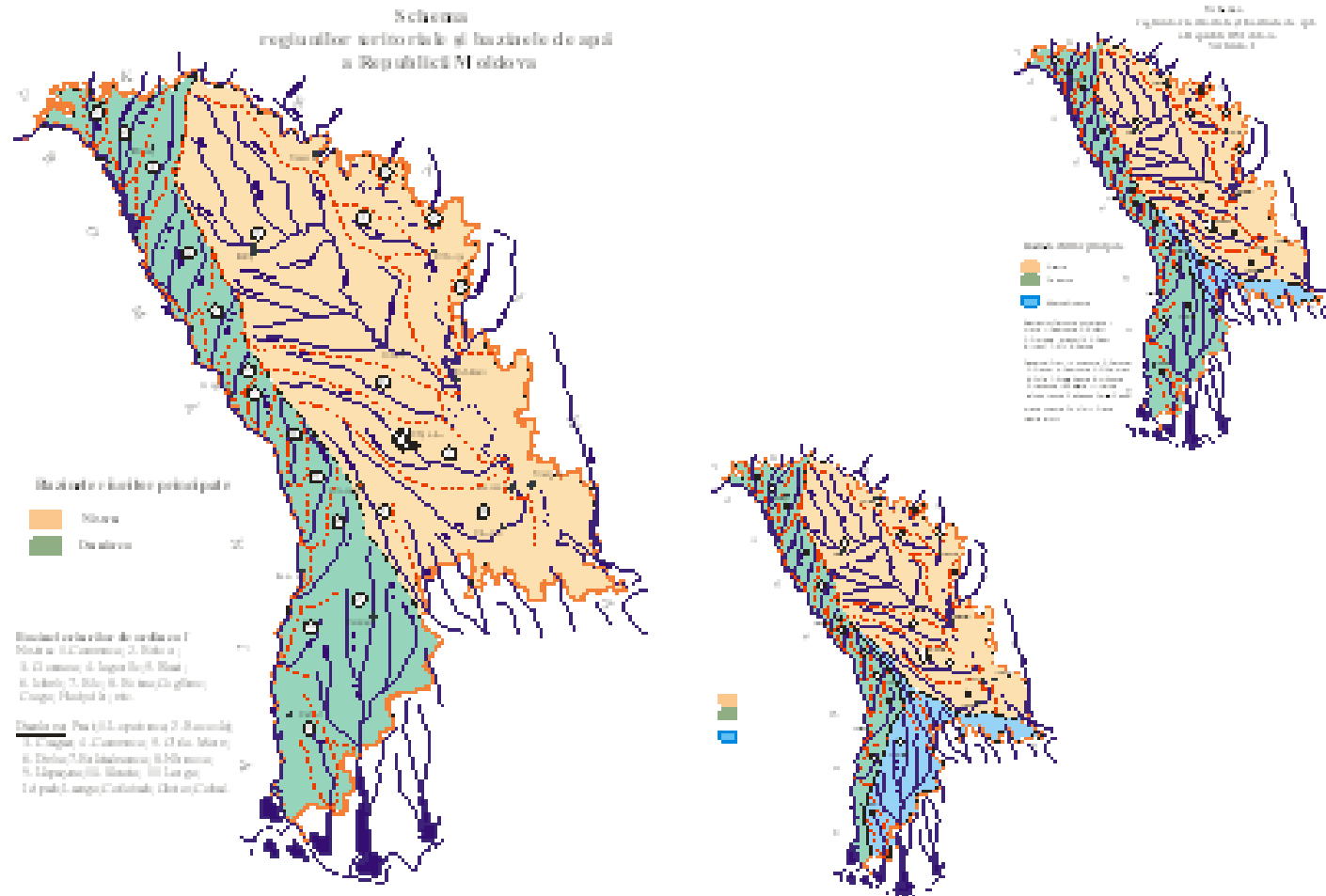


Soil management in Moldova

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River basin in the Republic of Moldova



Driving forces on soil resources strategy in Moldova

- **Population growth:** demands for more efficient land resources management
- **Urbanization:** migration from rural to urban areas which increases the current level of difficulty in land use management
- **Economic growth:** mainly in developing countries with large populations contributes to increased demand for economic activities
- **Globalization of trade:** production is relocated to “labor-cheap” areas that takes place without consideration for land and water resources

- **Climate variability:** more intense floods and droughts increase vulnerability of people
- **Climate change:** increase uncertainty about water cycle regimes and soil productivity

Institutions involved in soil management

- Ministry of Environment – central authority for soil management
- Ministry of Agriculture
- State Cadastr Agency
- State Agency “Moldsilva”
- Scientific Institutions
- Academy of Sciences
- Farmers associations
- NGO and local authorities

Main legislation in the field of soil management

- Land Code
- State Land Cadastr and Monitoring
- Law on farmer household
- Law on land price
- Water code
- Law on protected zones near rivers and water bodies
- Soil management issues are also presented in the laws on environmental protection, water strategy, river basin management plans (Moldavian part of the Danube river basin), etc
- Environmental issues are included in the governance program of actual government

Danube district in Moldova

- Total area 12400 km²
- Total population – around 1000000 people, rural population – around 80%
- Main branch of local economy – agriculture
- Fertilizer application average – 60 kg/ha in 80th, around 10-15 actually. P-fertilizer application is very low
- Manure – around 6 t/ha in 80th and 0,06 t/ha in 2005-2007

Land use in Moldavian part of the Danube river basin

- Arable lands – 53,5 %
- Orchards – 5,3%
- Vine yards – 5,2 %
- Pasture – 11%
- Meadow vegetation – 0,1%
- Other agricultural lands – 0,4%
- Forests – 12,5%
- Other lands – 12%

Crops harvest and soil fertility

- Average humus content – 2,5 – 3 %
- Total humus reserve in the arable strata – 110 kg/ha, nitrogen 5 kg/ha
- Average harvest – wheat – 2,5 tons/ha, maize – 3,5 t/ha, grape – 2-2,5 t/ha, bean roots – 20-25 t/ha, sunflower – 1,5-1,6 t/ha



Pollution reduction measures

- Actual pest application is around 3-4 kg/ha. Mainly CuSO₄ on orchards and vine yards
- Total lands under multiannual plantations around 10-11%
- Crop rotation practices. Actually average land in private property for crop cultivation – 3-5 ha, in some cases till 400-600 ha
- Development of irrigation system. Actually around 30000 ha of irrigated lands are under restoration in the frame of the WB project. Average irrigation norm – 3000 m³/ha/year

Main pathways in pollution loads on water ecosystems

- Total nitrogen emissions in the region is estimated on the level of 12500 tones and could be divided:
 - * Groundwater -50%
 - * Point sources – 15%
 - * Tile drainage – 5 %
 - * Populated areas – 10%
 - * Surface runoff – 10%
 - * Erosion – 5%
 - * Atmospheric precipitations – 3%
- Nitrogen emissions: 90% from diffuse sources – mainly agriculture of which around 30% originate from background flow and around 50% from agricultural activities

Phosphorus loads

- In regard to phosphorous total emission is estimated on the level of around 1000 tones. Main pathways are:
 - * Erosion – 50%
 - * Point sources – 30%
 - * Urban areas –10%
 - * Groundwater - 5%
 - * Surface runoff – 5%
 - * Atmospheric deposition –1%
- Phosphorous emissions: 90 % from diffuse sources – mainly agricultural activities (erosion)



Soil erosion

- Total agricultural not eroded lands – 770 th. ha
- Erosion – 370 th. ha – under different level of erosion
- Strong erosion (30% of soil profile) – 5,5%
- Average erosion (15-20% of soil profile) – 10 %
- Small erosion (till 10%) of soil profile – 20 %
- Area under eroded lands in comparison with 1965 increased in 2 times
- Average erosion could be estimated on the level of 10-12 tons of soil per ha/year on arable lands. Tolerable level - ?

Soil protection relevant to Danube strategy

- Development of organic farming practices – target for 2020 – 10-15% of arable lands
- Composting practices
- Introduction of erosion reduction measures and nutrient conservation in soils
- Organic fertilizers application (recommended level – 10 tones/ha)

Areas of Change

A. Environmental management

A1. Policies

A2. Legislation

A3. Financing & incentive structure

B. Institutional responsibilities

B1. Creating an organization frameworks

B2. Institutional capacity strengthening

C. Instruments for management

C1. Soil resources assessment

C2. Plans for IWRM

C3. Land use management

C4. Social change

C5. Regulatory instruments

C6. Economic instruments

C7. Information management