

Understanding Road Ecology: Kazakhstan and Mongolia Case Studies

Kirk Olson

**International Workshop on “ Implementing Wildlife-Friendly
Measures in Infrastructure Planning and Design in Mongolia.**

August, 2015

Ulaanbaatar, Mongolia



HANDBOOK OF ROAD ECOLOGY

Rodney van der Ree • Daniel J. Smith • Clara Grilo



WILEY Blackwell

Chapter 58

RAILWAYS, ROADS AND FENCES ACROSS KAZAKHSTAN AND MONGOLIA THREATEN THE SURVIVAL OF WIDE-RANGING WILDLIFE

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DISCUSSION PAPER



MONGOLIA

Wildlife Crossing Options
Along Existing and Planned
Mongolian Railway Corridors



Saiga Crossing Options

Guidelines and Recommendations to Mitigate
Barrier Effects of Border Fencing and Railroad
Corridors on Saiga Antelope in Kazakhstan.



Prepared by

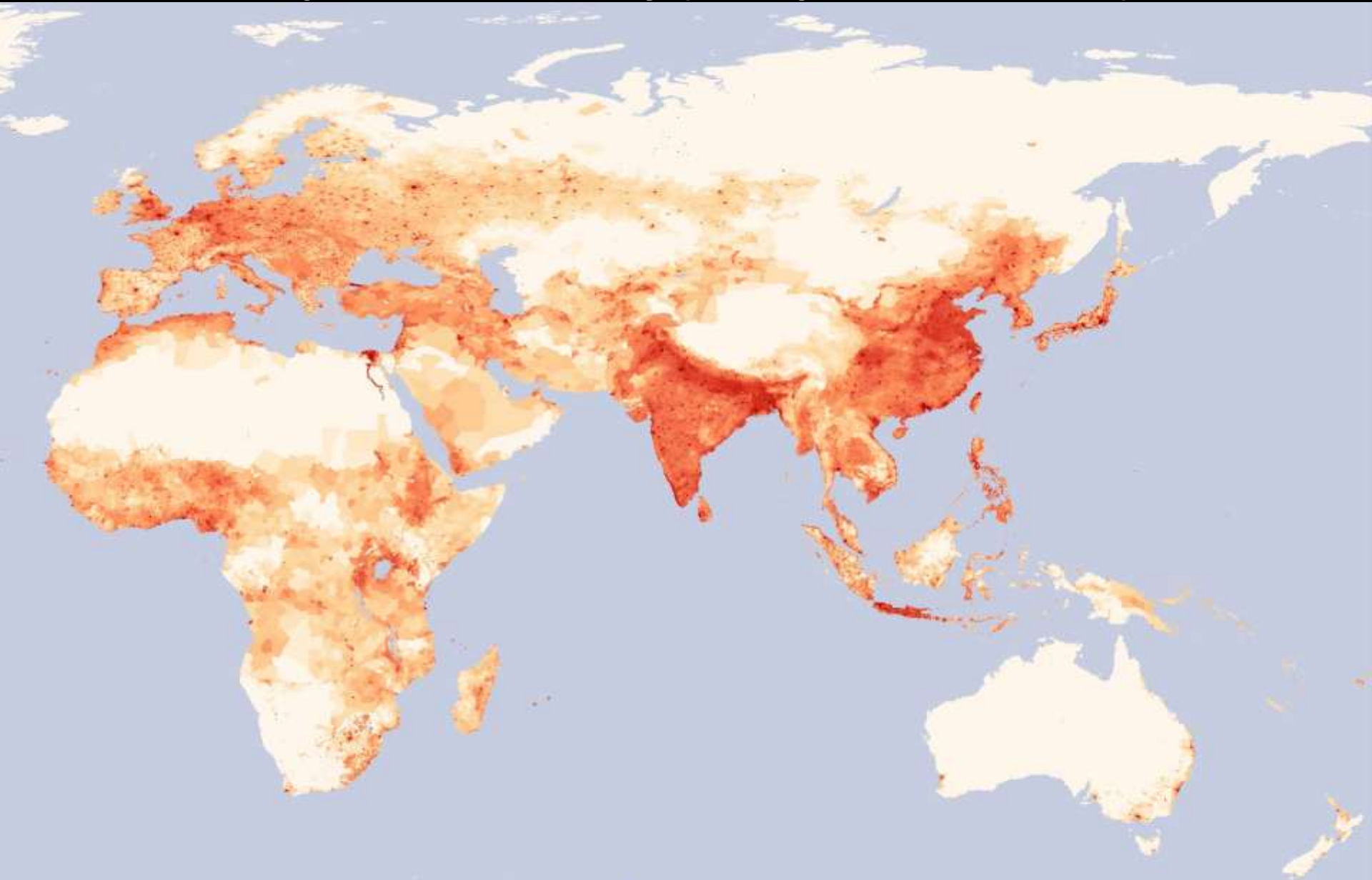
Dirk A. Olson
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Frankfurt Zoological Society,
Association for the Conservation of Biodiversity of Kazakhstan,
Fauna & Flora International,
Convention on Migratory Species



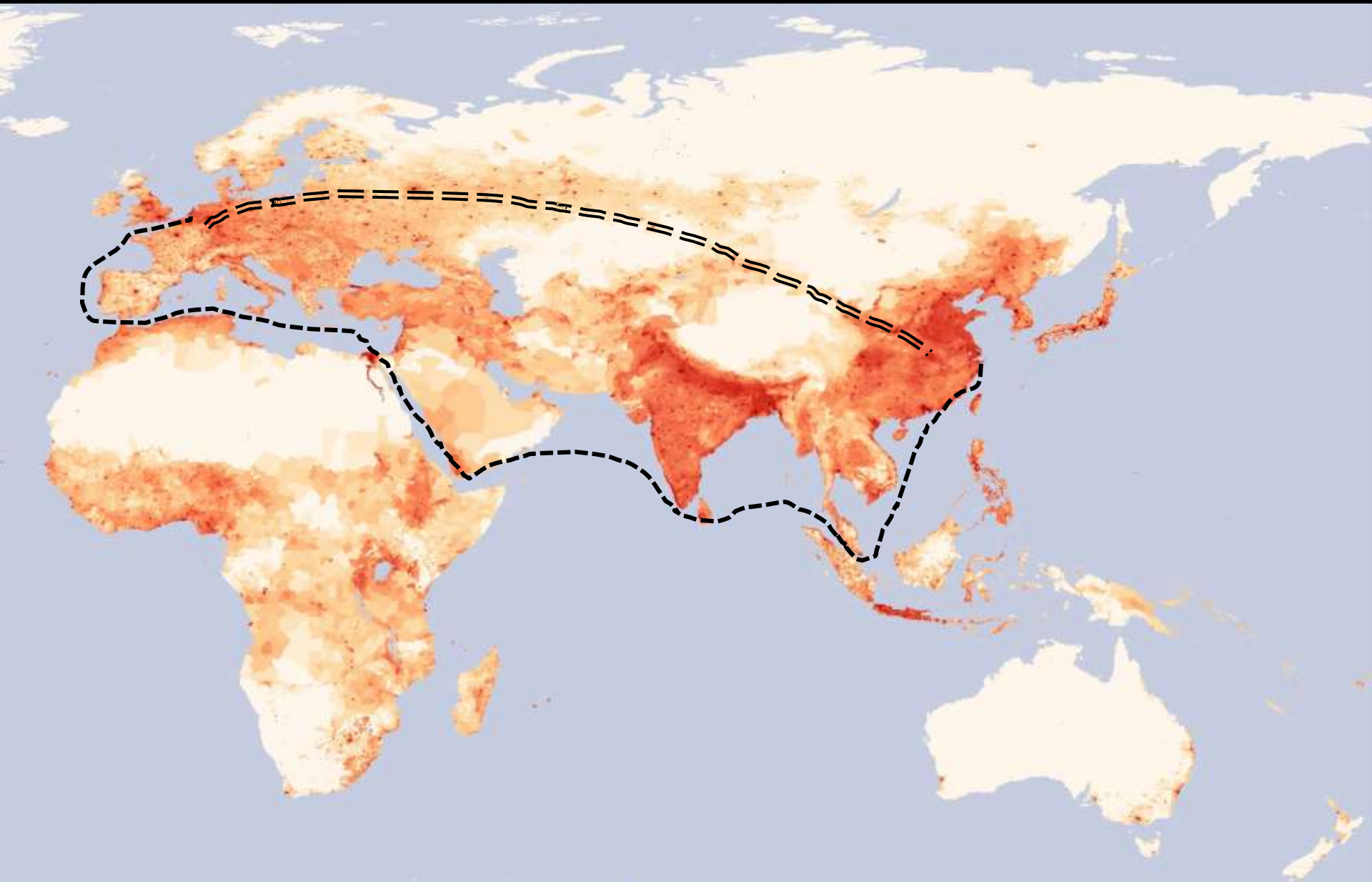


Population Density (Europe , Asia, India)





Population Density (Europe , Asia, India)



Railway and Road Corridors Connecting the Central Asia Regional Economic Cooperation Member Countries





Khulan (Asiatic Wild Ass)

Mammalia > Perissodactyla > Equidae
Equus hemionus
Asiatic Wild Ass, Asian Wild Ass
[Download Spatial data](#)

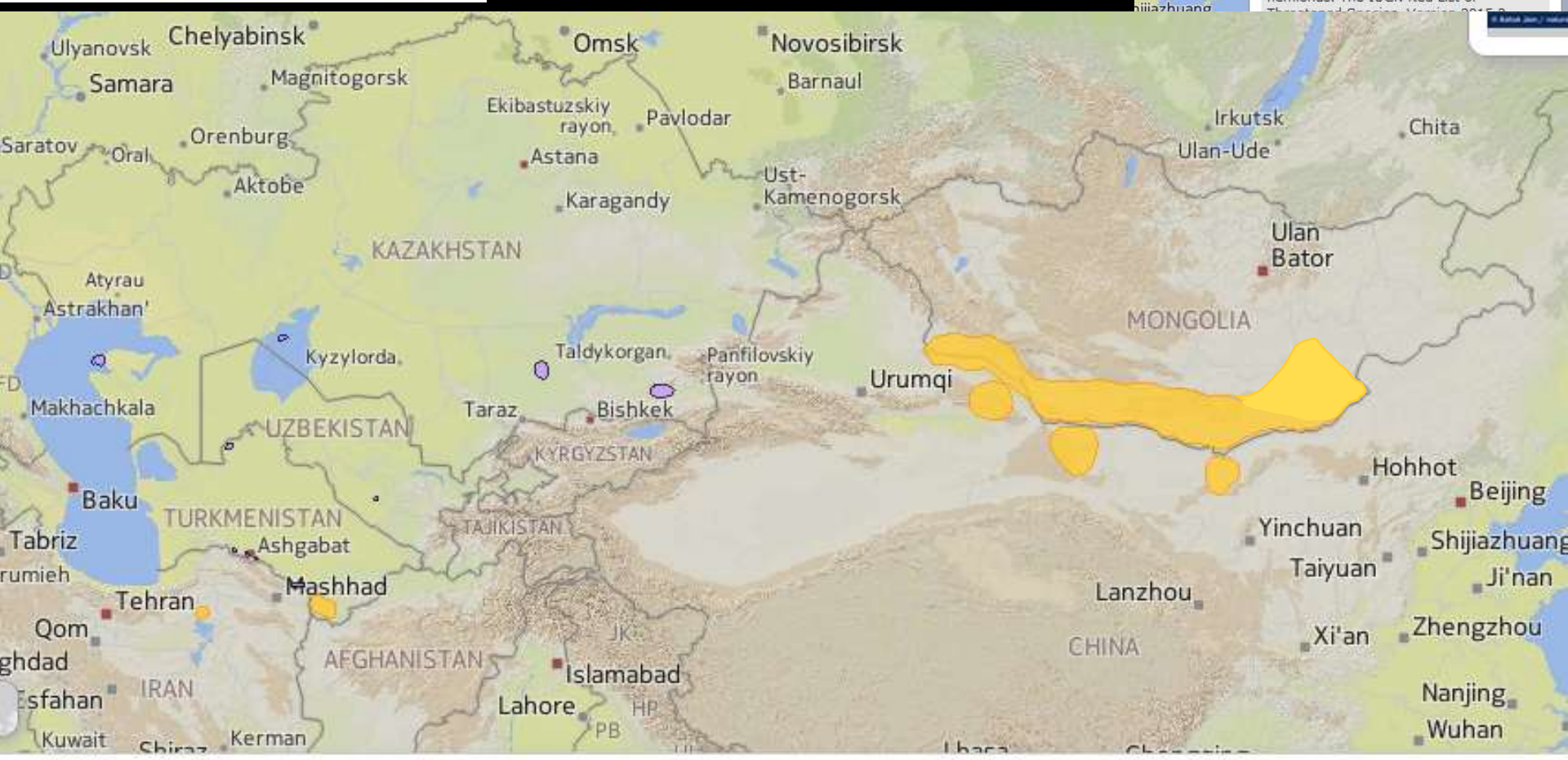
[> Back to Red List Page](#)

NE DD LC NT VU **EN** CR EW EX
ENDANGERED

Extant (resident) 🔍
Reintroduced 🔍

BROWSE IMAGES
📷 [ARKive \(65 found\)](#)

IUCN (International Union for Conservation of Nature) 2008. *Equus hemionus*. The IUCN Red List of Threatened Species. Version 2015.2. <http://www.iucnredlist.org/>





Mongolian gazelle

Mammalia > Cetartiodactyla > Bovidae
Procapra gutturosa
Mongolian Gazelle
[Download Spatial data](#)

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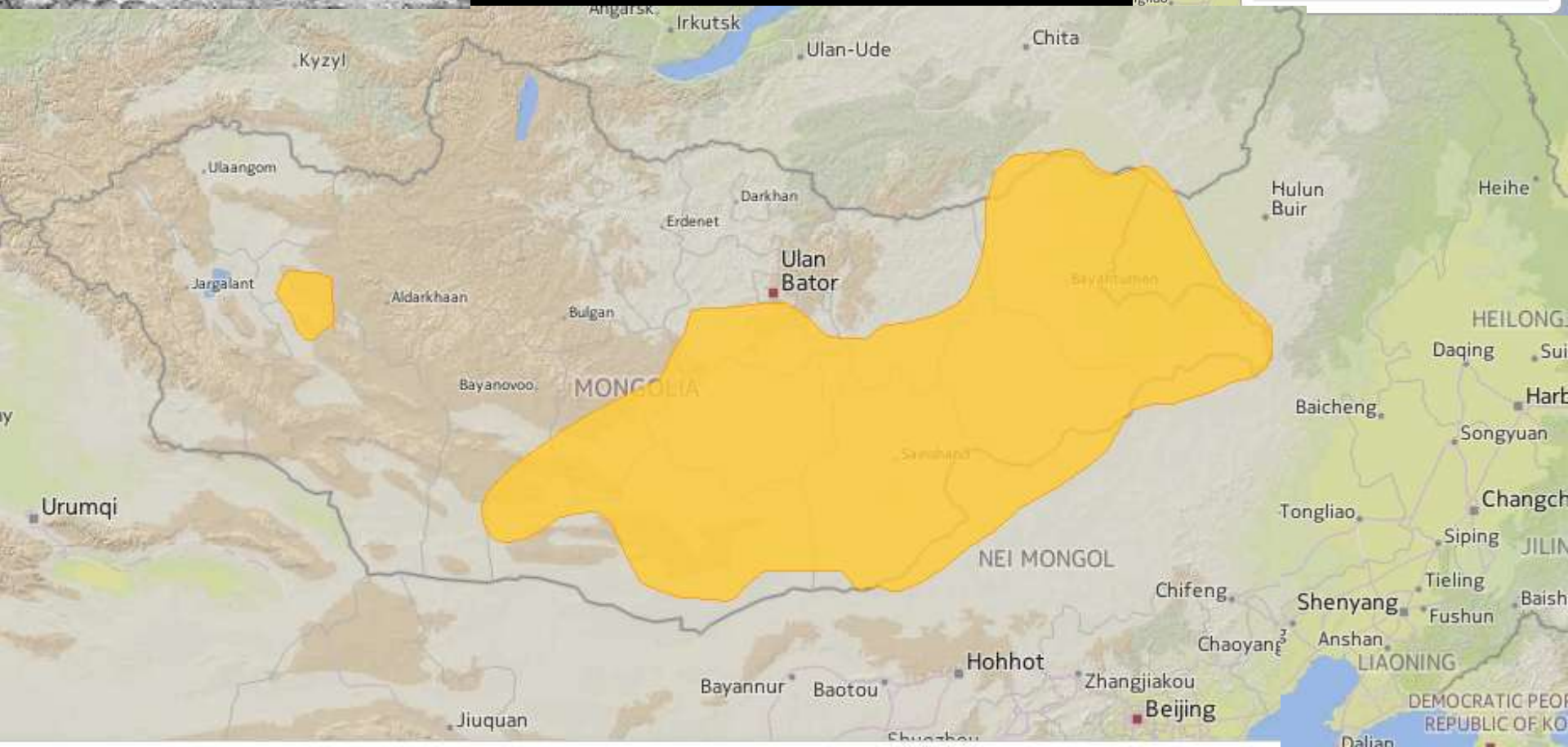
LC
LEAST CONCERN

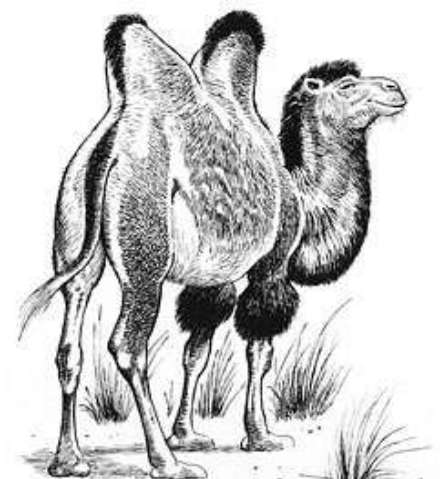
Extant (resident)

BROWSE IMAGES

[ARKive \(6 found\)](#)

IUCN (International Union for Conservation of Nature) 2008. *Procapra gutturosa*. The IUCN Red List of Threatened Species. Version 2015.2





Wild Bactrian Camel

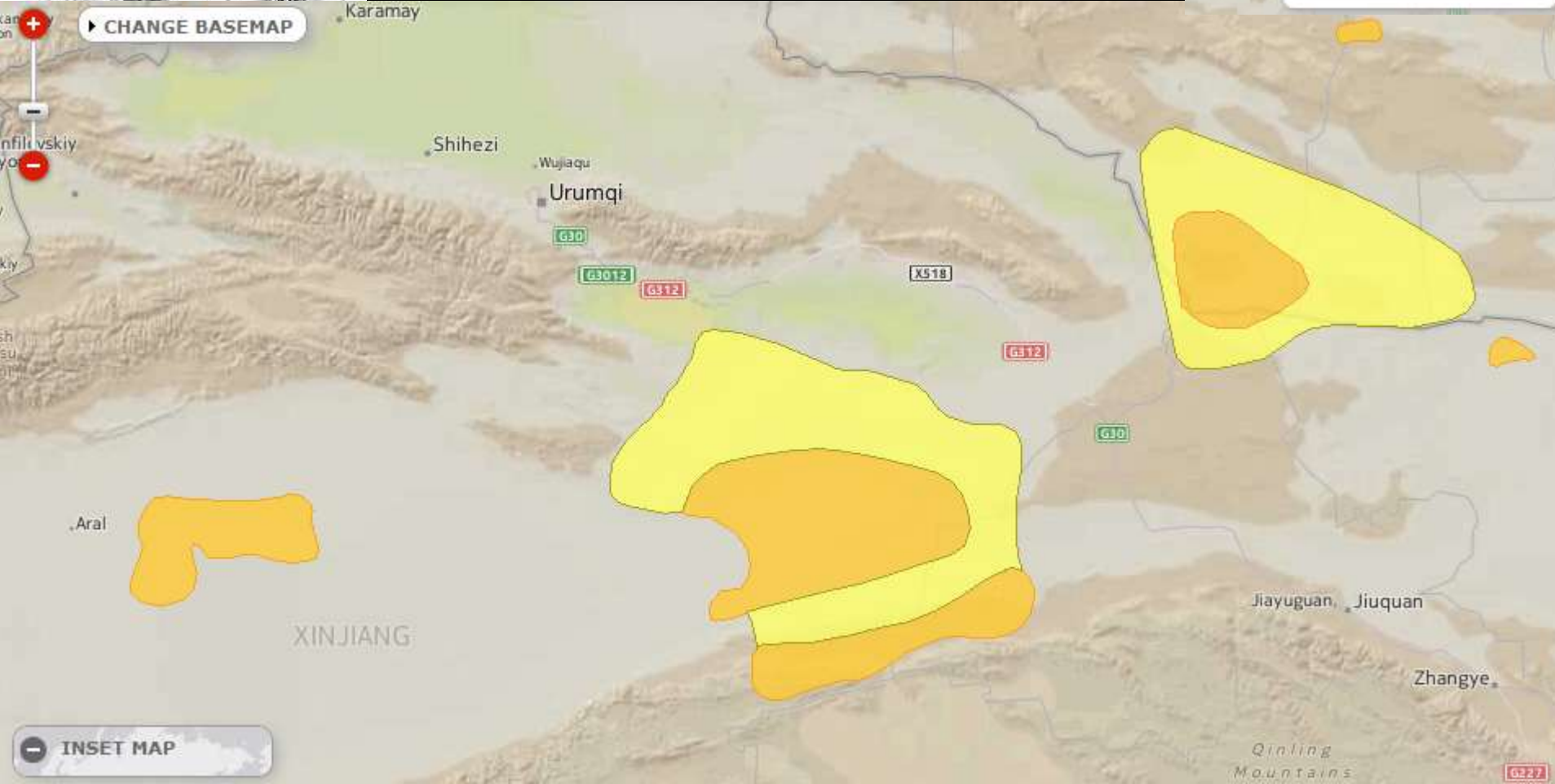
Mammalia > Cetartodactyla > Camelidae
Camelus ferus
Bactrian Camel
[Download Spatial Data](#)

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CR
Extinct (resident)
Probably Extant (resident)

BROWSE IMAGES
ABKive (9 found)

IUCN (International Union for Conservation of Nature) 2008. *Camelus ferus*. The IUCN Red List of Threatened Species. Version 2015.2





Saiga antelope

Mammalia > Cetartiodactyla > Bovidae
Saiga tatarica
Mongolian Saiga
[Download Spatial data](#)

[> Back to Red List Page](#)

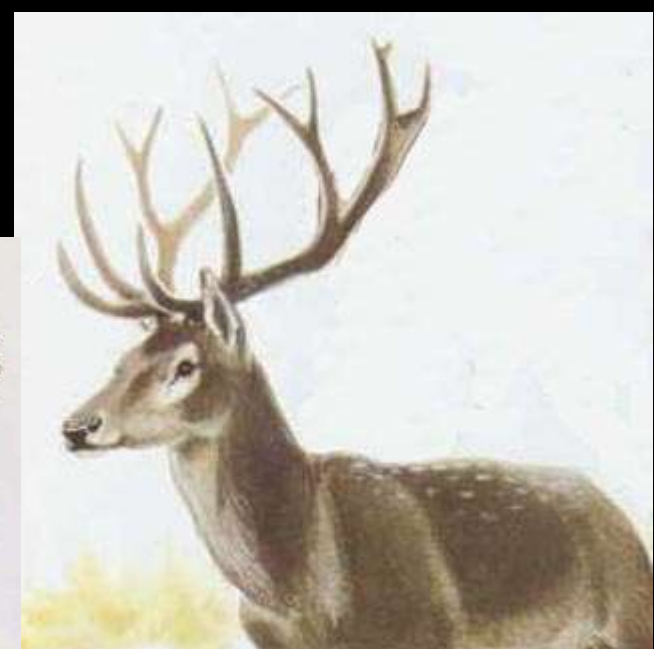
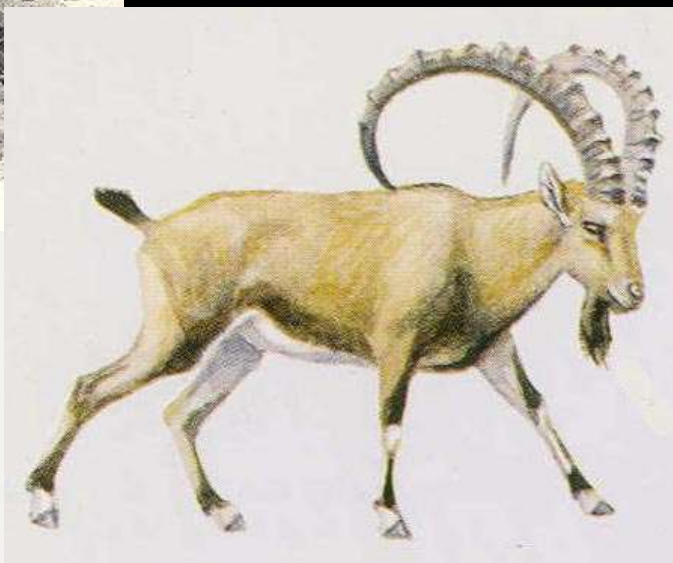
NE DD LC NT VU EN **CR** EW EX
CRITICALLY ENDANGERED

Extant (resident)

BROWSE IMAGES
📷 [ARKive \(33 found\)](#)

IUCN (International Union for Conservation of Nature) 2008. Saiga tatarica. The IUCN Red List of Threatened Species. Version 2015.2







TRANSPORT

Connecting CAREC Countries and People

- More than \$19 billion invested in 106 transport projects along the six CAREC corridor routes
- Infrastructure work focused on construction and upgrade of roads and rail lines
- Further measures aim to overcome nonphysical barriers to cross-border movement of goods, vehicles and people



14th Transport Sector Coordinating Committee Meeting

Participants reviewed progress under the CAREC Transport and Trade Facilitation Strategy 2020 and discussed ways to rejuvenate railways and boost connectivity between member countries. [Read more](#)

Workshop on Cross-Border Transport Facilitation

Key Goals of the CAREC Transport Sector

- 7,800 km of expressways or national highways built or improved by 2020
- 60% of CAREC road corridors maintained to an international roughness index of less than 4 meters per kilometer by 2020
- 1,800 km of new railways completed by 2020; 2,000 km of railway track renovation, electrification, or signalization completed by 2020

CORRIDOR 1

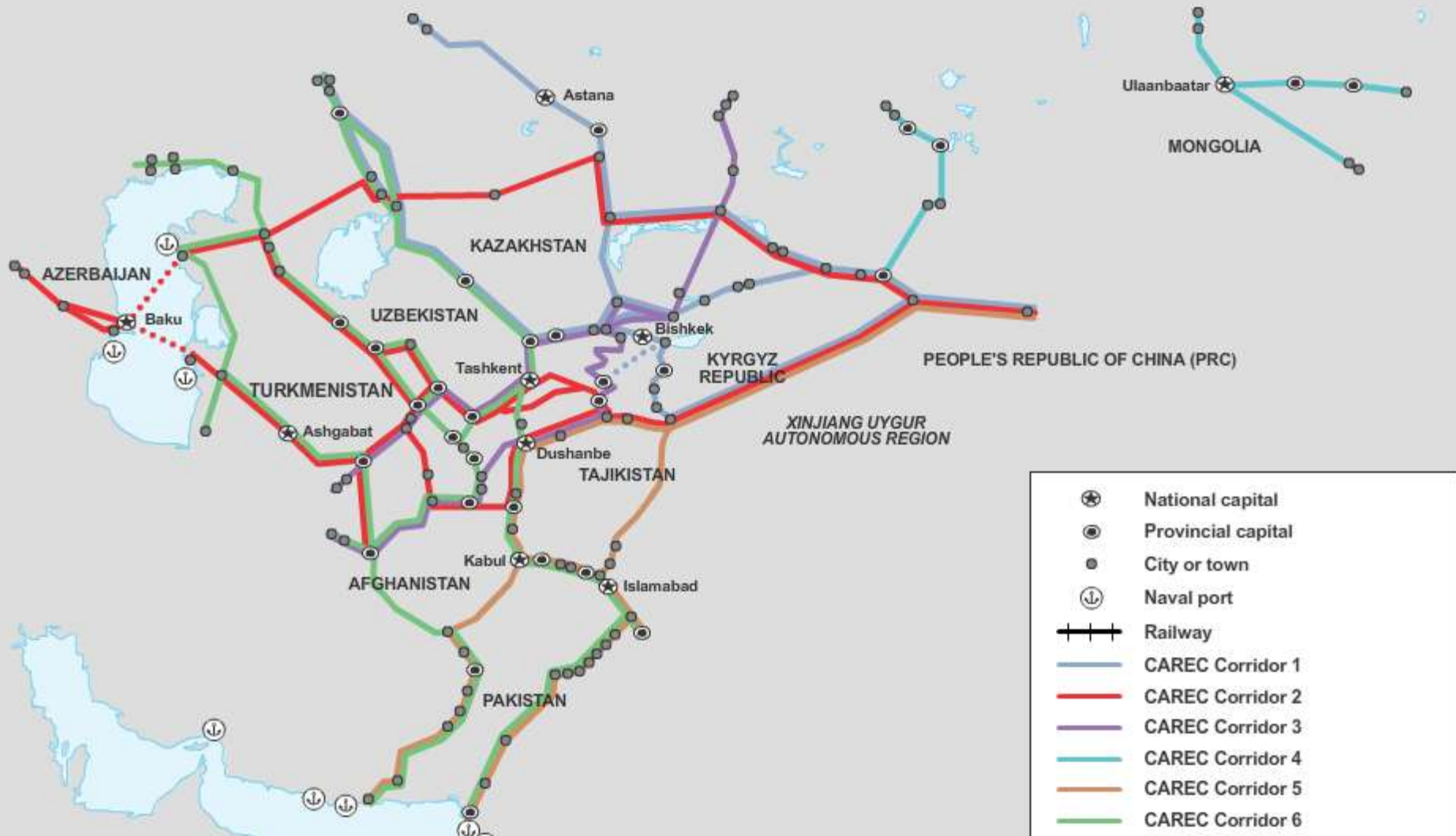
CORRIDOR 2

CORRIDOR 3

CORRIDOR 4

CORRIDOR 5

CORRIDOR 6



CORRIDOR 1

CORRIDOR 2

CORRIDOR 3

CORRIDOR 4

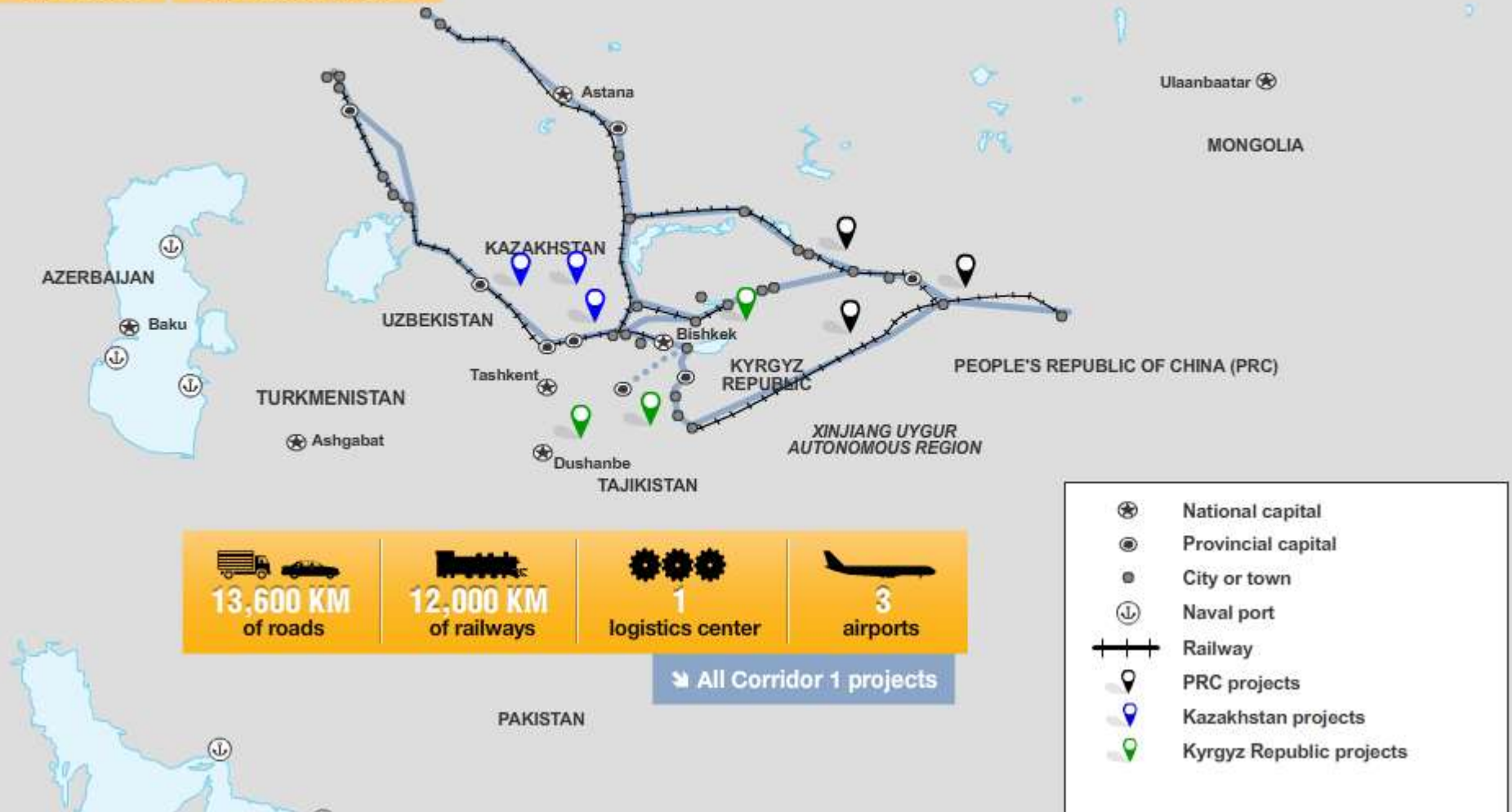
CORRIDOR 5

CORRIDOR 6

The most active of all corridors, Corridor 1 links Europe and East Asia through the Russian Federation, Kazakhstan, and the Kyrgyz Republic.

All Corridors

All Corridor 1 projects



CORRIDOR 1

CORRIDOR 2

CORRIDOR 3

CORRIDOR 4

CORRIDOR 5

CORRIDOR 6

Corridor 2 connects the Caucasus and Mediterranean to East Asia; covering Azerbaijan, Kazakhstan, Turkmenistan, Uzbekistan, Tajikistan, the Kyrgyz Republic, and the People's Republic of China.

All Corridors

All Corridor 2 projects



9,900 KM of roads

9,700 KM of railways

6 logistics center

All Corridor 2 projects

- National capital
- Provincial capital
- City or town
- Naval port
- Railway
- Azerbaijan projects
- PRC projects
- Kazakhstan projects
- Kyrgyz Republic projects



2,400 KM
of roads



1,100 KM
of railways

Click on the hotspots to know more about the Corridor 4 projects

📍 People's Republic of China

📍 Mongolia

🌐	National Capital
⦿	Provincial Capital
●	City/Town
—+—	Railway



PEOPLE'S REPUBLIC OF CHINA (PRC)

XINJIANG UYGUR
AUTONOMOUS REGION

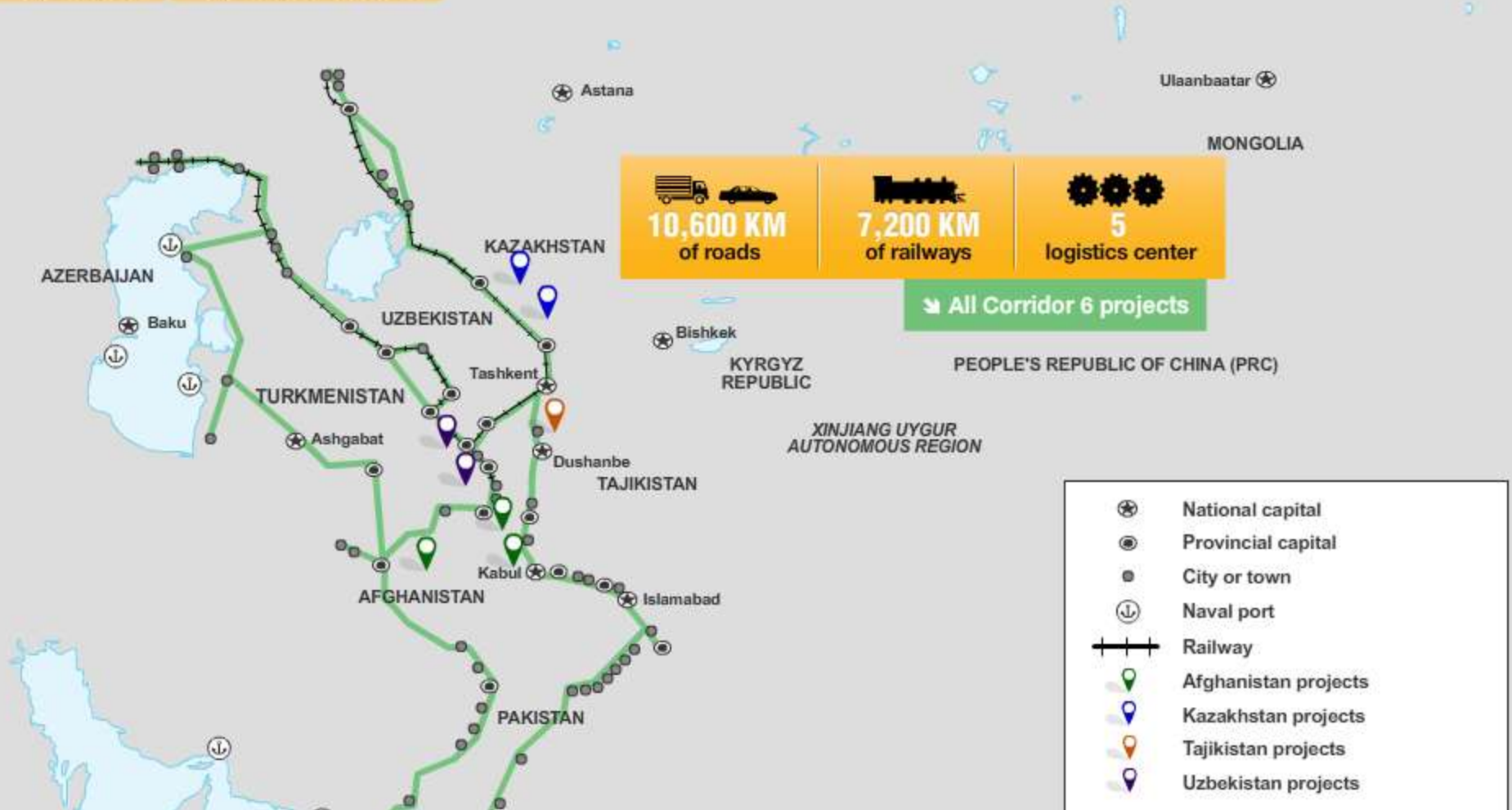
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CORRIDOR 1**CORRIDOR 2****CORRIDOR 3****CORRIDOR 4****CORRIDOR 5****CORRIDOR 6**

Corridor 6 connects Europe and the Russian Federation to the Middle East and South Asia, with three routes to the Arabian Sea port of Karachi and Gwadar or Bandar Abbas in the Persian Gulf.

☞ All Corridors

☞ All Corridor 6 projects







NAVIGATE

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RELATED TOPICS

[ICT and Disaster Risk Reduction](#)[Environment & Development](#)[Social Development](#)[Statistics](#)[Macroeconomic Policy & Development](#)

Asian Highway

The Asian Highway network is a regional transport cooperation initiative aimed at enhancing the efficiency and development of the road infrastructure in Asia, supporting the development of Euro-Asia transport linkages and improving connectivity for landlocked countries.

The Asian Highway network now comprises over 141,000 km of roads passing through 32 member countries. The network extends from Tokyo in the east to Kapikule, Turkey in the west and from Torpynovka, Russian Federation, in the north, to Denpasar, Indonesia in the south.

The Asian Highway project was initiated in 1959 with the aim of promoting the development of an international road transport system in the region. From 1960 to 1970, potential routes were identified and analysed. However, the progress was slow until political and economic changes in the region spurred renewed interest in the network in the late 1980s and early 1990s.



ASIAN HIGHWAY ROUTE MAP







Eurasian
Economic
Union

Russia
Belarus
Kyrgyzstan

Kazakhstan
Armenia



GENERAL INFORMATION

THE REPUBLIC
OF BELARUS

THE RUSSIAN
FEDERATION

THE REPUBLIC
OF KAZAKH STAN

THE REPUBLIC
OF ARMENIA

THE KYRGYZ
REPUBLIC



Eurasian Union

- Members
- Potential members
- Unwilling to join





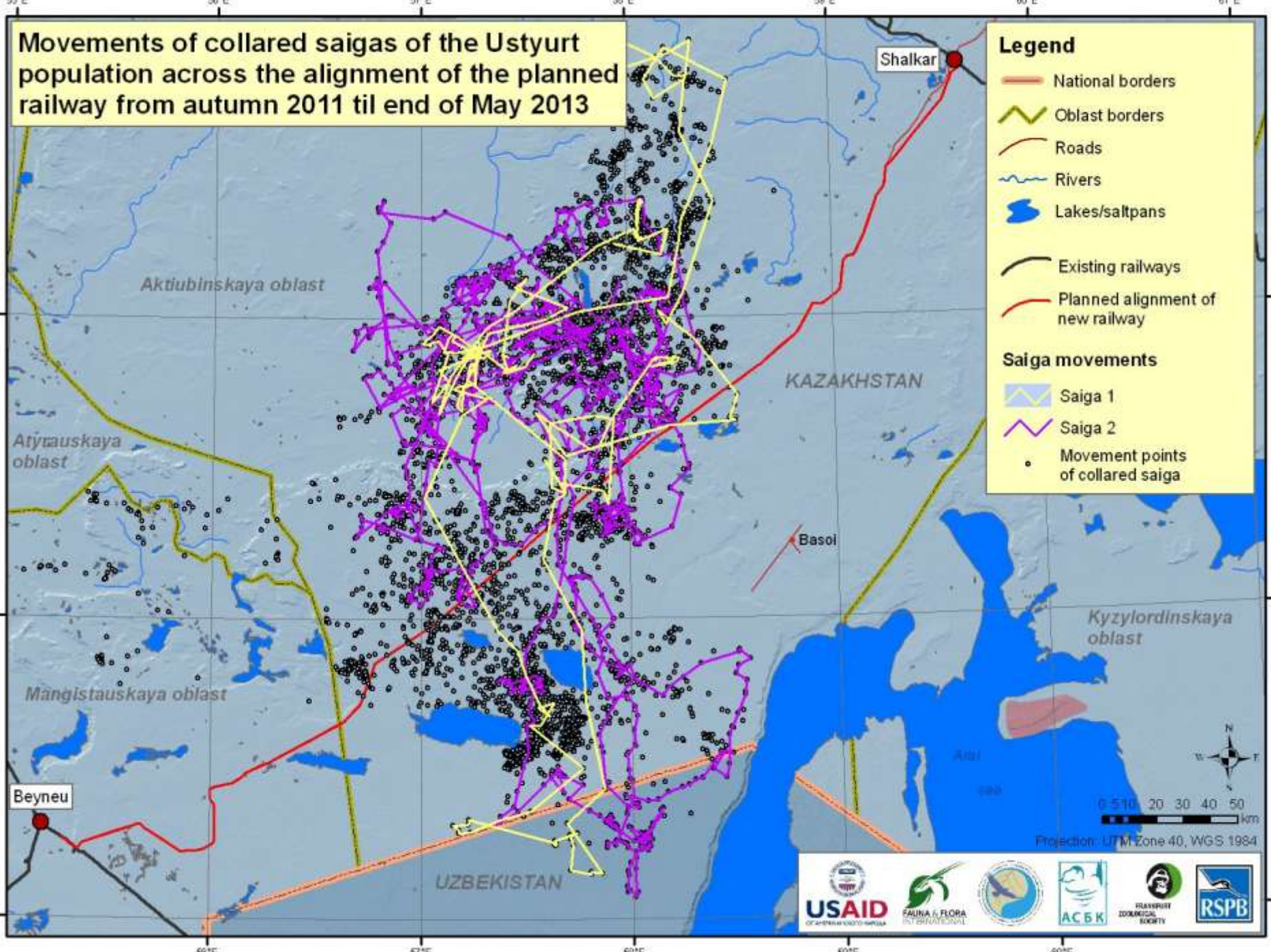
Movements of collared saigas of the Ustyurt population across the alignment of the planned railway from autumn 2011 til end of May 2013

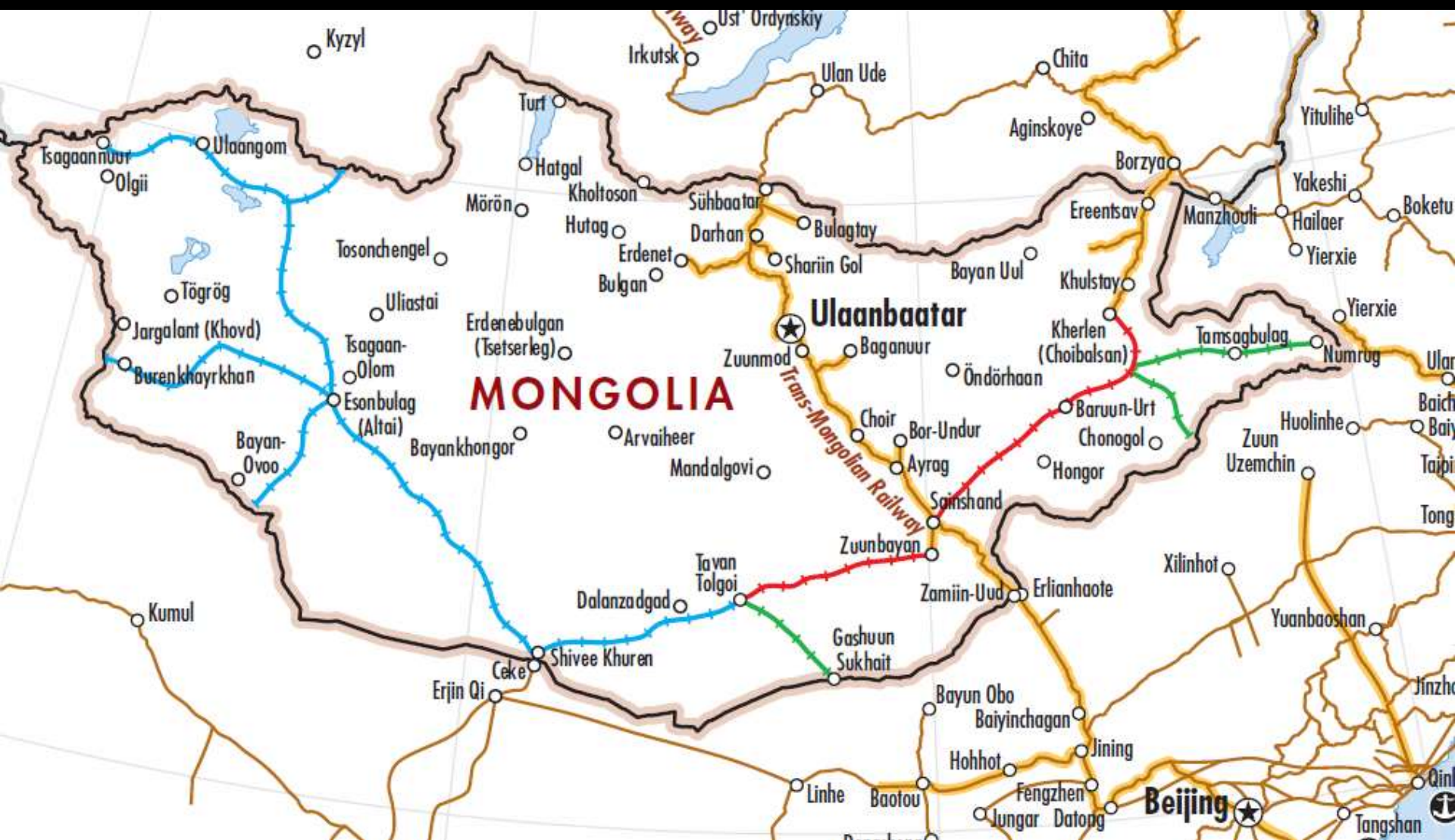
Legend

-  National borders
-  Oblast borders
-  Roads
-  Rivers
-  Lakes/salt pans
-  Existing railways
-  Planned alignment of new railway

Saiga movements

-  Saiga 1
-  Saiga 2
-  Movement points of collared saiga









АСТАНА

АРКАЛЫК

ШУБАРКОЛЬ

ШАЛКАР

САКСАУЛЬСКАЯ

ЖЕЗКАЗГАН

БЕЙНЕУ

- **Improvement of transport corridors to facilitate trade regionally and between Asia and Europe is coming at the expense of large highly mobile ungulates.**
- **Routes in Kazakhstan are now established. Monitoring of how this will affect movements of saiga antelope is critical.**
- **Routes in Mongolia are still being determined and the full mitigation hierarchy can be incorporated.**
- **Regional cooperation programs such as CAREC and development institutions such as UN, ADB, World Bank, EBRD, and a long list of others need to be better engaged in the discussion of improving permeability for wildlife along transport corridors.**