roads (Rs/km)			Number of Passengers Per Vehicle	
	Pre-Project	Post-Project	VOC Savings	Pre-Project	Post-Project
Carts	6.25	5.42	0.83	3	4
Cycle/Rickshaw	0.57	0.24	0.33	2	2
Bus	10.48	8.26	2.22	18	37
Truck	10.89	8.94	1.95	3	3
Tractor/Trailer	11.13	9.83	1.3	4	6
Car/Jeep	7.01	4.28	2.73	4	5
Two Wheeler	1.96	1.14	0.82	2	2

17. The second quantifiable benefit of black-top roads and bridges is savings in travel time. The passenger time saves on improved roads and the consumer surplus related to time savings on additional passenger traffic carried on the improved roads is calculated using a method similar to calculating the VOC. The value of time saved is estimated by the opportunity cost of labor, or the income lost in foregoing other income generating activities when traveling. Agricultural wage data was gathered through the Ministry of Labor and Employment, and time savings were estimated for average passenger traffic on the seven types of vehicles using same data traffic volumes and travel times collected in the PGMSY Rural Roads Project, as shown in Tables 16 and 17.

Table 17: Traffic Density and Travel Time

Vehicle Type	Traffic Volume (number of vehicles per day)			Travel Time (hours / 10 km)	
	Pre-Project	Post-Project	Increase	Pre-Project	Post-Project
Carts	14	34	20	3.4	1.5
Cycle/Rickshaw	24	76	52	1.8	0.4
Bus	6	26	20	0.6	0.3
Truck	6	41	35	0.4	0.2
Tractor/Trailer	3	12	9	1.6	0.4
Car/Jeep	7	32	25	0.9	0.3
Two Wheeler	15	71	56	0.4	0.1

18. The third quantifiable benefit from black-top roads and bridges is increased commercial value for marketed agricultural products. The data gathered from the PMGSY Rural Roads Project suggests that prices received by farmers with access to roads and bridges in good and fair condition are 9 to 13 percent higher than those received by farmers without such access. For the concerned analysis, more conservative estimates of 6 percent differential for rice and 10 percent differential for fruits and vegetables are used. The number of villages benefitting from improved roads and bridges and the net cultivated area per village is calculated, accounting for complementary project investments in irrigation and agricultural inputs that will increase production. Commercial gains are applied to the current marketed surplus proportions, although it is likely that these proportions themselves will increase with improved road and bridges and access to markets. Taking these assumptions into consideration, agricultural price benefits following the post-project improvements are calculated.

19. In sum, project costs are estimated at INR. 3.2 million per km for black-top roads and bridges. Annual maintenance costs is taken as INR. 25,000 per km, and rehabilitation costs of INR. 0.2 million per km every five years. The NPV is INR. 0.94 billion, with an ERR of 18.9 percent. The expected number of individuals benefitting from the construction of roads and bridges in good and fair condition is 2 million.

Fiscal Assessment

20. The fiscal assessment for BKBDP concentrates on the ability of the GoB to provide counterpart funds and necessary maintenance funds for the long-term sustainability of project investments. Bihar suffers from a plethora of problems including poor infrastructure, weak investment in human capital, inefficient local bureaucracies, underutilized agricultural potential, and deeply entrenched poverty, among others. Since 2005, however, the GoB has carefully structured an approach to state-building to improve governance and encourage holistic economic development. The government has consolidated the rule of law, built critical infrastructure, begun to deliver public services, increased revenues and expenditures, and improved overall functionality of the government. The economy has grown at over 11 percent for the past 6 years, and is expected to increase at a rate of 14 percent next year, the highest growth rate in India. The State's recent economic success has significantly increased the ability of the GoB to make

continued investments in infrastructure and development, and the BKBDP is a major vehicle for the government to advance some of the poorest districts in Bihar.

21. As a result of the efforts to improve government functionality, revenues in Bihar have increased significantly in recent years, as shown in Table 18 below. Tax processes have been simplified and a tax research unit has been set up within the commercial tax department to examine revenue trends and provide analysis of how to reduce outflows. For the 2012-13 fiscal year, the State expects a revenue surplus of INR. 7,088 crore, a majority of which will be used for investment in capital assets including roads, buildings, power, schools, health centers, and irrigation schemes.

Table 18: Tax Revenues in Bihar, 2004 – 2010 (INR. Crores)

Source of Revenue	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10 (RE)
Taxes on Sales, Trade etc.	1891	1734	2081	2535	3016	4339
Taxes on goods and passengers	473	613	783	938	1279	1270
State Excise	272	319	382	525	679	950
Stamp and Registration	429	505	455	654	716	925
Taxes on Vehicles	213	302	181	273	298	450
Land Revenue	33	55	75	82	102	110
Taxes and duties on Electricity	10	18	63	64	68	63
Other taxes/duties on comm.. & services	22	15	12	14	14	32
Total	3,342	3,561	4,032	5,086	6,172	8,139

Source: Economic Survey, Government of Bihar, March 2010

22. On the expenditure side, efforts to improve revenue collection and governance have generated a virtuous circle of funding flows from the Union government. As a result, state expenditures have increased dramatically. In 2000, Bihar spent just 52 percent of its planned expenditures; that has since risen to 93 percent in 2008-09. Budget expenditures for fiscal year 2012-13 is expected to be INR.78,686 crore, approximately 20.45 percent more than planned expenditures the previous year. The department wise allocation is shown below in Table 19, and emphasizes the GoB's continued priority to invest in the areas of education, physical infrastructure, and rural development.

Table 19: Department Wise Allocation for State Plan (INR. Crores)

Name of Departments	2011-12 Plan Outlay	2012-13 Plan Outlay	% Change from Last Year
1. Education	3014.00	3670.26	21.77
2. Road Construction	3513.76	3613.63	2.84
3. Water Resources	2016.37	2192.47	8.73
4. Social Welfare	1739.62	2118.40	21.77
5. Energy	1682.23	2001.75	18.99
6. Planning and Development	1548.47	1863.37	20.34
7. Rural Works	1200.41	1661.78	38.43
8. Rural Development	1293.25	1574.84	21.77
9. Agriculture	863.86	1200.00	38.91
10. Others	7128.03	8103.50	13.68
TOTAL	24000.00	28000.00	16.67

Source: Budget Highlights, Government of Bihar, 2012-13

23. Bihar's fiscal management has improved with the implementation of the Fiscal Responsibility and Budget Management (FRMB) Act of 2006. Per the provisions of the Act, the fiscal deficit to gross state domestic product (GSDP) has been limited to 3 percent. In the 2012-13 fiscal year, the fiscal deficit is likely to be contained at 2.87 percent of GSDP. The net borrowing limit is decided by the GoI. In year 2012-13, a net borrowing limit of INR.7,916 crore net has been fixed by the GoI. The GSDP estimate arrived at for the year 2012-13 in accordance with the 13th Finance Commission's recommendations is INR 263,876 crore. At the end of the year, public debt is estimated to be INR. 59,732 crore, which is 22.64% of GSDP.

24. Additional reforms have been adopted by the GoB to enhance the financial management systems of the State. Revenue monitoring systems within the Treasury and sub-treasuries have been computerized, as has the overall budgetary process. A separate budget book has been published for the Panchayati Raj Institutions and the Urban Local Bodies in the light of recommendation by the 13th Finance Commission. This document specifies the amount that has been granted by the State Government or State-level agencies to the local bodies in each district, enabling better monitoring and reducing budgetary volatility at the local level. A Sinking Fund with the Reserve Bank of India for the repayment of loans has been created, and gives interest after investment. From 2008-09 to 2011-12, a sum of INR. 676 crore has been deposited in the fund. These monies will be utilized to help the State in times of crisis to meet debt obligations.

Annex 6: Gender and Social Inclusion
INDIA: Bihar Kosi Basin Development Project

Gender and Social Context

Social Context

1. Bihar has a low level of social development, as shown by a score of only 0.44 on a scale of 1 (ranks 20th among all 36 States and UTs) on the human development index and a Gender and Development Index that is the lowest among all states.¹² Women's literacy rates are very low and there is a substantial gender gap; only 53.33% of women are literate, compared to 73.39% of men.

2. Specifically, in context of the project, the Kosi River Basin is characterized by high levels of landlessness and land fragmentation, high dependency on agriculture and high levels of seasonal migration. Bihar is also India's most flood prone state and 76% of the population in North Bihar lives under the recurring threat of flood devastation.

3. The flood-affected districts (2008) and flood-prone districts of Araria, Purnea, Madhepura, Saharsa and Supaul are amongst the poorest in India. The total population of these districts is 9.4 million¹³. Araria and Purnea have significant minority community populations (Araria 41.1% and Purnea 36.8%) while Madhepura and Saharsa have a high density of Scheduled Castes (Madhepura 17.1% and Saharsa 14.4%)¹⁴.

Livelihoods

4. Over 90 percent of the flood affected population was dependent on agricultural livelihoods which were severely affected¹⁵. Only 7 to 10% of people are engaged in non-agricultural activities. It is revealing that the proportion of workers engaged in non-agricultural activities ranged from as low as 7% in Madhepura to 10% in Saharsa, in 2001¹⁶. Thus diversification of livelihoods, especially for the landless and low-land quality farmers becomes crucial. Agricultural labourers constitute the majority of workers; in fact in Araria and Purnea these account for two-thirds of all workers.

Migration

5. A large number of people from the Kosi region were migrate annually to Delhi and Mumbai in search of menial jobs and to rural Punjab, even Kerala, as agricultural labours. After the 2008 calamity, no less than 5, 00,000 people were estimated to have already left the region¹⁷. Accentuated social vulnerabilities and rampant out migrations adversely affects women.

¹²India Human Development Report, 2011 (Updated March 2014)

¹³Need Assessment Report 2008, World Bank and Govt. of Bihar

¹⁴Census 2001

¹⁵Need Assessment Report 2008, World Bank and Govt. of Bihar

¹⁶Census 2001

¹⁷Kosi Nav Nirman Abhiyan

Their role as ‘proxy’ managers and shadow workers in agriculture and the invisibility of their contribution, hence cannot be ignored. Thus, it becomes crucial for the project to be gender-sensitive and gender-informed to meet its PDO indicators of increasing agriculture yields and enhancing connectivity to markets. High levels of out migration makes it necessary to involve women to the extent possible in the building of roads, bridges, etc. to enhance connectivity and ensure that the planning is participative and inclusionary.

Existing initiatives to address gender concerns:

6. Restrictive social norms and gender barriers prevents women from participating in decision-making processes. To counter this, various policies and programmes within the NRLM umbrella provide opportunities for women to engage with markets, take decisions regarding investments to be made for productive resources, procure seeds and food grains, engage with market structures through dedicated committees,

7. Listed below are a few policy/programme initiatives and case studies that will help inform priority targeting in the context of this project:

1. The Jeevika - Bihar Rural Livelihood Programme: Jeevika Bihar’s ‘Procurement Samitis’
2. Gender and Livelihoods Training Module developed by ANANDI and UN Women based on the Participatory Action Learning Systems (PALS)
3. MKSP in Bihar: Procure seeds and food grains, and engage with market structures through ‘procurement committees’ (*kharidari committee*)

Gender and Social Action Plan

Table 20: Gender Action Plan

Project Component	Suggested Action Area	Policy Rationale
Component 1: Improving Flood Risk Management Sub-component 1.2: Strengthening institutional capacity	Objective: The objective of this subcomponent is to strengthen and complement the studies and state level capacity to understand, manage, and communicate flood risks. Action area: The project will attempt to enhance social and gender-sensitization of implementation units with respect to understanding of social disparities, necessary priority targeting in management and effective communication to reach the isolated.	The National Policy on Disaster Management, 2009, clearly identifies women, elderly and the economically and socially excluded as vulnerable and prone to face the severity of the disaster much more than other advantaged groups.
Component 2: Enhancing Agriculture Productivity and Competitiveness	Objective: Increase crop yields through the adoption of modern agriculture technologies by farmers Action area: Specific targeting and monitoring of women farmers, small farmers, minority farmers, low-quality land owners while planning technology demonstration and diffusion, water availability through irrigation and	GOB’s Vision for Agriculture Development, 2010 focuses on agricultural productivity through increased and diversified crop yields, modernization, and improved access to

<p>Component 3: Augmenting Connectivity</p>	<p>agriculture inputs and packages. Improve market access for agri-products for farmers, including women farmers and small, landless, SC/ST farmers.</p> <p>Objective: Strengthening of agriculture value chains.</p> <p>Action area: Among producer groups selected for funding, (x) Women Farmer Producer Companies will be chosen to set off the disadvantages faced by women farmers in terms of poor land and seed quality, lack of access to technology or agricultural innovations and low-levels of diversification.</p> <p>Also Targeting Agri Business Companies and Dairy Cooperative societies with substantial representation of women.</p> <p>Objective: To improve farmers' access to markets</p> <p>Action Area:</p> <ol style="list-style-type: none"> 1. The project will attempt to enhance connectivity to SC/ST dominated hamlets/ villages within the target districts. 2. The design, planning and line alignment will be participative; women representatives, minority representation will be ensured during stakeholder consultation. 	<p>markets, training, and agricultural extension services.</p> <p>The key learning for MKSP (within NRLM) is in the targeting of women farmers.</p> <p>Constituting Women Farmer Producer Company (WFPC) at the block level for small & marginal women farmers to strengthen the members to eliminate the unfair practices of local traders and enhance their bargaining power.</p> <p>WFPC provides guidance and support to the members to addresses the issues like seed & other required inputs, technology, storage, aggregation and market linkage under a single umbrella.</p> <p>The PMGSY II guidelines provide for creation of rural infrastructure for enhancing connectivity to access agriculture markets and 'Growth Centers'.</p> <p>The PMGSY guidelines lay stress on community participation through transect walks involving inclusionary representation and stakeholder consultations.</p>
<p>Component 5: Implementation Support</p>	<p>Conduct a study on the presence of Women Farmer Companies in target districts in the first year of implementation. The study will identify:</p>	<p>No specific available literature to inform policy</p>

	<ol style="list-style-type: none"> 1. The range of landholdings in at least 2 of the identified districts and building a vulnerability matrix for the women farmers. 2. Identify barriers that obstruct women farmers' access agricultural technology and markets. 3. Suggest positive policy intervention (extendable to other districts) that will reduce the barriers and create sustainable market and technology access. 4. Set practical targets for achievement under the project. 	
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8. The gender and social inclusion outcomes of the project shall be monitored with key performance indicators and targets specified in the results matrix.

9. Capacity of the PIU and ATMAs shall be built through appointment of gender experts at state and District level to ensure implementation of gender action plan.