ECOSYSTEMS AND HUMAN WELL-BEING – A FRAMEWORK FOR ASSESSMENT OF ECOSYSTEM SERVICES PROVIDED BY HEATHLAND AND SHRUB ECOSYSTEMS


6-7 February 2017
Sofia, Bulgaria
Project Framework

• Project promoters:
  ✓ Sofia University “St. Kl. Ohridski” – Department of Ecology and Nature Protection
  ✓ Epsilon Bulgaria LTD
  ✓ KartGeo LTD

• The project covers around 65% of Bulgaria’s territory (outside NATURA 2000);

• Approach of mapping and assessment - biophysical assessment of ESs and ECs based on MAES working documents and adapted for Bulgaria (coordinates by the MetEcoSMap project (promoter – the Ministry of Environment and Water));

• The results of the project will be available via the Bulgarian Biodiversity Information System (BBIS), maintained by the Executive Environment Agency.
Subtypes of shrub and heathland ecosystems

F2. Arctic, alpine and subalpine shrubs (mostly in Natura 2000 sites) - 501

F3. Temperate and Mediterranean-montane shrubs (the most widespread) - 502

F9. Riverine and fen shrubs (very rare and normally with small size) - 503.
Territorial scope

- 65% of whole territory of the country, outside NATURA 2000;

- primary selection of physical blocks determined as “shrubs and heathlands” covers about 96000 polygons with area about 5697 km² (5.13% from the territory of Bulgaria).
Indicators and parameters for evaluation the ecosystem conditions

Ecosystem structure

**Biodiversity**
- Vegetation cover
- Plant species richness
- Animal species richness
- Red list species (animals and plants)
- Alien and invasive species presence

**Soil heterogeneity and disturbance**
- Soil quality
- Soil organic matter
- Soil erosion risk
- Concentration of pollutants in soil from surrounding areas – number of landfills
- Fires

**Ecosystem processes**

* Matter budget
  - Matter storage
Provisioning
- Biomass for food
- Biomass for processing

Regulating and Maintenance
- Regulating – soil and air quality
- Maintenance – habitats for pollinators and nursery populations

Cultural
- Physical interactions with the environment
- Intellectual interactions with the environment
- Spiritual (religious/sacral) interactions with the environment
- Others (bequest - conservation significance)
Score of IP index for Biotic diversity

Subtype 501

Subtype 502

Subtype 503

-most of HSEs are in good ecosystem condition
Score of IP index for Abiotic heterogeneity

Subtype 501

Subtype 502

Subtype 503

Most of HSEs are in good ecosystem condition as subtype 501 has more diverse distribution ranging from moderate to very good.
Most of 501 subtype HSEs are scored with very bad EC, while the other subtypes with very good.
Score of IP index for ecosystem conditions

Subtype 501

Subtype 502

Subtype 503

Most of HSEs are in good ecosystem condition
Provisioning Ecosystem Services

Subtype 501

- 501 subtype provides low relevant and relevant ESs
- 502 and 503 subtypes provide medium and high relevant ESs but in different proportion

Subtype 502

Subtype 503
Regulating and Maintenance Ecosystem Services

- **Subtype 501**
  - 0%
  - 66.7%
  - 33.3%
  - 0%

- **Subtype 502**
  - 0%
  - 0%
  - 30.7%
  - 69.3%
  - 0.05%

- **Subtype 503**
  - 0%
  - 0%
  - 13.3%
  - 86.7%
  - 0%

- Most of HSEs provide medium and high relevant ESSs
HSEs provide low relevant and relevant cultural ESs
Average Score for Ecosystem Services

Subtype 501

Subtype 502

Subtype 503
Distribution of ecosystem types by regions of planning

Type 501

Type 502

Type 503

Diagram showing the distribution of ecosystem types by regions of planning.
Distribution of HSEs referring to the state of their ecosystem conditions by regions for planning Subtype 501
Distribution of HSEs referring to the state of their ecosystem conditions by regions for planning Subtype 502
Distribution of HSEs referring to the state of their ecosystem conditions by regions for planning

Subtype 503
Distribution of SHEs referring to the values of ecosystem services by regions of planning
Subtype 501
Distribution of SHEs referring to the values of ecosystem services by regions of planning
Subtype 502
Distribution of SHEs referring to the values of ecosystem services by regions of planning
Subtype 503

NW: 70.5
NC: 70.4
NE: 61.7
SW: 81.1
SC: 56.8
SE: 80.2
Distribution of HSEs by Regions of Planning
Subtype 501
Distribution of HSEs by Regions of Planning
Subtype 503

Ecosystem condition and service
Conclusions

• The dominant subtype HSE is 502 because the subtype 501 is distributed mostly inside the Nature 2000 sites, whereas the 503 subtype HSEs is restricted like narrow stripes (till 20-30 m wide) along the rivers or water bodies.

• The average score of EC is moderate and of ES is medium.

• Comparing the HSEs’ condition and services – higher potential of HSEs to provide ESs than that calculated by the Real ESs Capacity (RESsC).

• Lack of knowledge and underestimated value of ESs provided by HSEs, especially some cultural ESs.

• All RP show similar values for EC as the national, except SW region.

• Highly developed ESs in South-East RP.
Thank you for your attention!

valentin.bogoev@abv.bg
office@epsilon-bulgaria.com