FORESTS IN SUSTAINABLE MANAGEMENT OF SOIL AND WATER RESOURCES IN THE CONTEXT OF RURAL DEVELOPMENT OF SERBIA

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PRESENT SITUATION

• From the whole surface area of Serbia (88 361 km2) about 90% is covered by erosion processes of different intensity.

• About 70% of the country is hilly-mountainous and predisposed to erosion regarding natural and anthropogenic factors.

• Annual sediment yield is about 37 milion m3 and specific sediment yield is 422 m3km-2.

• There are about 12 000 torrential streams with the catastrophic consequences on local public and infrastructure.
The impact of human activities on soil

European Soil Information
ROLE OF THE FOREST ECOSYSTEMS IN THE ENVIRONMENT PROTECTION

- Protection of soils against soil erosion
- Water quality protection
- Hydrological influence of forests on reducing flood hazards
- Protection of water reservoirs against siltation
GREAT FLOODS IN SERBIA IN MAY 2014
Extreme meteorological event

3-day rainfall (14-16 May 2014)

$P_{1000y}$
Upstream part of Kolubara RB (Valjevo city)

Total damage: 9 million €
Middle part of Kolubara RB (open-pit coal mines flooded)

187 mill $\text{m}^3$ of water + 3 mill $\text{m}^3$ of mud
Damage: 200 mil €
80% territory of Obrenovac city was flooded
- Water depth in some parts was 5m
- Evacuated: 25,000
- Partially or totally devastated houses: more than 1,000
- Damage to transport and communications: 17,000,000 €
- Endangered TPP Nikola Tesla (the largest in Serbia, installed power 1.650 MW)
Returning of some rains in Serbia in the period 1950-2014

157 times > 100 mm,
55 times > 120 mm
23 times > 140 mm.
2 times > 220 mm.
KRUPANJ: Čadjavica river (May, 2014)
Return period of flooding: once in 5000 years
Serbia: Sectors affected

Productive: 1,064 mill € (Energy and Mining 488, Agriculture 228, Trading 225, Manufacturing 121 and Tourism 2)

Infrastructure: 192 mill € (Transport 167, Water supply and Sanitation 16, Communication 10)

Social: 242 mill € (Housing 231, Education 3, Health 6, Culture 2)

Cross-Cutting: 28 mill € (Environment 21, Governance 7)
Unsustainable development
Uncontrolled forest cuts
Grđelička Gorge in fifties of last century:

- cutting leaves for the winter cattle forrage -
Nonadequate tillage
House on Sopotska river (Сопот, 2004.)
Restaurant on river Štira in Loznica, May 2014.
40% of waste have been not transported to the regular deponias
KEY ISSUES IN SUSTAINABLE RURAL DEVELOPMENT

SUSTAINABLE LAND MANAGEMENT

• It is a key to the sustainable management and conservation of water resources.

• Currently, it is widely held that conservation must include both soil and water resources, that is, integrated soil and water conservation.

• A critical component of such conservation is the need to link soil and water conservation technologies with the actual hydroclimatic deficiencies present in a given location.
Farming is first and foremost associated with soil and water management for the production of food and other biomass, and is also connected to flood control and rural development.

Contour tillage and contour planting of raspberries

Gornje Košlje, village in Drina watershed (about 900-1000 m altitude)
SOLUTION:

JOINT PROGRAMME(S)/PROJECT(S) AIMING TO THE FOLLOWING ISSUES:

• Promoting development of measures to improve the quality of life in rural areas and economic diversification and soil and water resources protection.

• Recent methods of the assessment of present state of erosion, natural and demographic conditions.

• Proposing forest species and specific technics for afforestation, taking into account natural conditions, carbon sequestration, etc.
• Proposing technical works in the torrential streams as well as in the watershed area.

• Special attention is on the establishing models of sustainable soil and water management which could contribute to the better life conditions and reducing migrations.

• High cost effective orchards and other species could be used on the principle of sustainability.

• Improvements in a water and soil law are also considered in the accordance with EU.
Community Based Natural Resource Management (CBNRM) Initiative in Balkans
WORLD Svetski
OVERVIEW OF pregled
CONSERVATION konzervacionih
APPROACHES AND pristupa i
TECHNOLOGIES tehnologijai
In the whole context, it means that production lines could be proposed/projected on the ecological, economical and social levels, by using conservation approaches and technologies, and, in the same time, taking into account population needs and economic efficiency. It proposes research in soil and water protection (that reduces flood hazard), necessity of local people and wider market as well as long term economic efficiency.
Thanks for the attention I
Thanks for the attention II

Center for freezing orchard products on EU standards

- Economy reason to stop migrations -