

# Climate adaptation and flood prevention financing: case studies from Eastern Europe and Asia

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**EUROPEAN INVESTMENT BANK**

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- Case Studies from Eastern Europe and Asia:
  - St. Petersburg Flood Barrier, Russia
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## 1. General

- Largest international lender to the water sector worldwide,
- Total loan amount of EUR 33bn over the past 10 years, 90% of which for projects inside EU,
- Over the past 10 years, 300 major projects have been financed, 75% of which located within the EU.

### *Expected Outcome of the projects signed in 2020*



#### **SANITATION**

**15.5 million** with improved sanitation



#### **FLOOD PROTECTION**

reduced risk of flooding for  
**1.8 million** people



#### **WATER**

Safer drinking water for  
**29.6 million** people



#### **DROUGHTS RISK REDUCTION**

**8.7 million** people with reduced exposure to drought risk

## 1. General (cont.)

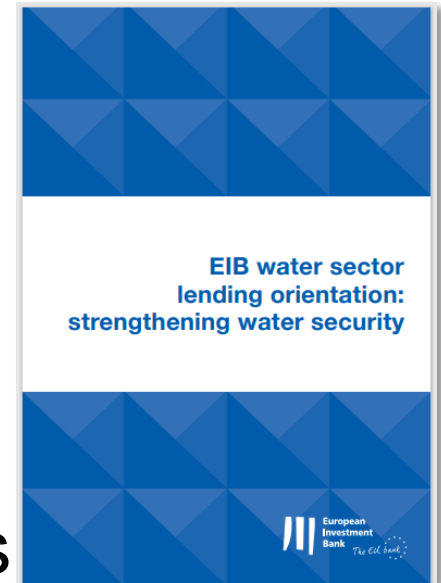
- EIB lending covers the whole water cycle (water resources, water supply, sanitation, flood protection).
- EIB lends to public or private utility companies, national or local authorities or directly for project finance deals (but public sector represents 70% of lending volume)
- EIB can mobilise technical assistance, for both project preparation and implementation;
- EIB can finance large individual operations under investment loans or small operations under framework or global loans;
- EIB cannot finance more than 50% of the project investment cost (on average, EIB lending represents 30% of the project investment cost);

For more data and media material click here:

<http://www.eib.org/en/projects/sectors/water-and-waste-water-management/index.htm?f=search&media=search>

## 2. EIB's Water Sector Lending Orientation<sup>(1)</sup>

- River basin approach (IWRM)
- Sector development
- Adaptation to climate change
- Water efficiency
- Development of new water supply
- Wastewater and sanitation services
- Research and Innovation



**Maximise Added Value**

(1) Published in December 2017. Available here:

[http://www.eib.org/attachments/strategies/eib\\_water\\_sector\\_lending\\_orientation\\_en.pdf](http://www.eib.org/attachments/strategies/eib_water_sector_lending_orientation_en.pdf)

### 3. Implementing the Orientation: Key Actions (1/2)

- IWRM (Integrated Water Resources Management):
  - Promote IWRM + water services provision in a project
  - Support transboundary cooperation
- Consolidation of institutional framework:
  - Support appropriate level of integration of utilities to improve efficiency and enhance borrowing capacity
  - Enhance financial sustainability (sustainable cost recovery)
- Adaptation to climate change:
  - Adaptation is part of EIB's Climate Action Commitment
  - Promoters should consider adaptation in project design
  - EIB supports technical assistance (TA) with grants
  - Preparation, implementation of flood risk management projects

### 3. Implementing the Orientation: Key Actions (2/2)

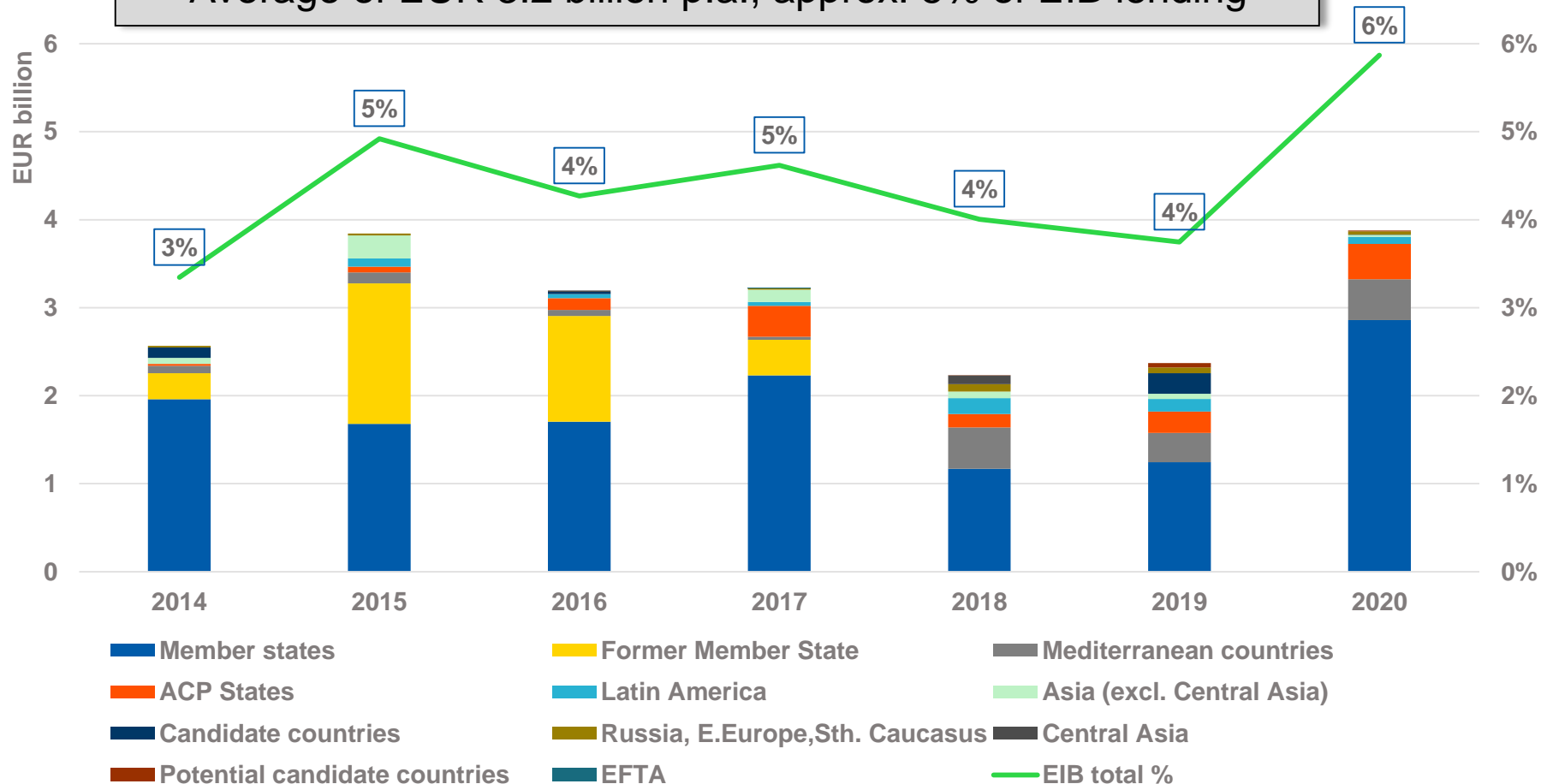
- Water efficiency:
  - Support efficiency in: (i) use by consumers; (ii) allocation of resources; (iii) systems (losses); (iv) management of utilities
  - Promote principle of cost recovery in line with WFD<sup>(1)</sup>
  - Support industries aiming at improving “water footprint”
- Development of new water supply:
  - Demand side management and efficiency as 1<sup>st</sup> priority
  - Finance: (i) desalination with pre-requisites; (ii) dams, basin transfers and fossil water under strict conditions
- Wastewater and sanitation services:
  - Always consider them when undertaking water supply projects
  - Sustainable cost recovery (incl. subsidies)
  - Sustainable financing (blend loans, grants)

(1) EU Water Framework Directive (2000/60/EC)

# EIB Activity in the Water Sector

## 4.1 Key Figures 2014-2020: EUR 22.5 bn signed

Average of EUR 3.2 billion p.a., approx. 5% of EIB lending



In 2020 EIB's climate financing totalled EUR 24.2 Bn (37%).

## 5. EIB's Climate Action Commitment

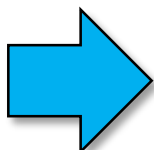
*“As the largest multilateral provider of climate finance worldwide, **we commit at least 25% of our lending portfolio to low-carbon and climate-resilient growth.**” (2016)*

*“The EIB will increase its level of support to climate action and environmental sustainability to **exceed 50% of its overall lending activity by 2025.**” (EIB Group Climate Bank Roadmap 2020-2025)*

EIB is member of the European Financing Institutions Working Group on Adaptation to Climate Change (EUFIWACC) which issued a Guidance Note in 2016.<sup>(2)</sup>



Standard Terms of reference for Climate Risk and Vulnerability Assessments (CRVA), available upon request



***We want to demonstrate the climate impact (adaptation and/or mitigation) of all our projects!***

Integrating Climate  
Change Information  
and Adaptation in  
Project Development  
Emerging Experience from Practitioners

European Financing Institutions Working Group on Adaptation to Climate Change



## Case Studies from Eastern Europe and Asia:

1. St. Petersburg Flood Barrier, Russia
2. Moldova Flood Management Master Plan
3. Ulaan Bataar Flood Protection Works, Mongolia

## Case Study 1: St. Petersburg Flood Barrier, Russian Federation

### The Problem:

- Created in 1703, the city was destroyed three times by catastrophic floods (over 3m): 1777, 1824 and 1924;
- Floods with heights 1.5-3m happen twice as often during the past 50 years as during the previous 250 years.
- Baltic mean sea level rise has been about 2.45mm annually during the last 50 years, causing a predicted 7.5cm rise in the sea level of the Gulf of Finland.
- Annual Average Damages from floods in St Petersburg were in the order of USD 50m.



## Case Study 1: St. Petersburg Flood Barrier, Russian Federation

The solution:

- Completion of the Flood Protection Barrier
- 25.4 km embankment across Neva Bay, 11 sub-embankments, six discharge sluices and 2 navigation channels with closing gates; later added: motorway + tunnels
- Designed to provide protection against the level of a flood with a return period of 1000 years (4.5m)



- Total project cost: EUR 2,200m (50/50 flood/road infrastructure)
- Loans from EIB (EUR 40m) and EBRD (USD 245m).
- Borrower: The Russian Federation
- Final Beneficiary: The Barrier Authority
- Implementation: 2003-2012

## Case Study 1: St. Petersburg Flood Barrier, Russian Federation

List of Floods prevented in St. Petersburg since the start of Flood  
Barrier operation

	Date	Rise, metres	
1	28 November, 2011	2.05	(prevented, which would have been flood number 309 )
2	26 December, 2011	2.94	(prevented)
3	27 December, 2011	2.60	(prevented)
4	29 October, 2013	2.67	(prevented)
5	17 November, 2013	2.13	(prevented)
6	13 December, 2013	2.48	(prevented)
7	3 January, 2015	2.40	(prevented)
8	13 January, 2015	1.90	(prevented)
9	05 December, 2015	2.68	(prevented)
10	06 December, 2015	2.30	(prevented)
11	07 December, 2015	2.51	(prevented)
12	10 December, 2015	1.85	(prevented)
13	25 December, 2015	1.87	(prevented)
14	8 January, 2018	2.14	(prevented)
15	26 September, 2018	2.07	(prevented)
16	9 March, 2019	1.80	(prevented)
17	15 September, 2019	1.70	(prevented)
18	01 October, 2019	1.65	(prevented)
19	19 December, 2019	2.36	(prevented)
20	06 February, 2020	1.65	(prevented)
21	18 February, 2020	1.73	(prevented)
22	23 February, 2020	1.96	(prevented)
23	24 February, 2020	1.72	(prevented)
24	13 March, 2020	1.63	(prevented)
25	10 September, 2020	1.70	(prevented)
26	13 September, 2020	1.73	(prevented)

### Result after 10 years of operation:

26 floods above 1.6m prevented, of which several close to the 3m level (approx. EUR 1 Bn damages per flood).

**Flood protection investment already paid back!**

For more info: The Barrier Authority  
<https://dambaspb.ru/en>

## Case Study 2: Moldova Flood Management Master Plan

### Context and overall objectives

- Request for support from Ministry of Environment further to the 2010 floods
- Objectives:
  - Develop a countrywide Flood Management Master Plan and investment programme
  - Enhance Ministry of Environment's capacity
  - Set up institutional conditions in line with EU Floods and Water Framework Directives
- Take into account past and ongoing initiatives from other lenders and donors (EU, World Bank, UNDP/UNEP, Czech Cooperation, OECD, etc.)
- Funding from EPTATF (Eastern Partnership Technical Assistance Trust Fund): EUR 2m approved in Nov. 2011
- Start of consultant's assignment: October 2013

### **Tasks of the TA assignment, in line with EU Floods Directive:**

1. Preliminary Flood Risk Assessment
2. Hydraulic Modelling and preparation of Flood Hazard Maps
3. Flood Risk Assessment (FRA)
4. Define Objectives and Strategies
5. Identification of measures for flood risk management
6. Development of Phased Investment Program
7. Development of a Short Term Investment Plan (STIP)
8. Implementation of a GIS based River Management and Monitoring System
9. Capacity Building

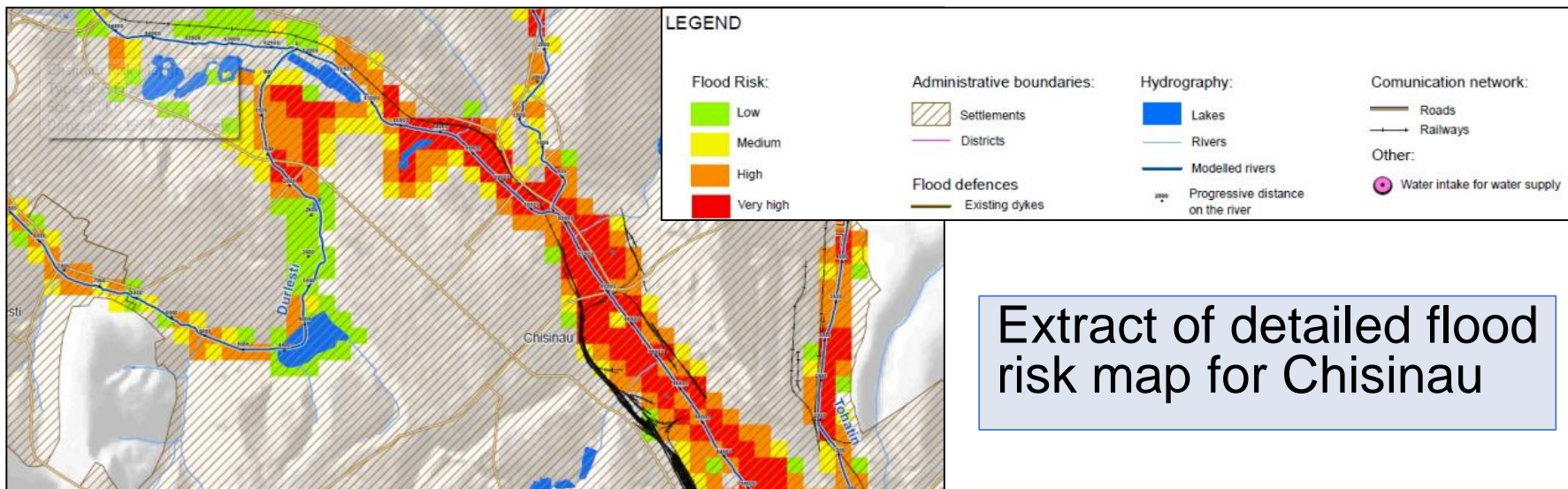
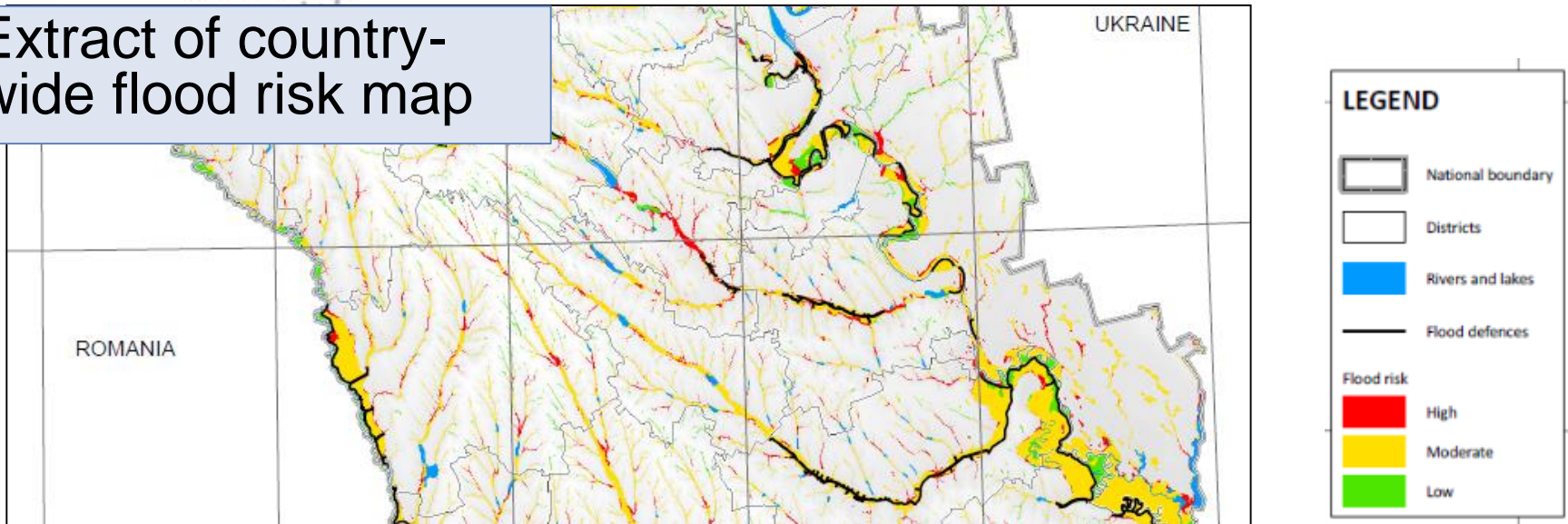
## Case Study 2: Moldova Flood Management Master Plan

### Main Results:

- Assessment of existing infrastructure (3,000km of flood defenses, 5,000 dams and reservoirs, LIDAR and on-site surveys, etc.);
- High level hydraulic modelling of 12,000km of rivers, of which 3,400 km modelled in detail with review of historic flood events;
- Preparation of flood hazard maps in line with EU Floods Directive;
- Estimate of hydropower potential (1200 kW, 7,300 MWh/year);
- Development of strategic options for flood risk management and approval by stakeholders;
- Identification of structural and non-structural / technical assistance measures;
- Development of phased investment plan over 20 years (EUR 450 million) and Short Term Investment Plan over 7 years (EUR 100m);
- TA completed in 2016, but project not yet implemented due to political reasons.

# Case Study 2: Moldova Flood Management Master Plan

Extract of country-wide flood risk map



Extract of detailed flood risk map for Chisinau

## Case Study 3: Ulaan Bataar Flood Protection Works (Mongolia)

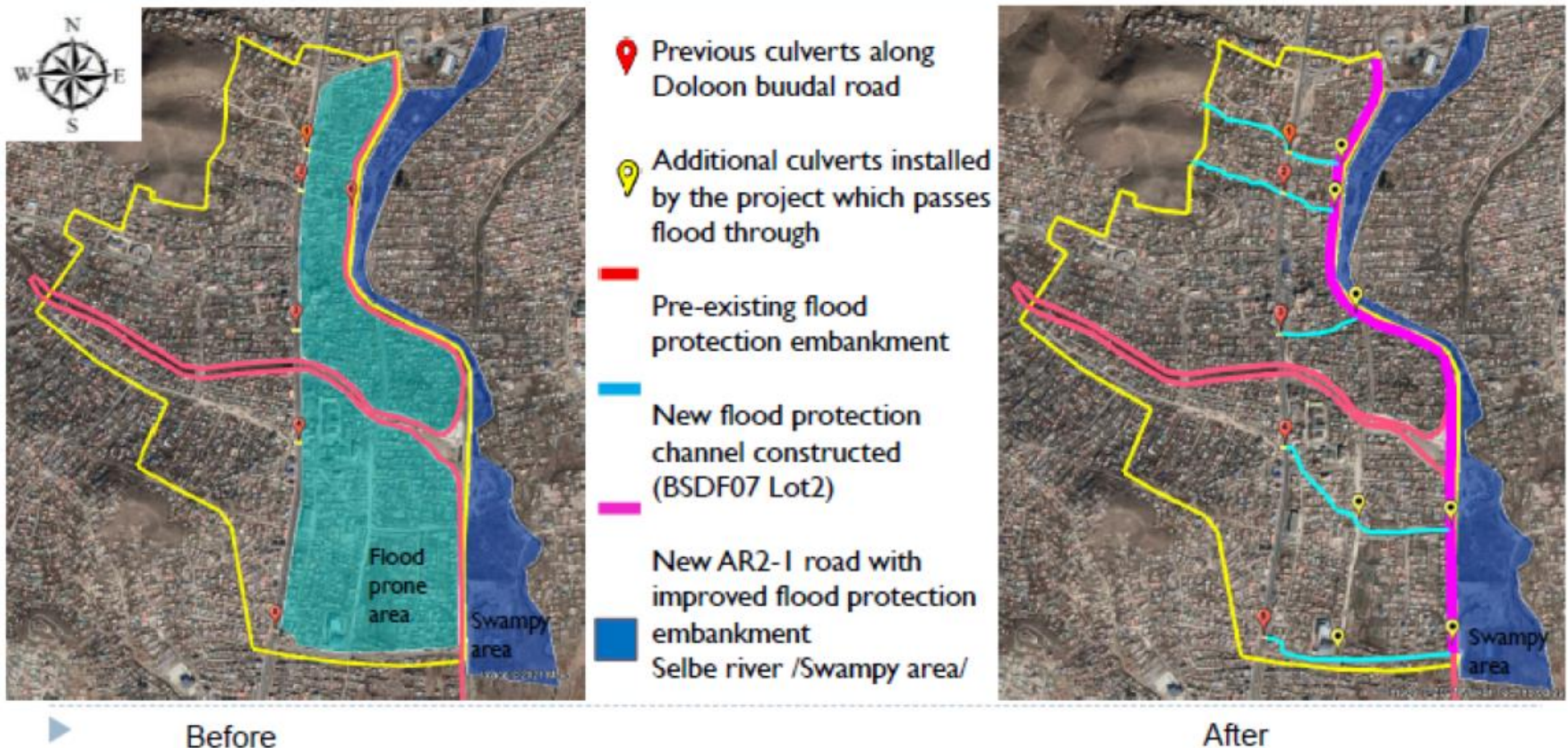
- Ulaanbaatar Urban Services Ger Areas Development Investment Program (GADIP),
- Comprehensive multi-sector urban development programme initiated by ADB, over USD 300 m over 10 years (2013 -2023) in 3 Tranches.
- EIB contribution of EUR 50 m for water, wastewater and flood infrastructure.



Tranche	Subcenters	EIB financed flood protection channel		Population	Number of beneficiary households
		Length (km)	Discharge capacity (m3/s)		
Tranche 1	Bayankhoshuu	2.3	5.1 - 14.9	7,677	1,360
		2.4	40.5 - 62.4	5,486	972
	Selbe	2.4	2.5 - 3.7	8,718	2,420
Tranche 2	Denjiin1000	0.80	0.95	10,731	3,066
	Dambadarjaa	1.8	1.5	4,434	1,267
Tranche 3	Tolgoit	3.12	18.1 - 24.5	5,774	1,566
	Sharkhad	7.76	TBD	6,585	1,869
Total		20.58 km		49,405	12,520

# Case Study 3: Ulaan Bataar Flood Protection Works (Mongolia)

Selbe subcenter Flood Protection channels (BSDF07 Lot2)  
Total length, L=2.4km



# THANK YOU FOR YOUR ATTENTION!



For more information and for the CRVA Terms of reference (available in English, French and Russian) please contact :

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