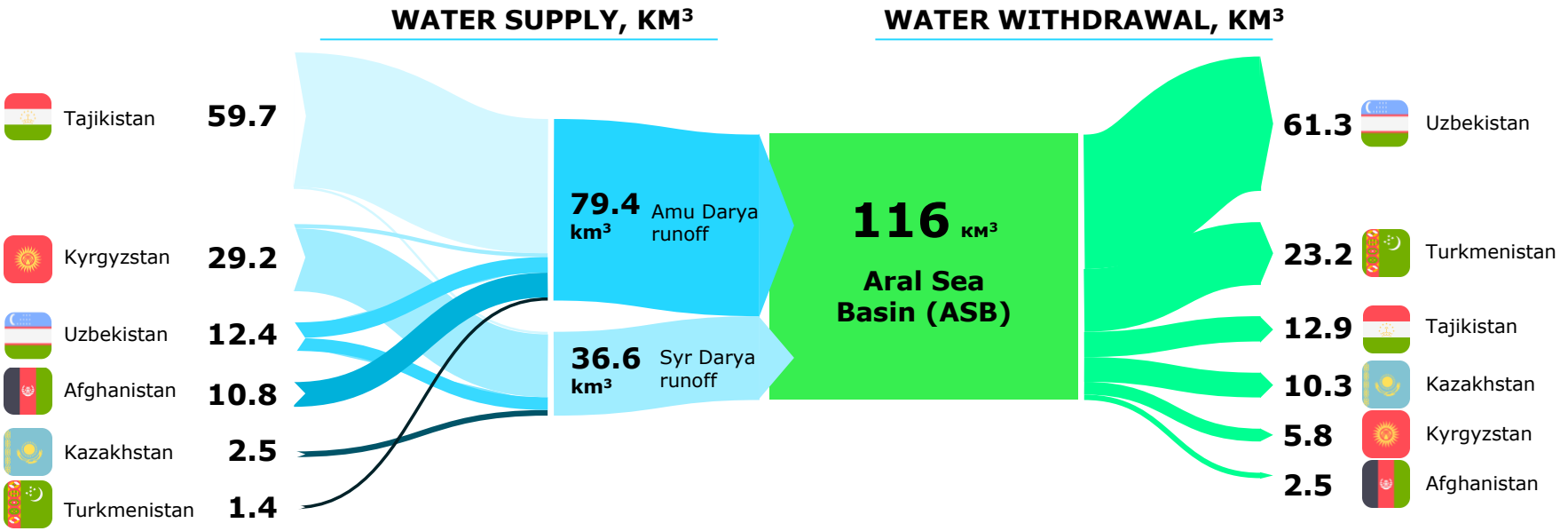
Eurasian Development Bank

Efficient Irrigation and Water Conservation in Central Asia

Water Balance of Aral Sea Basin

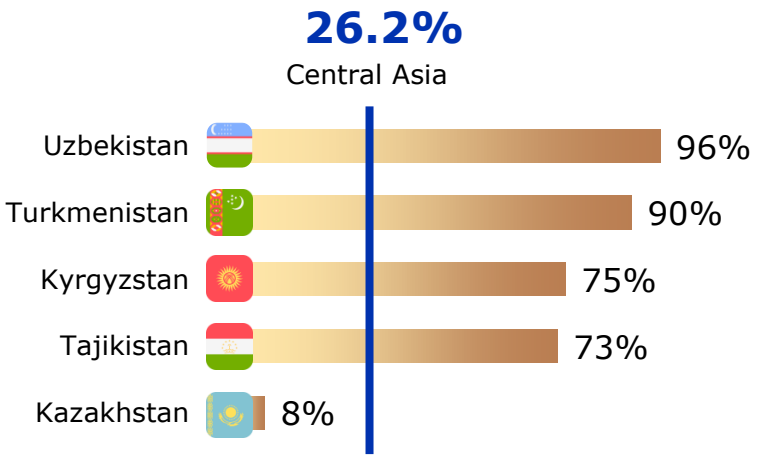


92% of water withdrawal goes to agriculture

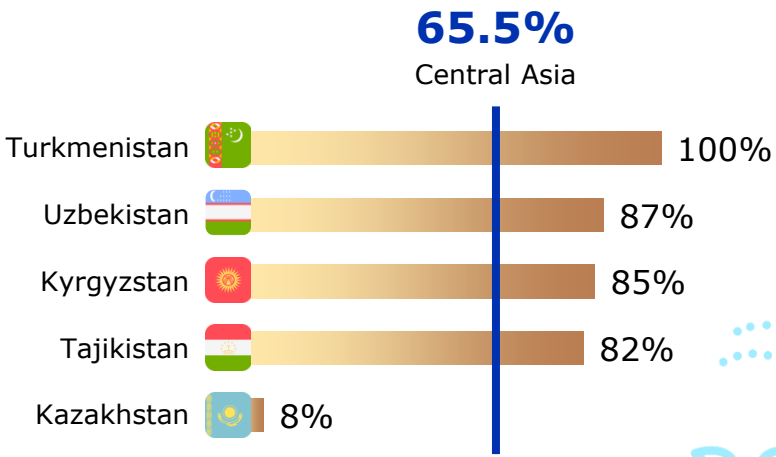
Source: EDB estimates based on data from SIC ICWC

Irrigated Lands: Basis for Food Security in Central Asia

Irrigated land
in Central Asia
as % of cultivated land, in 2020



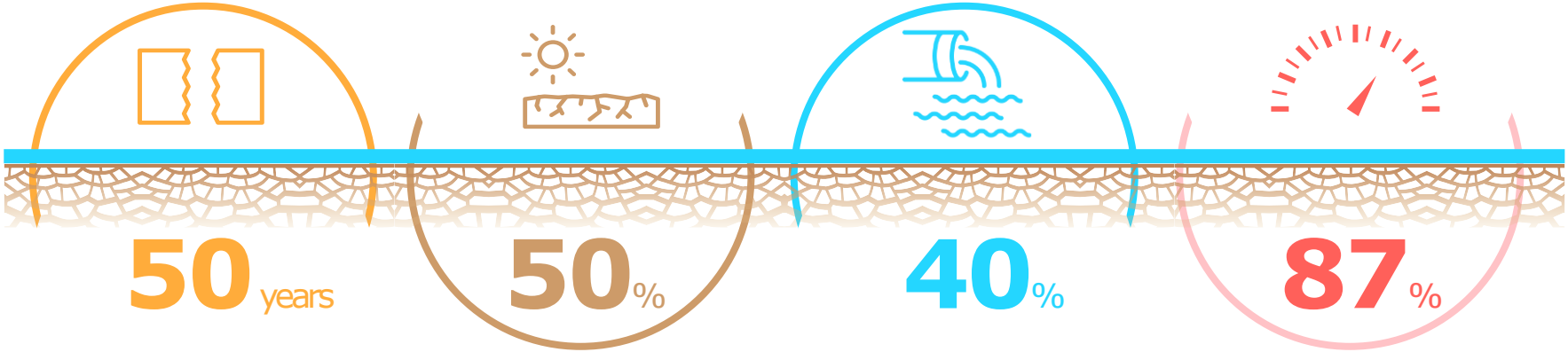
Irrigated agriculture in the total
added value of agriculture
in %, 2020



Agriculture can only develop through **irrigated crop farming**

Source: EDB calculations based on FAOSTAT data

Central Asia Faces Exhaustion of Land and Water Resources



INFRASTRUCTURE DETERIORATION

50 years

is the average age of irrigation inter-farm and intra-farm infrastructure.
This figure is even higher for large main canals

LAND DEGRADATION

50%

of irrigated lands in Central Asia are subject to salinization

WATER LOSS

40%

of water is lost through filtration.

1/3 of the entire amount is lost in the main and inter-farm canal systems,

2/3 of it is lost in on-farm canals.

LIMITED POTENTIAL FOR IRRIGATION EXPANSION

87%

is the realised irrigation potential in Uzbekistan. Other Central Asian countries are also close to reaching the limit of developing new irrigated areas

Qosh-Tepa Canal in Afghanistan Will Significantly Reduce Water Availability in Central Asia

180/191 place

in the world according to the Human Development Index (HDI) that is estimated at 0.478 points

Food shortage in Afghanistan

19.7 million people

or nearly 50% of the country's population is experiencing critical food shortage

285 km

is the length of the main canal that is 10-meter wide and 8.5-meter deep (no lining planned)

Launch of the Qosh Tepa canal

500 thousands hectares

of new irrigated lands in Kunduz, Balkh, Jawzjan and Faryab provinces of Northern Afghanistan

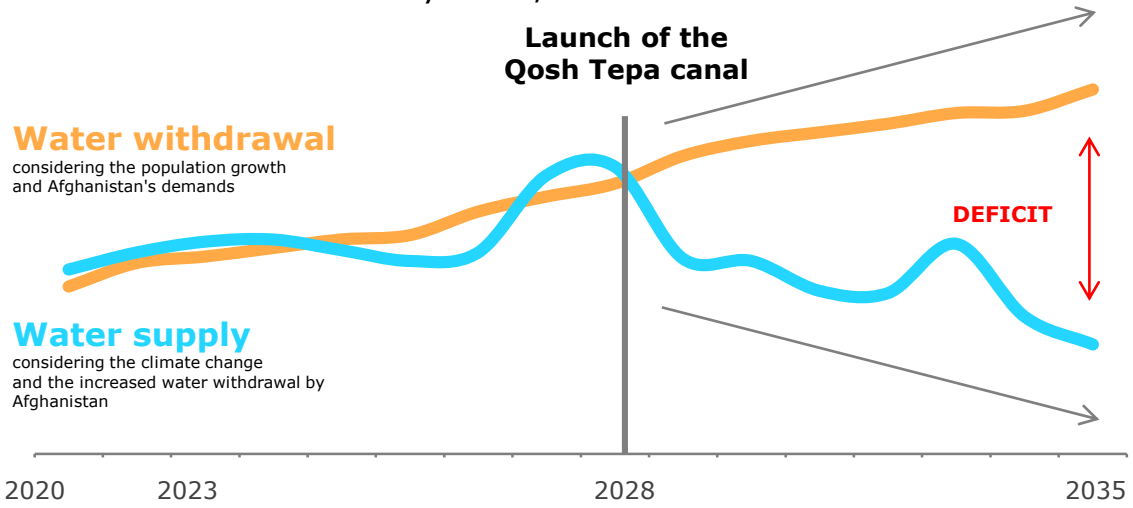
up to 10 km³

is the expected water withdrawal from the 22 km³ of the Panj river runoff in Afghanistan and from the 80 km3 of the total runoff of the Amu Darya River

Reduction of river runoff in Central Asia

In Five Years Aral Sea Basin May Face Chronic Water Scarcity

Forecast of runoff and water withdrawal in the ASB* by 2035, km3



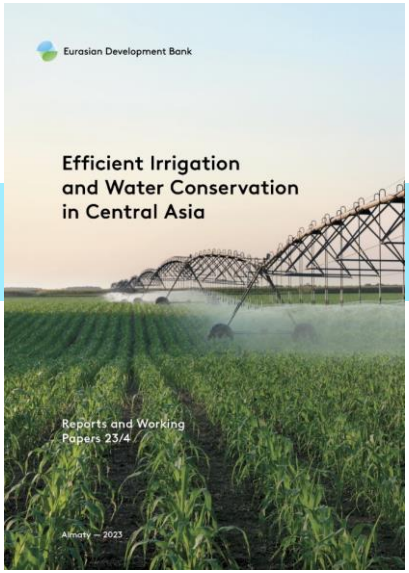
5-12 km³

assessment of water deficit in the ASB starting from 2028-2029 as a result of a combination of climate change, population growth and increased water withdrawal by Afghanistan.

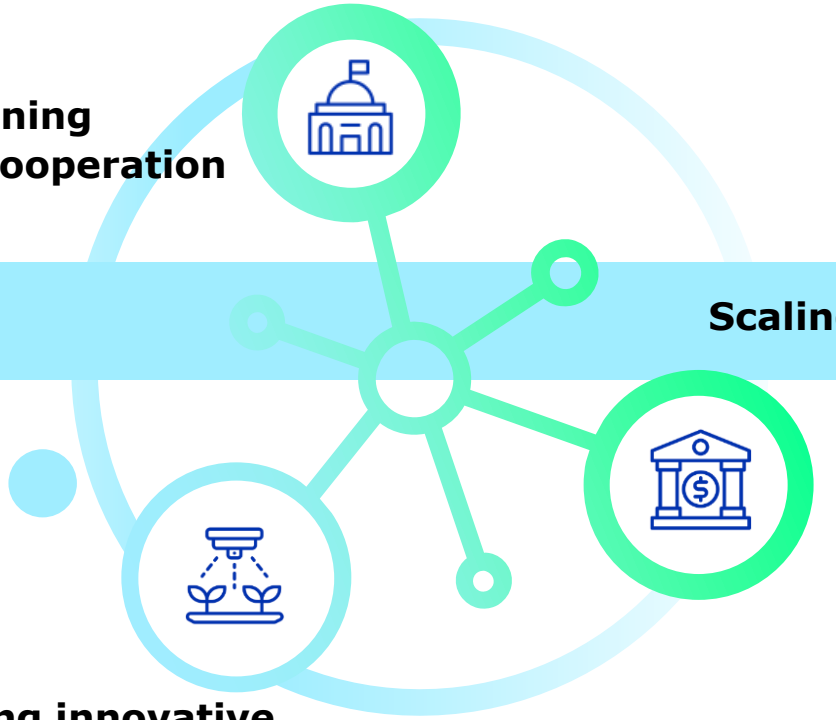
*ASB – the Aral Sea basin

Reducing the flow of the Amu Darya river will have an impact on the entire ASB and may violate existing regional agreements on water sharing

Ten Practical Solutions: Regional Cooperation Plus Improving Irrigation Efficiency



Strengthening regional cooperation



Scaling up finance

Promoting innovative technology

Regional Level Solutions

1

Establish the International Water and Energy Consortium
of Central Asia

2

Pool MDB's financial resources
to support project construction of water infrastructure

3

Create a regional cluster to produce irrigation equipment

4

Offer Afghanistan partnership in water management
in Central Asia

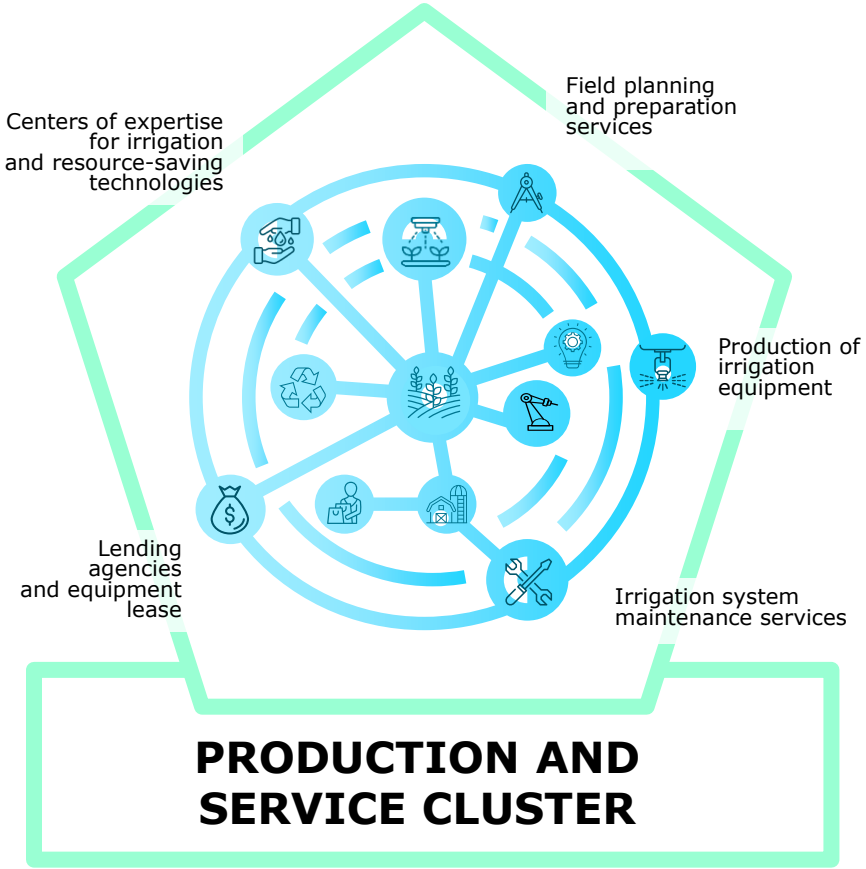
International cooperation and the water–energy–food nexus form the basis for coordinated economic policy

Investing in Regional Cluster for Production of Irrigation Equipment

High demand
for irrigation equipment
in Central Asia

$140-320
millions / year

National support programs
for agricultural equipment
and machinery
purchasing



National Level Solutions: Improvement of Investment Attractiveness of Water and Irrigation Infrastructure

5

Use public-private partnership mechanisms

6

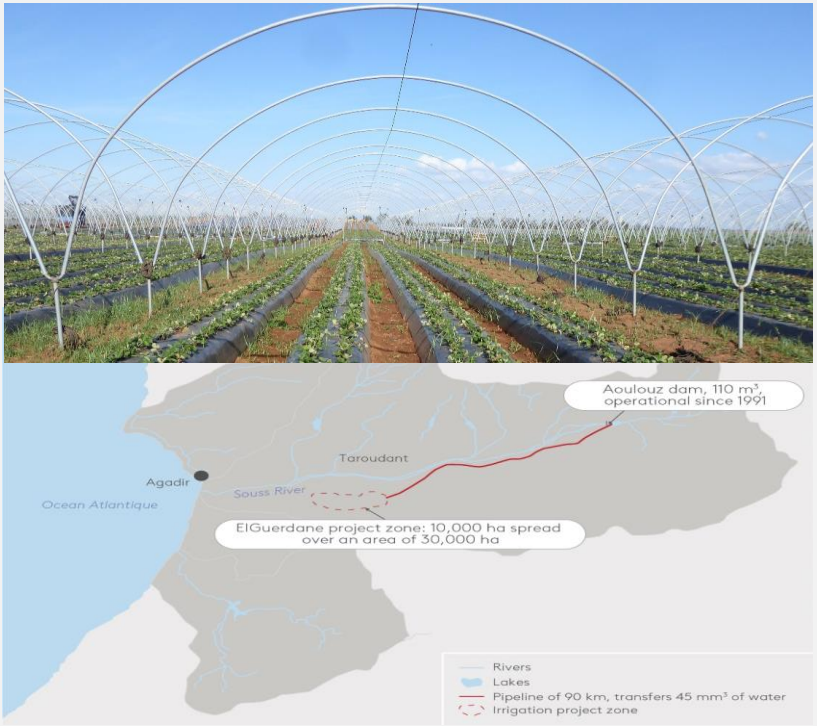
Organise water accounting
while engaging water user associations

7

Gradually incorporate investment charges into tariffs
for irrigation water

The use of PPP mechanisms, mobilisation of MDB's resources, and tariff increases would enable irrigation system renovation and introduction of water-saving technologies in Central Asia

Case 1: First Public-Private Partnership Irrigation Infrastructure Construction Project



Guerdane Irrigation Project

Country	Morocco
Sector	Water supply
PPP form	Build-Transfer-Operate (BTO)
Members of the water consortium	— Omnium Nord Africain (Moroccan State Consortium) — Caisse de Dépot et de Gestion (Moroccan State Investment Bank) — InfraMan, a Saudi-Arabian company — Compagnie Nationale d'Aménagement du Bas Rhône Languedoc (Moroccan State Investment Bank)
International stakeholders	International Finance Corporation (WB Group)
Year of commissioning	2010
Project cost	$ 110 millions
Financing	$44 millions – the Government of Morocco $38 millions – the project operator (consortium) $6 millions – water users through a fixed connection fee

Case 2: Pooling Government's and MDB's Financing in Central Asia

South Karakalpakstan Water Resources Management Improvement Project

Country	Uzbekistan
Sector	Water supply
International stakeholders	— International Bank for Reconstruction and Development (IBRD WB Group) — International Development Association (IDA WB Group)
Implementation time frame	12 June 2014 – 31 July 2023
Project cost	$337.43 million
Financing	$242.5 millions – IDA $76.64 millions – Республика Узбекистан $18,29 millions – IBRD
Project component financing	$273.9 millions – Modernisation of the Irrigation Network $55.4 millions – Modernisation of Agriculture $8.1 millions – Project Management, Monitoring, and Evaluation

... and Promotion of Innovative Water Supply and Irrigation Technology

8

Rehabilitate on-farm irrigation infrastructure

9

Introduce digital technology
for reliable water accounting, sustainable water allocation, and land quality monitoring

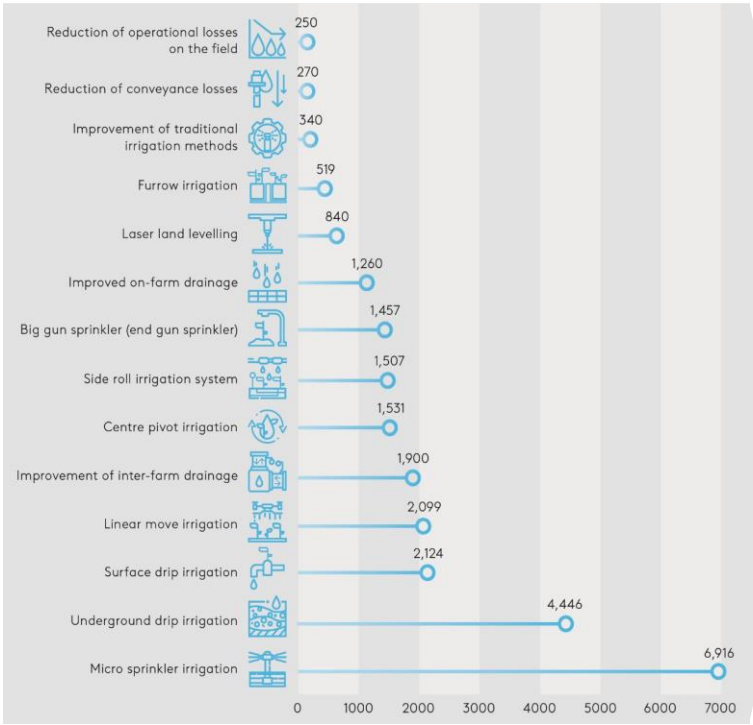
10

Use modern technology
in irrigation, laser land levelling, and crop farming across the region

Transitioning to water-saving practices is the only solution to retain the irrigated land potential and ensure food and water security in Central Asia

Modern Irrigation Technology, Laser Land Levelling, Crop Farming

cost of irrigation technology, $/ha



Introduce digital technology
for reliable water accounting and rational water distribution

12-15%
water saving

Develop modern technology
in irrigation, laser land levelling, cultivation of agricultural plants and crops

20-30%
water saving

Rehabilitate on-farm and irrigation infrastructure
using the private-public partnership format

x3
reduction of water filtration lost

THE SITUATION IS CRITICAL

URGENT SOLUTIONS ARE NEEDED

at the international and national levels to address and mitigate the causes of water scarcity

WATER-SAVING PRACTICES AND CLOSE REGIONAL COOPERATION

are the only solution to retain the irrigated land potential and ensure water and food security in Central Asia

Eurasian Development Bank

Thank you for your attention!

Eurasian Development Bank

HEADQUARTERS

Republic of Kazakhstan
050051, Almaty, 220 Dostyk ave.
Tel.: +7 (727) 244 40 44
Fax: +7 (727) 244 65 70

info@eabr.org
eabr.org