

Barriers to Climate-Resilient Infrastructure Financing

Standing Committee on Finance Forum

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Rabat, Morocco

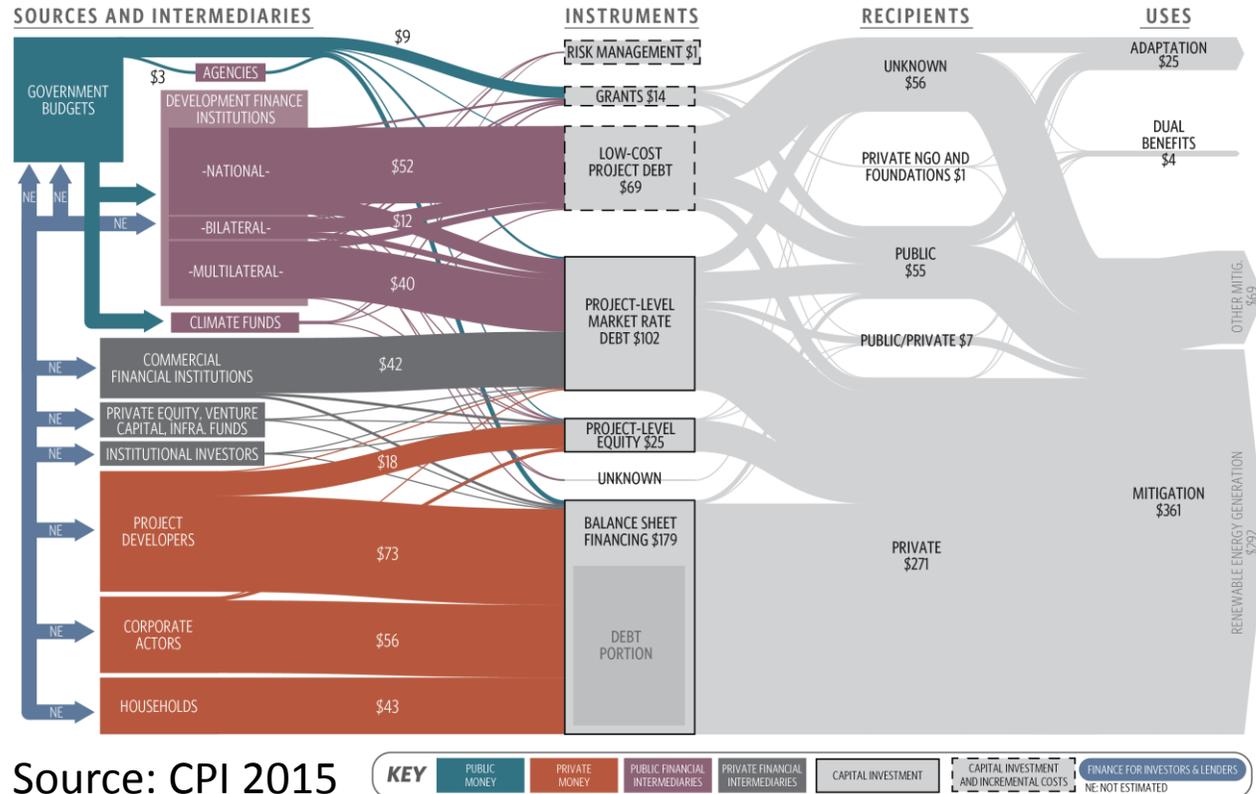
Overview

- **Sources of finance and competing demands**
- **4 main barriers to climate resilient infrastructure**
 - Creating Enabling Environments
 - Facilitating Strategic Planning and Programming
 - Strengthening Project Preparation and Technical Design
 - Leveraging Financing
- **Project Examples**

Sources of Climate Finance

GLOBAL LANDSCAPE OF CLIMATE FINANCE 2015 **USD 391** BN TOTAL

Landscape of Climate Finance 2015 illustrates climate finance flows along their life cycle for the latest year available, mostly 2014, in USD billions



Status

- Global climate finance reached USD 391 billion in 2014
- Public climate finance, with contributions by governments and intermediaries at least USD 148 billion (range of USD 144–152 billion) in 2014
- Private investment at USD 243 billion (mostly in renewable energy-mitigation)

Need

- Current infrastructure spending of US\$2.5 trillion to US\$3.5 trillion per year (public and the private sectors)
- Estimated annual infrastructure demand US\$6 trillion
- Estimated need to mobilize an additional \$700 billion to ensure this shift to resilient infrastructures

Good Decision Making for Infrastructure Investments is Challenging

Rapid Changes

Shanghai 1990 vs. 2010



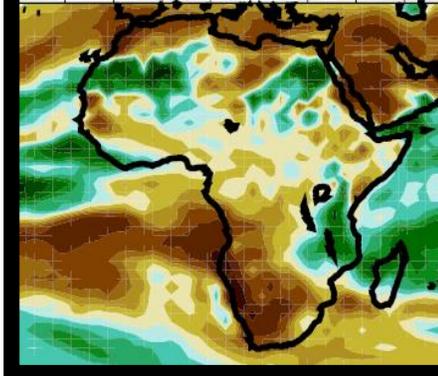
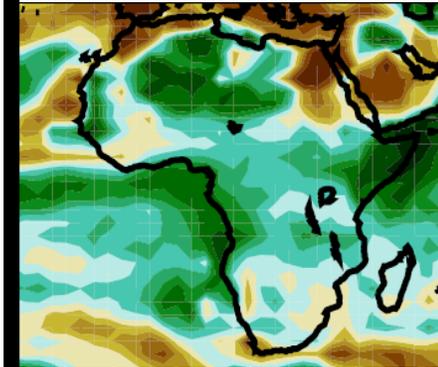
Competing Priorities

Conservation vs. Development



Uncertain Future

Climate Change



Medium to Long Lifetimes

Main Barriers to Climate Resilient Infrastructure



1.1. Policies and enabling environments



1.2. Strategic planning and programming



1.3. Project preparation and technical design



1.4. Financial structuring

Cross-cutting challenges: (1) Longevity and scale of investments; (2) Uncertainty on exposure to climate conditions and potential impacts on design

1: Policies and Enabling Environments

Mainstreaming climate into budget and planning processes in MOFs, supporting NDC implementation and putting in place policies to incentivize investment

- Integrating climate into national budget and planning processes via the Climate Action Peer Exchange (CAPE)
- Supporting NDC implementation through the NDC Partnership

Putting a price on carbon to drive low-cost climate mitigation

- Supporting government and private sector clients to get the prices right on carbon
- Deepening fossil fuel subsidy reform
- Leading creation of post-2020 carbon markets to lower costs of NDC implementation

Identifying roadmaps for medium-term de-carbonization by 2050

- Formulating scenarios for mid-century de-carbonization and development

2. Facilitating Strategic Planning and Programming

	Climate & Disaster Risk Screening	GHG Accounting & Internal Shadow Price of Carbon	Climate Co-Benefits Tracking
Purpose	Risks: Identify climate & disaster risks	Emissions: <ul style="list-style-type: none"> Determine ex-ante gross and net GHG emissions Value GHG emissions in economic analysis 	Finance: Identify climate mitigation and/or adaptation co-benefits
Benefits	“Climate proof” projects and better account for future conditions	Gain knowledge of emissions sources and opportunities to design lower carbon projects	Measuring climate finance and achieving targets
Applicable Projects	Required for IBRD/IDA operations	<ul style="list-style-type: none"> Required for IBRD/IDA IPFs led by SD GPs for which GHG accounting methodologies are available Internal shadow price of carbon is coming soon 	Required for all IBRD/IDA lending projects (& knowledge products*)

3. Strengthening Project Preparation and Technical Design

Decision Making under Uncertainty

What are the available strategies?

Identify vulnerabilities of these strategies

Develop strategy adaptations to reduce vulnerabilities



Upper Arun Hydropower Project - Nepal



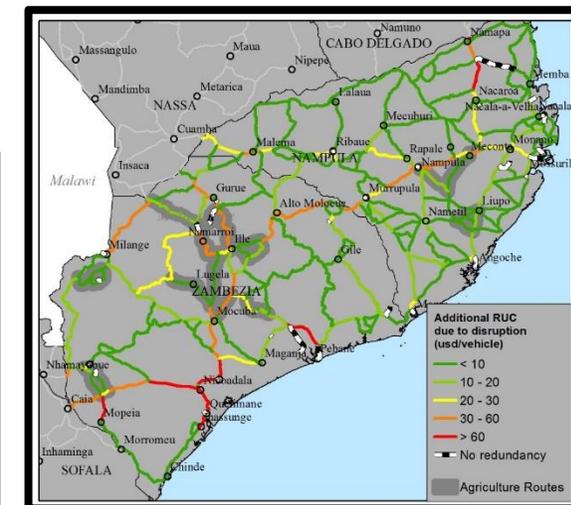
Mwache Dam, Kenya

Project Level Application

System wide Application

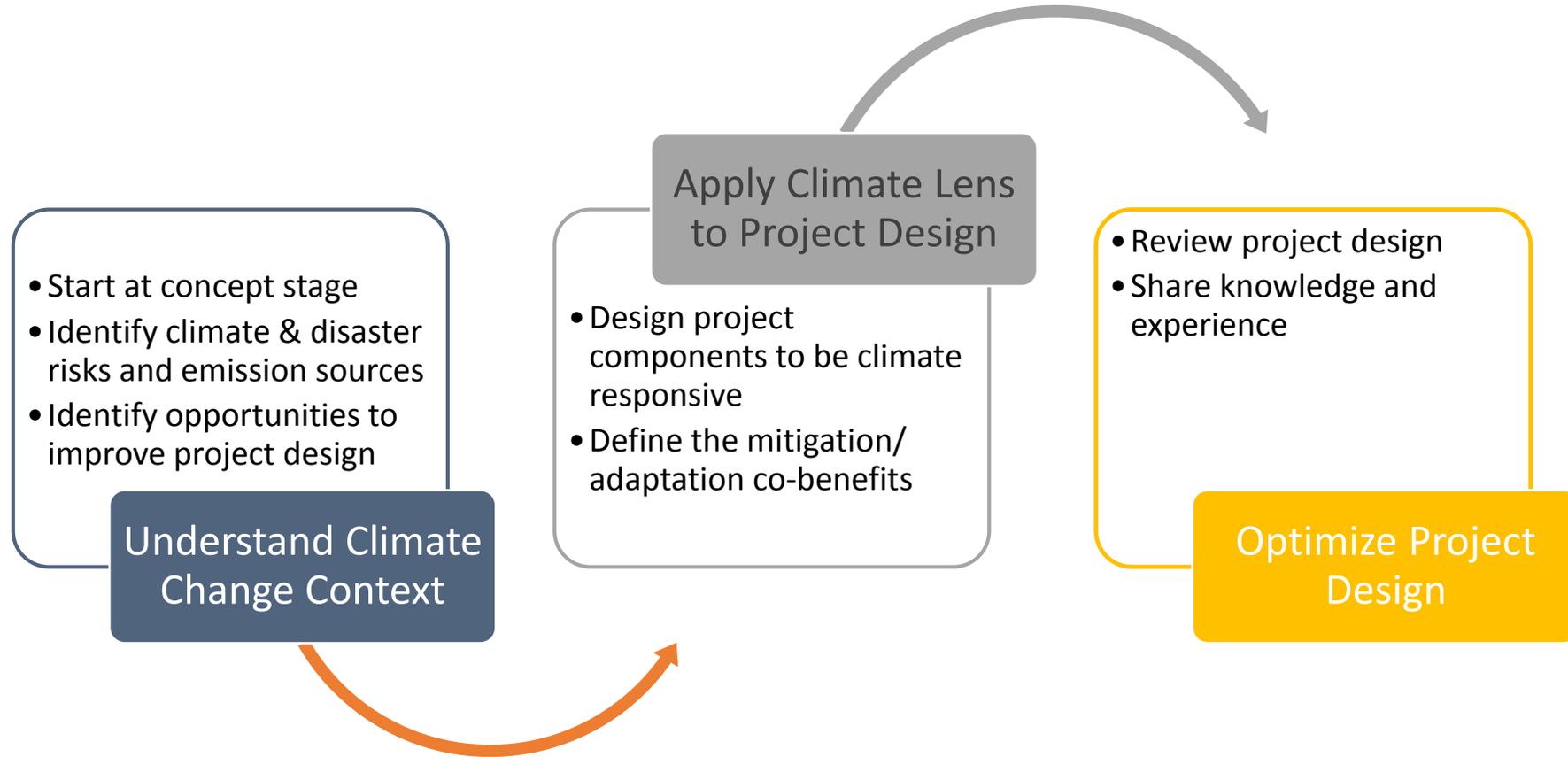


Drought Preparation and Management – Lima, Peru



Prioritizing investments in the rural road network, Mozambique

Technical Tools to Support Climate Informed Project Design



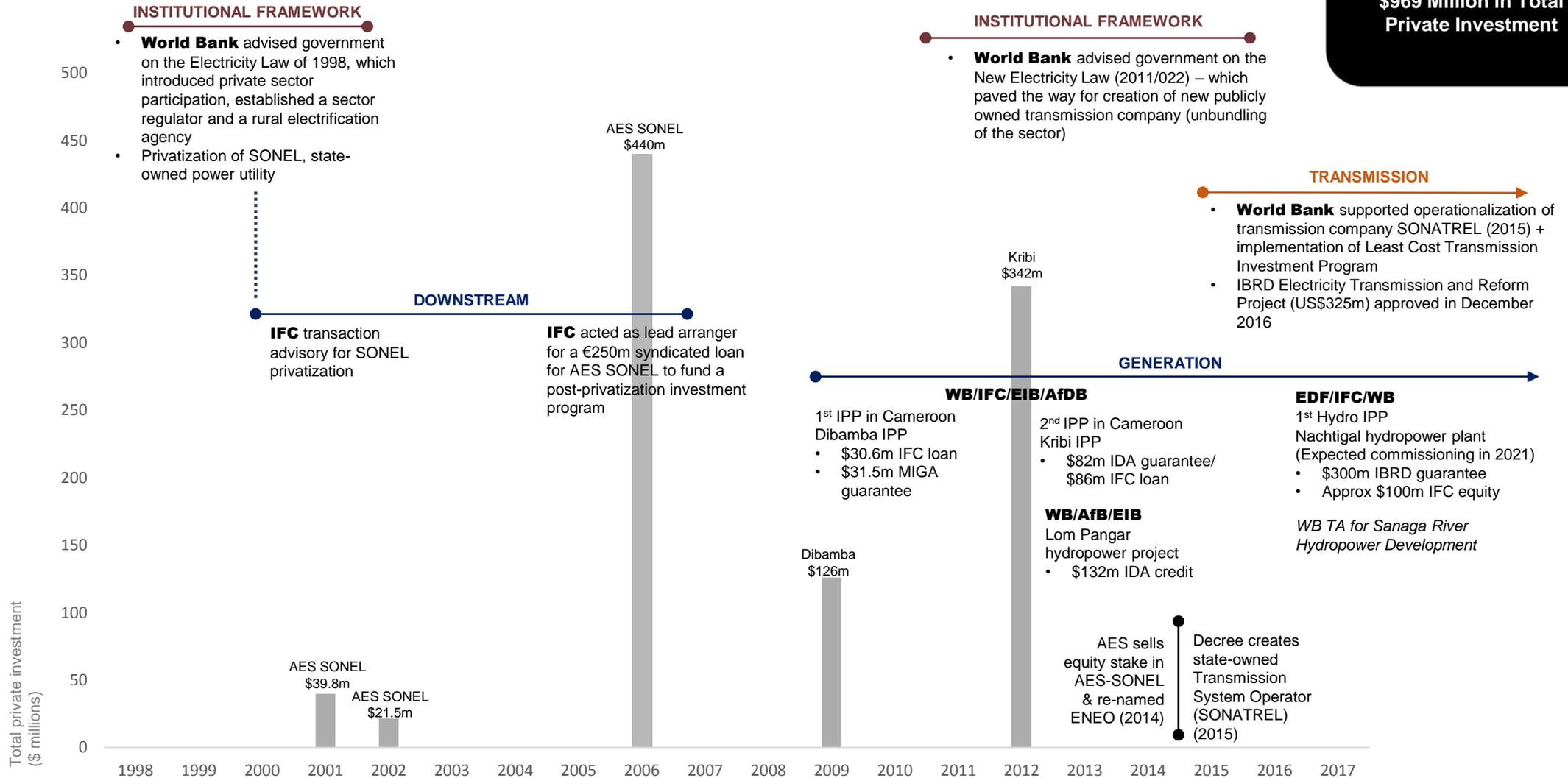
4. Leveraging Financing

- **Need for physical and fiscal resiliency**
- **Public funds**
 - Better target concessional finance to support global public goods provision and fund activities that can't be funded by commercial finance
 - Ensure that the appropriate policy framework is in place
- **Private-Public Financing**
 - Build public and private sector capacity and de-risk mitigation and adaptation opportunities
 - De-risking infrastructure investments
 - Quantifying and managing risks
 - Development of new insurance packages
 - Optimize concessional finance and maximize commercial financing

Cameroon: Power

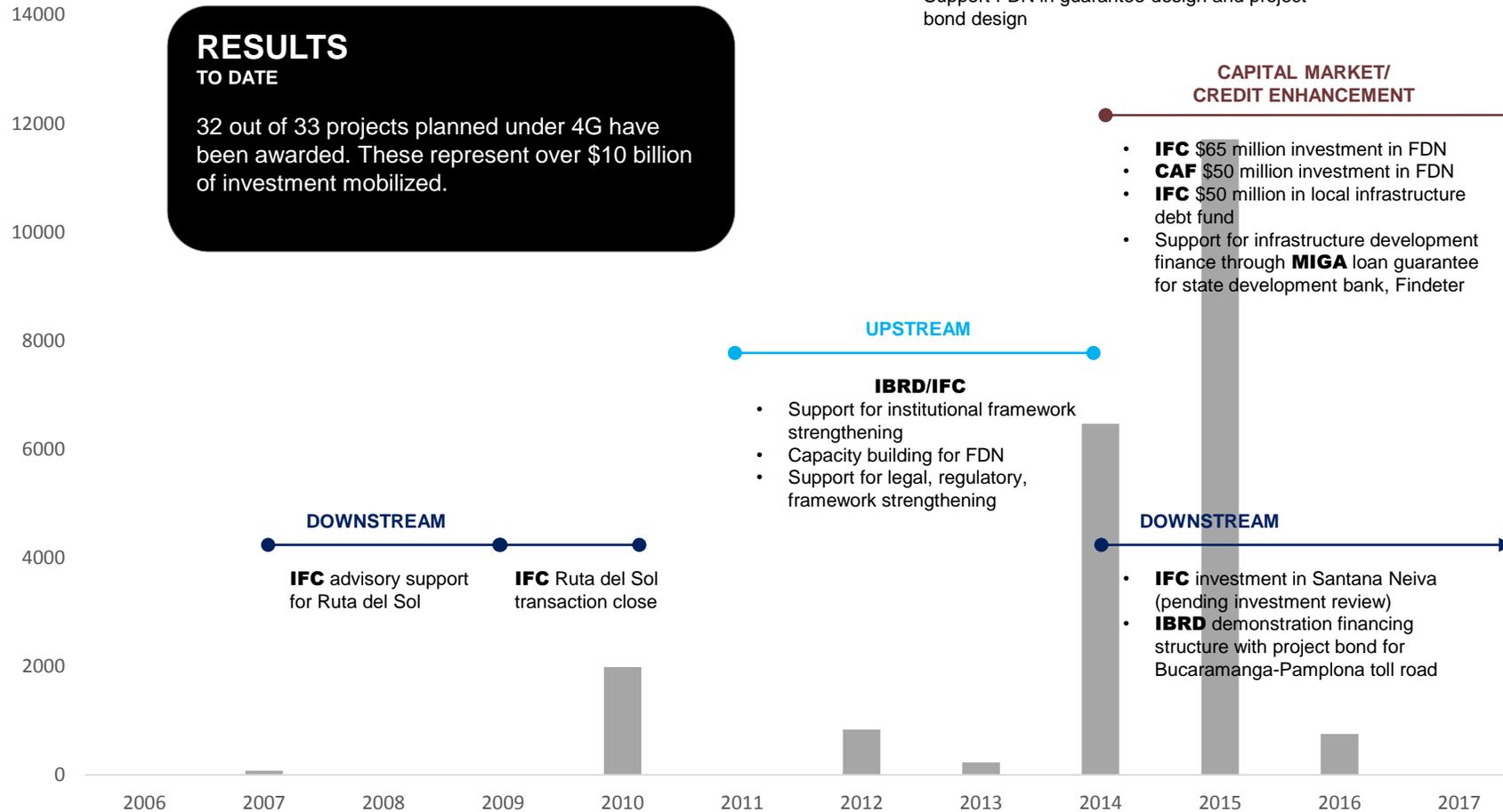
RESULTS TO DATE

\$969 Million in Total Private Investment



Colombia: Roads

Commitment w/private sector participation in roads (\$ millions)



CAPITAL MARKET/ CREDIT ENHANCEMENT

IBRD

- Improved pricing benchmark
- Standardized bond structure with FDN guarantee
- Regulations on infrastructure debt funds
- Support FDN in guarantee design and project bond design

CAPITAL MARKET/ CREDIT ENHANCEMENT

- **IFC** \$65 million investment in FDN
- **CAF** \$50 million investment in FDN
- **IFC** \$50 million in local infrastructure debt fund
- Support for infrastructure development finance through **MIGA** loan guarantee for state development bank, Findeter

UPSTREAM

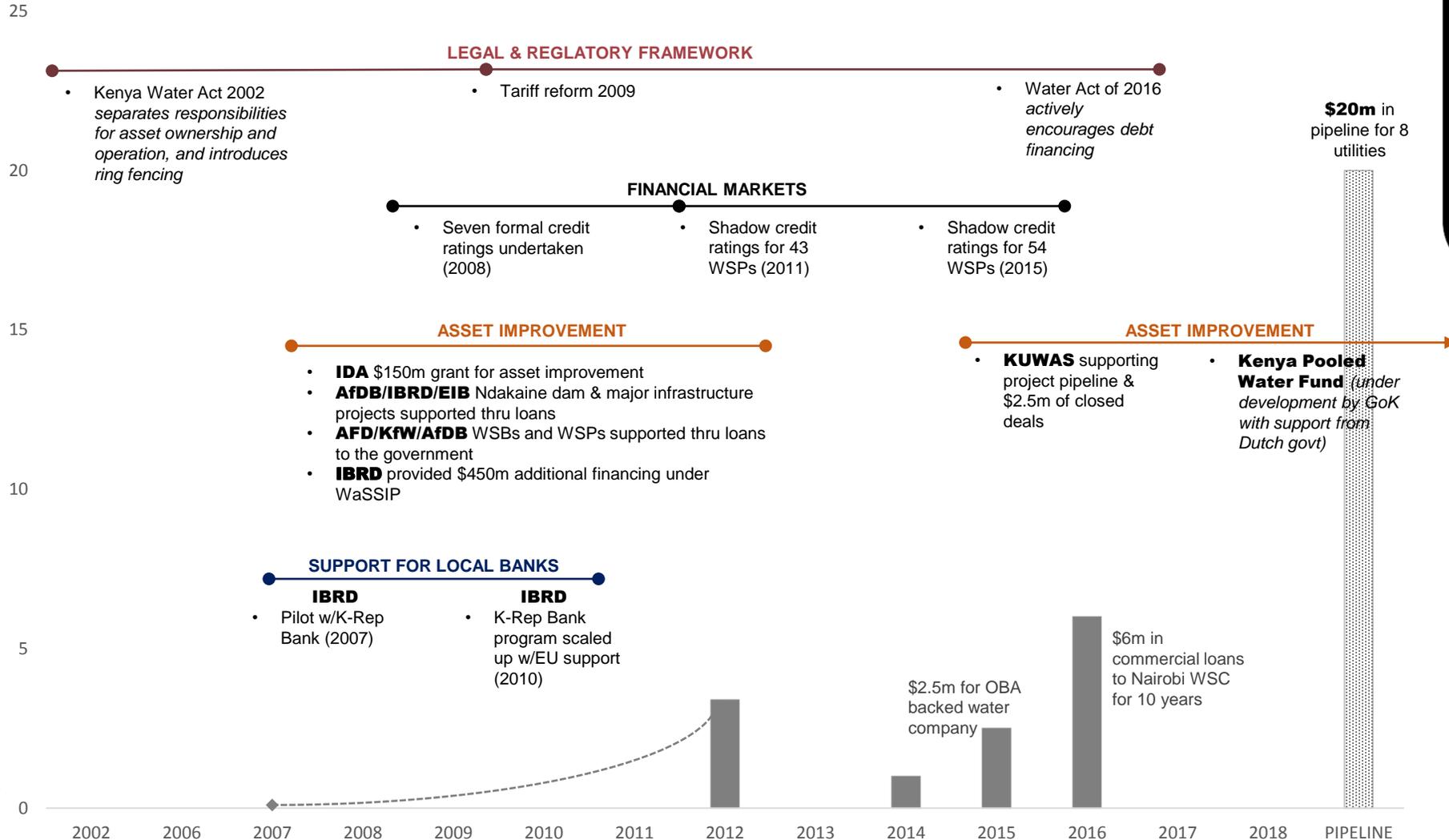
IBRD/IFC

- Support for institutional framework strengthening
- Capacity building for FDN
- Support for legal, regulatory, framework strengthening

DOWNSTREAM

- **IFC** investment in Santana Neiva (pending investment review)
- **IBRD** demonstration financing structure with project bond for Bucaramanga-Pamplona toll road

Kenya: Water



RESULTS

TO DATE

\$12.7 million commercial financing mobilized to improve services in low income areas, with \$20 million in pipeline.

Tenor of loan increased from 5 years in pilot phase to 10 years.

*Commercial financing includes commercial loans from domestic banks, which may be supported by partial credit guarantees from development partners.

Getting Finance to Flow

- Recognizing the primacy of country ownership
- Support low-carbon transitions and target transformational potential
- Protect the vulnerable
- Creating an investment-friendly environment
- Expanding and standardizing credit enhancement
- Prioritizing commercial financing
- Blending concessional resources and private capital
- Reviewing incentives for crowding-in private sector resources

Thank You!

Project Examples

Roads and Bridges Maintenance Project - AF2 (P146402)

Project Info	Mozambique; IPF; Transport and ICT Total Financing: US\$73.90M; Borrower US\$40M; IDA US\$3.15; Strategic Climate Fund Credit US\$6.50M; Strategic Climate Fund Grant US\$9.25M; GFDRR US\$15M
Co-benefits	Adaptation: US\$33M Mitigation: US\$0
PDO	(i) improve access of the population to all-season roads through maintenance, rehabilitation and upgrading of the classified road network
Barrier: Policies and enabling environments	<ul style="list-style-type: none"> • Developing <u>national technical design standards and specifications</u> for climate resilient roads: <ul style="list-style-type: none"> - Review existing design standards and construction maintenance approaches - Develop technical standards and maintenance approaches for paved and unpaved classified road network
Barrier: Strategic planning and programming	<ul style="list-style-type: none"> • <u>Improving flood modelling</u> in the area
Barrier: Project preparation and technical design	<ul style="list-style-type: none"> • Piloting <u>climate resilient road designs</u>, with view to scaling up to rest of road network: <ul style="list-style-type: none"> - Design options for rural unclassified roads and associated hydraulic structures - Piloting improved methodologies for maintenance and monitoring - Capacity building programs for local contractors and service providers
Barrier: Financial structuring	<ul style="list-style-type: none"> • <u>Immediate Response Contingency Fund:</u> Establishment of an immediate response mechanism to facilitate access to rapid financing for disaster response in the aftermath of a national disaster to be triggered through formal declaration by the Recipient of national or regional state of emergency

Project Examples

Enhancing the Climate Resilience of the West Coast Road Project (P126504)

Project Info	Samoa; SIL; Transport and ICT Total Financing: US\$17.02M; IBRD US\$14.80M; Borrower US\$2.22M
PDO	(i) improve the climate resilience of the West Coast Road; and (ii) enhance local capacity to develop a more climate resilient road network
Barrier: Policies and enabling environments	<ul style="list-style-type: none">• Strategy to <u>outline a general climate change adaptation policy framework</u>• Review the <u>institutional and legal framework and recommend specific reforms</u>
Barrier: Strategic planning and programming	<ul style="list-style-type: none">• <u>Vulnerability assessment of the Samoa road network:</u><ul style="list-style-type: none">- Technical assistance to assess the climate vulnerability of the main road network and prepare a climate resilience/adaptation strategy- Identification and prioritization of specific locations requiring investment to improve resilience- Determining specific measures to update design and planning standards and maintenance procedures, prepare tools to assess the vulnerability of road assets to climate events
Barrier: Project preparation and technical design	<ul style="list-style-type: none">• <u>Implementing resilient road design:</u><ul style="list-style-type: none">- Raising and strengthening vulnerable sections- Improving longitudinal and cross drainage with a view to reducing road closures, surface flooding and impounding of water and road deterioration due to runoff and increasingly high water tables

Project Examples

Road Asset Management Project (P150572)

Project Info	Cambodia; IPF; Transport and ICT Total Financing: US\$64.80; IDA US\$60M; Borrower US\$4.80M
Co-benefits	Adaptation: US\$55M Mitigation: US\$ 0
PDO	To improve the condition, safety and climate resilience of selected national road corridors in Cambodia. The project will achieve this objective through (i) the systematic introduction of designs that include climate proofing and road safety measures and the use of performance based contracts; and (ii) by enhancing capacity to carry out road maintenance planning, contracting and management.
Barrier: Strategic planning and programming	<ul style="list-style-type: none">• <u>System upgrading and capacity development:</u><ul style="list-style-type: none">- Strengthening data collection and modeling systems- Capacity development to outsource and oversee road maintenance activities (including testing the utility of performance based contracting for road maintenance)- Development of three-year rolling road maintenance plans
Barrier: Project preparation and technical design	<ul style="list-style-type: none">• <u>Road asset management:</u><ul style="list-style-type: none">- Periodic maintenance and strengthening of existing bitumen-sealed roads- Replacement of current pavement with concrete pavement at flood prone areas and installation of new drains on both sides of the road- Opportunity to introduce climate resilient design to high-volume roads
Barrier: Financial structuring	<ul style="list-style-type: none">• <u>Contingent Emergency Response:</u> Enabling immediate response through the reallocation of project proceeds in the event of an eligible crisis or emergency

Project Examples

Shire River Basin Management Program (P117617)

Project Info	Malawi; Adaptable Program Loan; Water Total Financing: US\$267.88; Global Environment – Associated IDA Fund US\$125M; IDA US\$93.75M; IDA Grant US\$31.25M; GEF US\$6.58M; Borrower US\$11.30M
Co-benefits	Adaptation: US\$86.25M Mitigation: US\$38.75M
PDO	To generate sustainable social, economic and environmental benefits by effectively and collaboratively planning, developing and managing the Shire River Basin’s natural resources
Barrier: Strategic planning and programming	<ul style="list-style-type: none"> • <u>Integrated investment planning and modernized system operations</u> for river basin management: <ul style="list-style-type: none"> - Developing basin planning decision support systems to support a strategic multi-sectoral systems perspective in evaluating future investment possibilities - Modernizing water resources monitoring systems (including the development of real-time hydromet systems) and an operational decision support system to improve integrated hydromet, support forecasting and early warning systems, and provide inputs for water systems infrastructure operations - Institutional coordination mechanisms for basin planning and management • <u>Implementing an Integrated Flood Risk Management Plan (IFRMP)</u>
Barrier: Project preparation and technical design	<ul style="list-style-type: none"> • <u>Upgrading the Kamuzu Barrage:</u> <ul style="list-style-type: none"> - Extending the operational life of the barrage and support its key functions to regulate water levels upstream to allow for additional flexibility and greater buffering from climate variability and change, among others. - Using the decision support system to optimize barrage operation in real-time
Barrier: Financial structuring	<ul style="list-style-type: none"> • <u>Use of the Adaptable Program Loan (APL) instrument</u> with fully blended co-financing from the Global Environment Facility and the Least Developed Countries Fund (GEF/LDCF)

Project Examples

Barrier Addressed	Resilience Approach	Projects
1. Policies and enabling environments	<ul style="list-style-type: none"> • Developing national technical design standards and specifications for climate resilient roads • Establishing climate change adaptation policy frameworks • Reviewing institutional and legal frameworks and recommending specific reforms 	<ul style="list-style-type: none"> - Roads and Bridges Maintenance Project AF2 (Mozambique) - West Coast Road Project (Samoa)
2. Strategic planning and programming	<ul style="list-style-type: none"> • Assessing the vulnerability of roads network and preparing a climate adaptation strategy • Strengthening data collection and modeling systems including flood modelling, integrated hydromet, forecasting, and early warning systems • Outsourcing/Performance-based contracting for road maintenance activities • Developing road maintenance plans • Integrated investment planning and modernized system operations for river basin management • Developing planning decision support systems • Implementing Integrated Flood Risk Management Plans (IFRMP) • Institutional coordination mechanisms for basin planning and management • Identification and prioritization of specific locations for investments to improve resilience 	<ul style="list-style-type: none"> - Roads and Bridges Maintenance Project AF2 (Mozambique) - West Coast Road Project (Samoa) - Road Asset Management Project (Cambodia) - Shire River Basin Management Program (Malawi)
3. Project preparation and technical design	<ul style="list-style-type: none"> • Implementing climate resilient road designs: <ul style="list-style-type: none"> - Cross drainage and materials options - Methodologies for maintenance and monitoring - Capacity building programs for contractors and service providers • Implementing climate resilient barrage designs: <ul style="list-style-type: none"> - Flexibility in regulating water levels upstream for greater buffering from climate variability 	<ul style="list-style-type: none"> - Roads and Bridges Maintenance Project AF2 (Mozambique) - West Coast Road Project (Samoa) - Road Asset Management Project (Cambodia) - Shire River Basin Management Program (Malawi)
4. Financial structuring	<ul style="list-style-type: none"> • Establishing an immediate response contingency fund • Use of the Adaptable Program Loan (APL) instrument with fully blended co-financing from other sources 	<ul style="list-style-type: none"> - Roads and Bridges Maintenance Project AF2 (Mozambique) - Road Asset Management Project (Cambodia) - Shire River Basin Management Program (Malawi)