Biosphere Reserves: models for sustainable human living (the concept of biosphere-based urbanization)

Roman Jashenko

Professor, Doctor of Biological Sciences

Director General, of the Institute of Zoology CS MES RK
Chairman of the Kazakhstan National MAB Committee
Adviser of the Director-General of UNESCO on biosphere reserves
President of the Tethys Scientific Society
UNESCO designates sites to encourage national governments and local communities to identify special sites and work together to ensure their conservation and sustainable use for current and future generations.
Statutory Framework of the World Network of Biosphere Reserves (article 1):

«Biosphere Reserves are areas of terrestrial and coastal/marine ecosystems or a combination thereof, which are internationally recognized within the framework of UNESCO’s programme on Man and the Biosphere (MAB)». 
Three Main Functions of Biosphere Reserve

A CONSERVATION FUNCTION
- to preserve genetic resources, species, ecosystems and landscapes

A DEVELOPMENT FUNCTION
- to foster sustainable economic and human development

A LOGISTIC SUPPORT FUNCTION - to support demonstration projects, environmental education and training, and research and monitoring related to local, national and global issues of conservation and sustainable development.
• one or more core areas, which are securely protected sites for conserving biological diversity, monitoring minimally disturbed ecosystems, and undertaking non-destructive research and other low-impact uses (such as education);

• a buffer zone, which usually surrounds or adjoins the core areas, and is used for cooperative activities compatible with sound ecological practices, including environmental education, recreation, ecotourism, and applied and basic research;

• a transition area, or area of co-operation, which may contain a variety of agricultural activities, settlements and other uses and in which local communities, management agencies, scientists, non-governmental organizations, cultural groups, economic interests and other stakeholders work together to manage and sustainably develop the area's resources
Providing Eco-Labelling:
Products of the Biosphere Reserve with label of origin

Develop social events, as well as education and training:
- Exhibition or arts projects within the BR
- March of Parks, Day of Tulips, Week of Birds, etc.

Develop Green Economics in BR transition zone:
- Introduction of renewable energy sources
- Energy efficiency in housing and communal services
- Organic farming in agriculture
- Improving waste management system
- Improving water management
- Development of "clean" transport
- Conservation and effective management of ecosystems
• 714 BIOSPHERE RESERVES

• In 129 countries

• 21 transboundary BR (Asia: 1, Arab States: 2, Africa: 3, Europe and North America: 12, Latin America: 3)

• Including 2 transcontinental between Europe (Spain) and North Africa (Morocco)

• Almost all significant large world ecosystems presented

• More than 257 million people live in transit zone of biosphere reserves
Networks have a key role to play in the exchange of information and experience regionally namely in:

* Africa
  AfriMAB

* Latin America and the Caribbean
  IberoMAB

* Europe and North America
  EuroMAB

* Asia and the Pacific
  EABRN
  PacMAB
  SACAM
  SEABRnet

* Arab States
  ArabMAB

* Inter-regionally
  REDBIOS

Kazakhstan participates in 3 Biosphere Reserve networks:
South-Central Asia MAB Network (SACAM Network) in 2020

13 state members, 48 biosphere reserves in 8 countries

Member Countries
- Afghanistan
- Bangladesh
- Bhutan
- India
- Iran
- Kazakhstan
- Kyrgyzstan
- Maldives
- Nepal
- Pakistan
- Sri Lanka
- Tajikistan
- Uzbekistan
7 member-states, 93 biosphere reserves:

China - 34
Russia (Asian part) – 17 (including Katunskiy BR as part of TBR, Great Altai)
Kazakhstan – 12 (including Katon Karagay as part of TBR, Great Altai)
Japan – 10
Mongolia - 7
Republic of Korea - 8
DPRK – 5

Established in 1994 Russia since 1998, Kazakhstan since 2011
16 existing biosphere reserves in Central Asia in 2021
Great Altai Transboundary Biosphere Reserve (first in Asia)

Approved by UNESCO: 2017

Area: 1,543,807 ha:
- Kazakhstan: 956,890 ha
  - Core zone: 126,432 ha
  - Buffer zone: 564,768 ha
  - Transition zone: 282,300 ha
- Russia: 586,920 ha
  - Core zone: 151,637 ha
  - Buffer zone: 144,630 ha
  - Transition zone: 290,655 ha

Local population: more than 24,500 people

Reason: to improve the conservation of the joint ecosystems and to foster a sustainable development of the local communities.
The development of megacities leads to a dead end

Hong Kong "anthill", 35 thousand people, the area of the block is 0.03 sq. km.

Suburban landfills are no longer able to contain all the garbage from megacities.
Strength public awareness and community involvement: Concept of biosphere-oriented settlements

Green Economics in BR transition zone BR: resettlement
Strength public awareness and community involvement: Concept of biosphere-oriented settlements

Green Economics in BR transition zone BR: resettlement – algorithm in design
Strength public awareness and community involvement: Concept of biosphere-oriented settlements

Green Economics in BR transition zone BR: resettlement – biological basis

Golden cut and Fibonacci spiral
Strength public awareness and community involvement: Concept of biosphere-oriented settlements

Green Economics in BR transition zone BR: resettlement – algorithm in design
Additional information on BRs
www.kazmab.kz
Thank you for your attention!

Web site: kazmab.kz
E-mail: info@kazmab.kz