

# Planiranje energetske zasade u Srbiji sa posebnim osvrtom na brzorastuće šume

*Planning energy crops in Serbia with  
special reference to the fast growing  
forests*

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*Biomass* as one of the renewable energy sources (RES) represents "biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries, as well as the biodegradable fraction of industrial and municipal waste" (article 2 of the *Law of Energy*, Official Gazette of RS no.145/2014).

Biomass, in addition to coal, oil and natural gas is an important fuel that is used for production of heat energy and electricity.

*National Action Plan for renewable energy sources of the Republic of Serbia* (NAPRES) (RS, Ministry of Energy, Development and Environmental Protection, 2013) and *Action Plan for Biomass 2010-2012* (RS, 2010) - preconditions for further development RES in Republic of Serbia (RS) .



The potential of biomass in Serbia consider the mass of: **the wood** (1.53 million ten), **agricultural biomass** (1.67 million ten – remains in farming, animal husbandry, fruit growing, viticulture, primary processing of fruit), **primary biodegradable waste** (205 thousand ten), **municipal waste** and edible oils waste and animal waste (0.043 million ten per year) (*Strategy for energy development of RS until 2015 with projections to 2013*, "Official Gazette of the RS" no.101/2015).

**Energy crops** as biomass represent the RES and include plantation of plants containing a high percentage of oil or sugar (fast-growing trees, Chinese cane, eucalyptus, green algae); *this type of biomass is not specifically considered and singled out as the potential of biomass from forestry and agriculture..*



***Law on planning and construction*** ("Official Gazette of the RS" no.72 / 09, 81/09-correction, 64/10, 24 / 11,121 / 12, 42/13, 50/13, 98/13, 132/14 and 145/14) - one of the basic principles is the rational and sustainable use of non-renewable resources, as well as the optimal use of renewable energy resources (article 3); established an obligation for improvement of energy efficiency in terms of energy performance of the building (article 4).

***Law on Forests*** ("Official Gazette of the RS" no. 30/2010, 93/2012, 89/2015) - the economic function of forests is accomplished by using forest products for generation of income and thus creates the precondition for planning and management of forests of fast-growing species for the purpose of energy production; in some forest lands, programs and plans, fast-growing forest species are planned and cultivated, where, after the achievement of certain age, clean or read cutting of trees is implemented.



***Law on Agricultural Land*** ("Official Gazette of the RS" no. 62/2006, 65/2008, 41/2009, 112/2015) - while protecting soil from erosion, it is allowed to raise protective forest belts on the agricultural land and it is forbidden cutting of forests over endangered agricultural land (Article 18); : during the re-cultivation of degraded land due to mining and other activities, the most frequently applied measures of rehabilitation and reclamation are raising forest plantations of fast growing and pioneer and other forest species.

**In the RS 250,000 ha represents a total area of unused arable land which is 4.9% of the total arable land for which there is no special plan to be used for energy purposes** (NAPRES, RS, Ministry of Energy, Development and Environmental Protection, 2013).



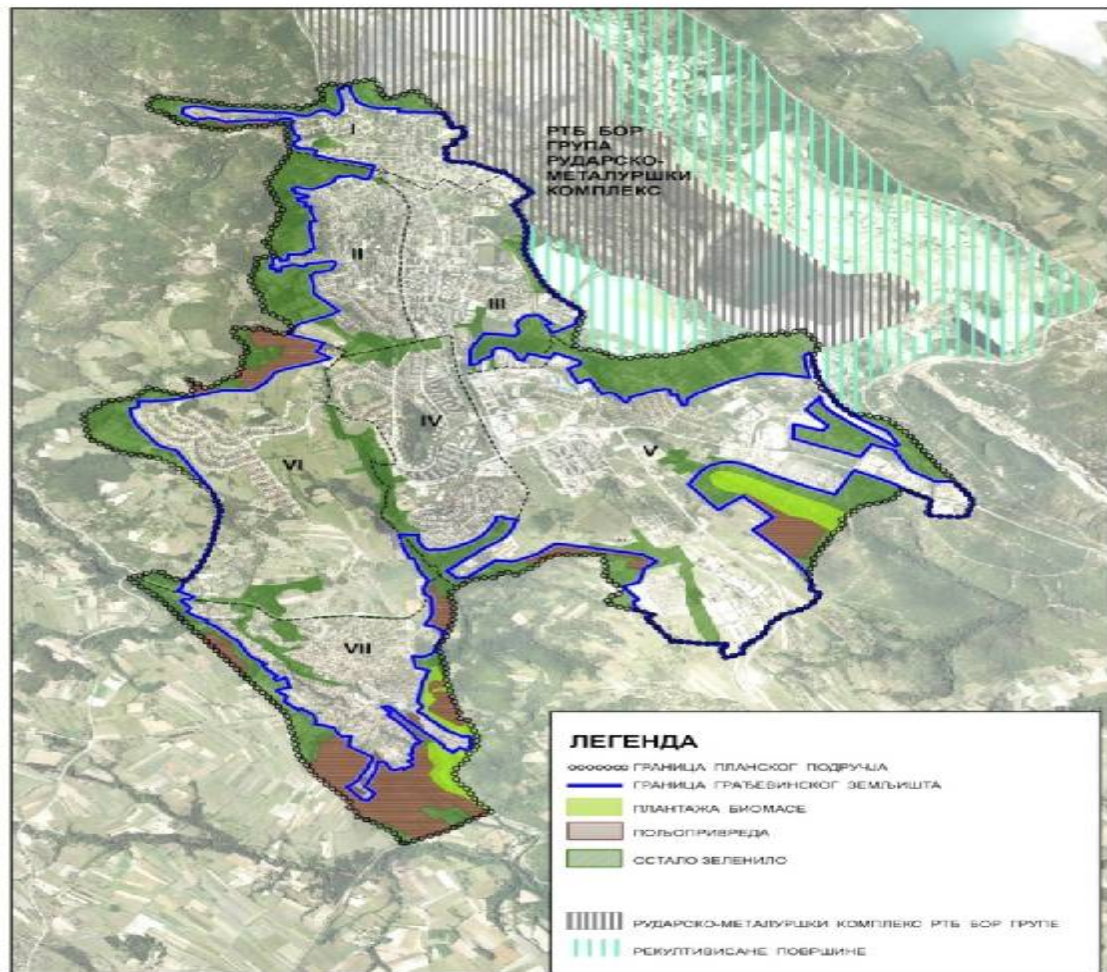
*Law on Energy* ("Official gazzete of the RS" no.145/2014), which defines the RES and biomass separately, in terminological sense, does not stands out energy crops.

*Law on Spatial Plan of the Republic of Serbia* ("Official Gazette of the RS" No.88/2010) - one of the main goals is significantly increasing the share of RES in the energy balance of the Republic of Serbia, respecting the principles of sustainable development; obligation for identification and quantification of local RES is established as well as the creation of a database for regional plans; it is estimated that about 200 000ha of land near rivers and canals in the plain area might be appropriate for raising energy crops and, together with the land that is not suitable for growing conventional agricultural crops.



(a) Mining basin "Kolubara" in 2012 started the implementation of the project on cultivation of growing biomass on areas where soil is temporarily deposited; on about 2ha is formed fast-growing forest of poplar and willow ([www.rbkolubara.rs/list-kolubara/?p=7186](http://www.rbkolubara.rs/list-kolubara/?p=7186));

(b) Reed Miscanthus (*Miscanthus giganteus*) is experimentally grown in Serbia on several locations (within the Institute for the Application of Nuclear Energy, in Čačak, landfill of ash and slag within thermal power plant "Nikola Tesla B" in Veliki Crljeni and in dump of futile in Kolubara, further on the degraded agricultural land in Loznica, etc.) where, as outlined, good results are achieved ([zelenasrbija.rs/srbija/3257-srbija-pogodna-za-uzgoj-energetske-trske](http://zelenasrbija.rs/srbija/3257-srbija-pogodna-za-uzgoj-energetske-trske), Jurek & Drazic, 2011, etc.) .







Current legal and planning framework in the Republic of Serbia establishes the basic conditions for development of renewable energy and it is certainly necessary that further development is focused also to the provision of appropriate legal and planning predisposition for raising energy crops.

Case study shows that it is possible to provide potential areas for raising plantations – energy plantations of fast-growing forest. By establishing a planning framework a significant stimulus is given to the local government for the production of energy crops.



# THANK YOU!

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