

Biodiversity of Central Asia: A Visual Synthesis

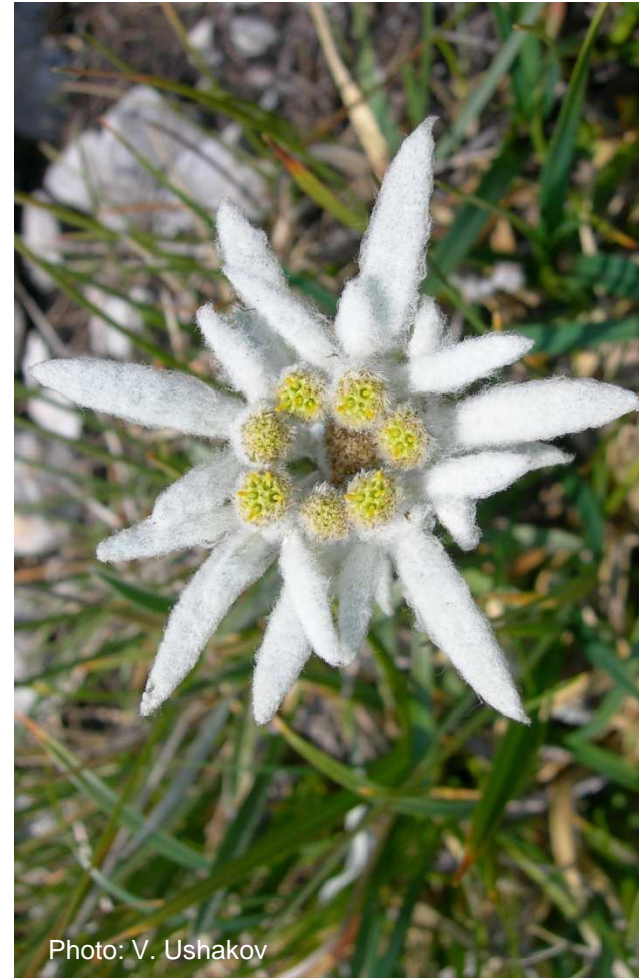
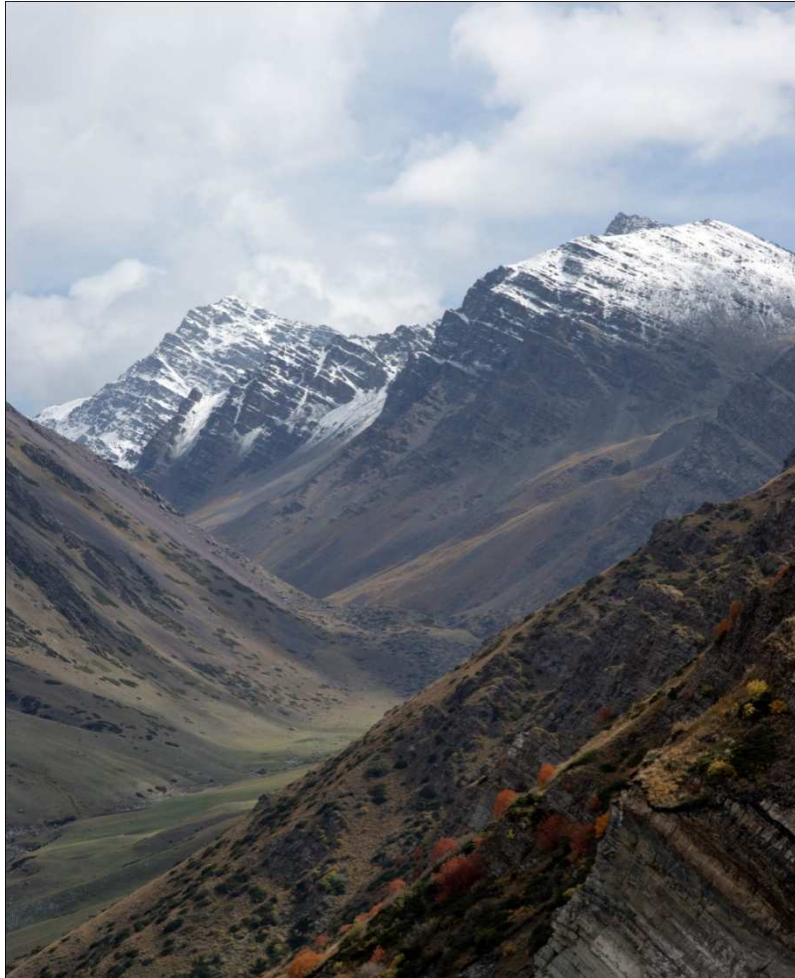


Photo: V. Ushakov

funded by:



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(FOEN)

produced by:



Viktor Novikov, Istanbul regional workshop, 19 October 2011

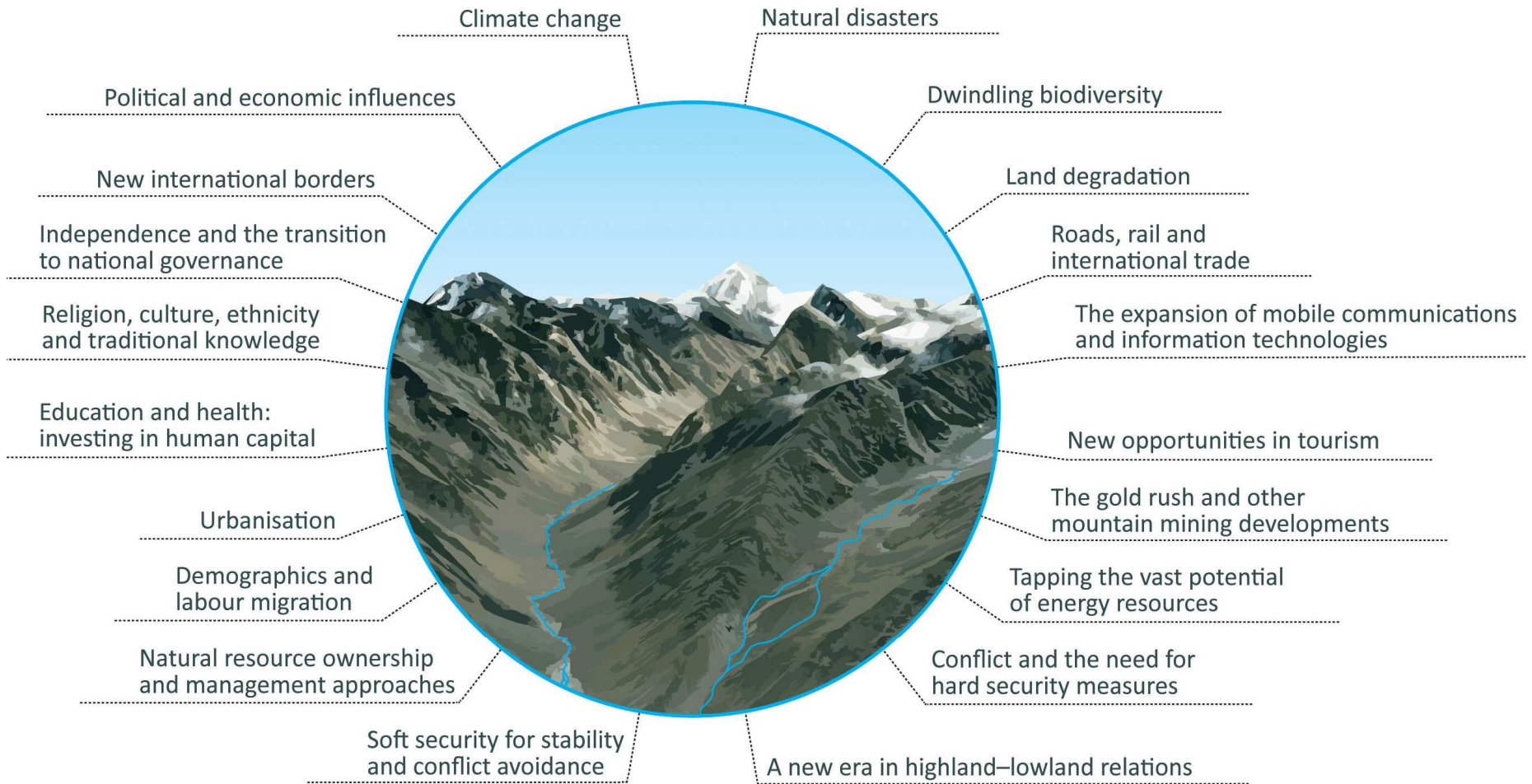
Report preparation process:

- Consult global reports, global databases, eco-footprint
- Consult national biodiversity reports, NBSAPs, SoEs
- Consult scientific and popular papers, officials and NGOs

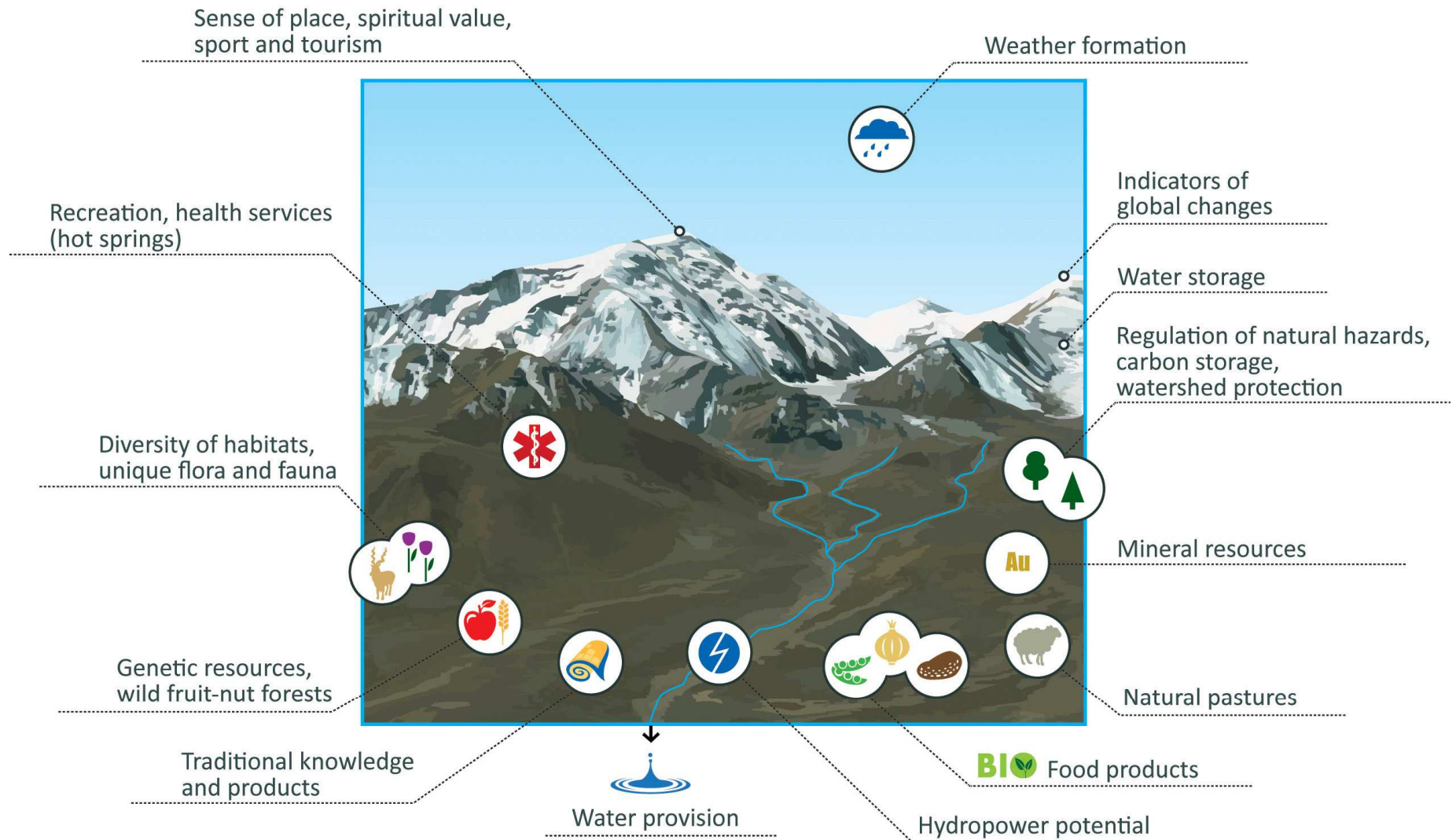
Report contents:

- Central Asia and Global Biodiversity
- Biodiversity Richness of Central Asia
- Biodiversity Products and Services
- Challenges for Biodiversity
- Safeguarding Biodiversity
- Visuals: more than 80 maps and graphics, 30 photos

Drivers of change and trends affecting Central Asia nations and their key ecosystems



Ecosystem goods and services





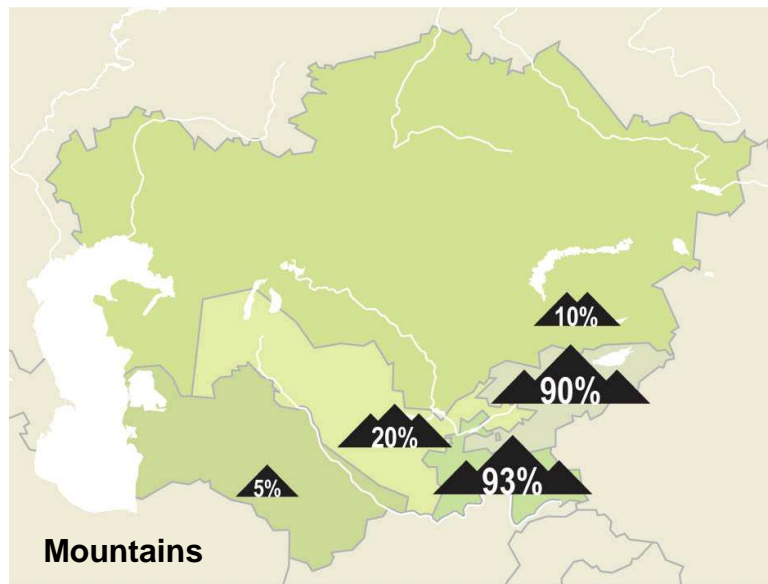
Key ecosystem communities



Steppes



Deserts



Mountains



Central Asia flagship species

- | | | | | | |
|-----------|------------|-----------------------------------|-------------------------|----------------|------------------------|
| Mountains | Grasslands | Snow leopard | Mountain goat (Markhor) | Saiga antelope | Varan (Desert Monitor) |
| Deserts | | Mountain sheep (Marco polo sheep) | Bactrian deer | Caspian seal | Steppe eagle |

0 100 200 300 km

Map produced by ZOI Environment Network, October 2011

Source: ???



Agrobiodiversity









0 100 200 300 km

Map produced by ZOI Environment Network, October 2011

Source: Interactive Agricultural Ecological Atlas of Russia and Neighboring Countries (→ www.agroatlas.ru/ru/content/vegetation_maps/Arable)



Protected areas in Kazakhstan

- | | | | | | |
|---|---|---|--------------------------------|---|--|
|  | Protected areas |  | UNESCO natural world heritage |  | Tentative UNESCO natural world heritage |
|  | RAMSAR sites (Convention on wetlands of international importance especially as waterfowl habitat) |  | UNESCO cultural world heritage |  | Tentative UNESCO cultural world heritage |



Protected areas in Kyrgyzstan

- Protected areas
- ⚔ UNESCO natural world heritage
- ⚔? Tentative UNESCO natural world heritage
- 🦩 RAMSAR sites (Convention on wetlands of international importance especially as waterfowl habitat)
- 🏛 UNESCO cultural world heritage
- 🏛? Tentative UNESCO cultural world heritage



Protected areas in Tajikistan

- Protected areas
- Protected areas
- UNESCO natural world heritage
- UNESCO cultural world heritage
- Tentative UNESCO natural world heritage
- Tentative UNESCO cultural world heritage
- Ramsar sites (Convention on wetlands of international importance especially as waterfowl habitat)



Protected areas in Turkmenistan

- Protected areas**
- RAMSAR sites** (Convention on wetlands of international importance especially as waterfowl habitat)
- UNESCO natural world heritage**
- UNESCO cultural world heritage**
- Tentative UNESCO natural world heritage**
- Tentative UNESCO cultural world heritage**



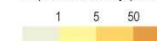
Protected areas in Uzbekistan





- Protected areas
- RAMSAR sites (Convention on wetlands of international importance especially as waterfowl habitat)
- UNESCO natural world heritage
- UNESCO cultural world heritage
- Tentative UNESCO natural world heritage
- Tentative UNESCO cultural world heritage



Synthesis

Population density (inhabitants per km²)



-  Sensitive water ecosystems with complex manmade pressures on biodiversity including climate change, pollution, habitat disturbance, overexploitation and invasive species
-  Environmental crisis area: ecosystem change and degradation due to massive water withdrawal for agriculture with negative implications for life quality, economic performance, health and environment
-  Sensitive ecological regions intensely used for agriculture (crop cultivation and grazing) and experiencing high pressure from climate change, habitat disturbance and overexploitation
-  Densely populated and industrialized regions
-  Fortified borders

0 100 200 300 km

Map produced by ZOI Environment Network, September 2011

Source: LandScan Global Population Database 2007, Oak Ridge, TN, Oak Ridge National Laboratory (→ www.ornl.gov/sci/landscan/); World Gazetteer 2011 (→ www.world-gazetteer.com)



Climate change

-  Increased river flow
-  Reduced river flow
-  Risk of flooding due to sea level fluctuation
-  * Reduction of ice cover
-  Increased productivity of wheat crops and pastures
-  Severe drought impacts
-  Increased risk of natural disasters in the mountains
-  Hazardous waste sites and industries potentially affected by disasters
-  Environmental crisis area
-  Bushfires
-  Locust invasions
-  Potential risk of cross-border spread of invasive species and new diseases

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Map produced by ZOI Environment Network, September 2011



Pollution and fragmentation

- Railway
- Projected railway
- Major roads
- Oil or gas pipeline
- Projected oil or gas pipeline
- Oil or gas field
- Coal mining
- Mining in sensitive areas
- Recently constructed new tunnels
- Thermal power plant (coal, oil, gas)
- Hydroelectric power plant
- Nuclear power plant
- Projected hydroelectric power plant
- Projected nuclear power plant
- Radioactive contamination and limitations for landuse
- Concentration of industrial pollution

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Map produced by ZOI Environment Network, September 2011

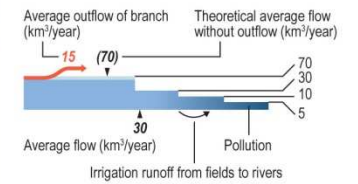
Sources: Pipeline Infrastructure Map of Europe & the CIS, The Petroleum Economist Ltd., London (→ www.petroleum-economist.com); Resources and Energy Atlas of Russia



Water-land management

- Impacts from intense grazing and land cultivation in sensitive soils or steep slopes
- Croplands in the former steppes and virgin lands of northern Kazakhstan
- Mountain regions above 2000 metres
- Major decline in fisheries

Aral Sea basin



- Environmental crisis area
- Aral Sea basin
- Irrigated lands

0 100 200 300 km

Map produced by ZOI Environment Network, October 2011

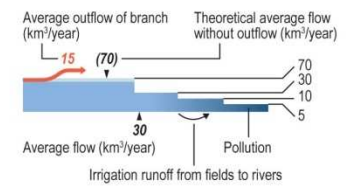
Source: CAWATERinfo (→ www.cawater-info.net); Interactive Agricultural Ecological Atlas of Russia and Neighboring Countries (→ www.agroatlas.ru/ content/vegetation_maps/Aralie)



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Aral Sea basin

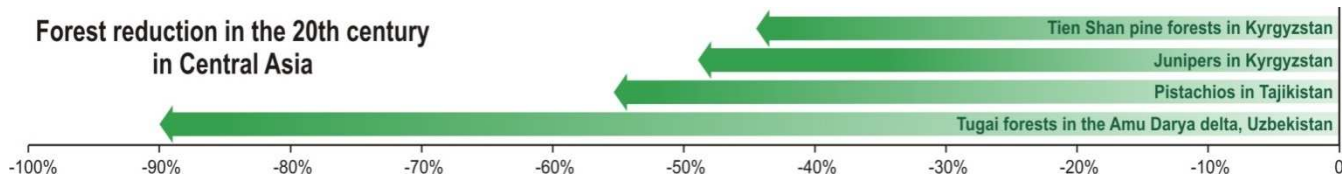
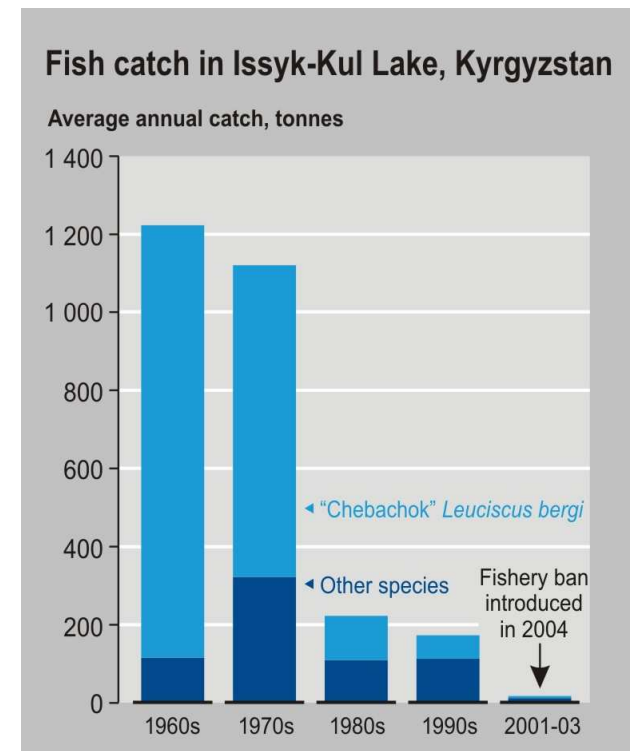
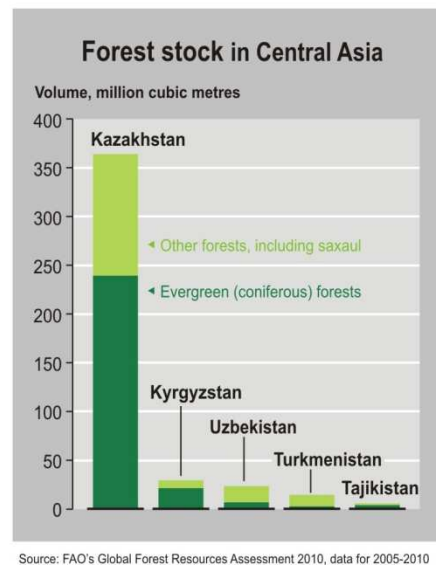
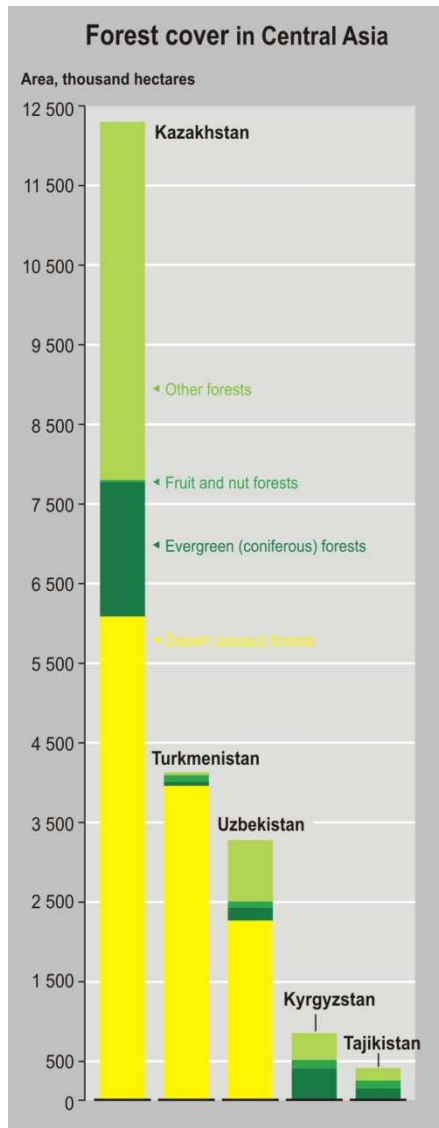


- Environmental crisis area
- Aral Sea basin
- Irrigated lands

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Safeguarding biodiversity

- National actions and traditional measures
- GEF projects related to biodiversity
- Swiss projects related to biodiversity
- Other projects: WWF, FFI, GIZ



Photo: N. Mustaeva

Biodiversity brochure will be available in November 2011

www.zoinet.org

Thank you!



Istanbul exercise

Relative importance of impacts on ecosystems and trends					
	Habitat change	Pollution	Overuse	Climate change	Invasive species
Evergreen forests	↘	→	→	↗	
Wild fruit and nut forests	↘	→	↗	↗	↗
Desert forests	↘	→	→	↗	
Tugai and riparian forests	→	→	→	↗	
Deserts and semi-deserts	→	↗	→	↗	
Steppes	↘	→	→	↗	
High mountains (>2500 m)	↗	↗	→	↗	↗
Rivers, lakes, reservoirs	→	↘	→	↗	→
Aral and Caspian Seas	→	→	↘	↗	↗
Agroecosystems	↗	↘	↗	↗	↗

Historical impacts since the 1950s:



Current and ongoing trends:



Source: synthesis of information from countries' national biodiversity strategies, reports and expert judgement

Indicators	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Population pressure on natural ecosystems and agrobiodiversity					
Ecosystem fragmentation, accessibility and habitat change					
Climate change challenges for biodiversity					
Pollution and over-exploitation of biodiversity					
Challenges of alien species and biosafety control					
Ecological footprint					
Forest cover, area					
Forest cover, tree density and conditions					
Abundance and distribution of selected species, 1991-2000					
Abundance and distribution of selected species, 2001-2010					
Change in status of threatened species					
Fish resources and catch: marine					
Fish resources and catch: freshwater					
Genetic resources of agrobiodiversity (domestic animals, plants)					
Food production, 2001-2010					
Agriculture and forestry areas under sustainable management					
Protected areas (number and coverage): terrestrial					
Protected areas (number and coverage): freshwater, marine				—	
Protected areas ecological corridors: cross-border cooperation					
Protected areas: management and conservation efficiency					
Afforestation, control of forest fires and diseases					
Botanical gardens, nurseries, ex-situ conservation					
Policies and measures on biodiversity: planning					
Policies and measures on biodiversity: implementation		partial	partial	partial	
Biodiversity inventories, monitoring and services					

Istanbul exercise