

## **ECOLOGICAL – ECONOMIC CLASSIFICATION OF AREAS OF FOREST RESOURCES ENERGY USE**

**Oksana Dynka**

*National Forestry and Wood Technology University of Ukraine*

The essence of ecological-economic approach to the classification of areas of forest resources energy use is realized through the ecosystem approach to nature management in general and forestry in particular, which was grounded by Acad. Y.Y. Tunytsya in the 1970s [1]. In the context of ecological – economic approach to nature management which was determined as a ternary process of “use, protection and reproduction of twofold components of ecological-economic system – natural living environment and natural resources” by Academician Y.Y. Tunytsya [2, c. 116], forest is described as an organic unity of forest raw resources (wood, non wood plant resources, fauna) – DMF components and different useful functions of forest – R components, namely its influence on living environment (services of general social use)

The meanings of the terms “Use of forest energy resources” and “Energy use of forest resources” are specified based on the ecological - economic principals of classification of nature management areas. The term “Use of forest energy resources” means the use of most components of resources of wood origin (subsystems of D element of DMFR system) and some components of non wood plant origin resources (subsystems of M element of DMRF system) and their processing products as a source of heat and energy in everyday life and economic activity of a man.

Wood energy resources are used in two main directions. The first one is the direct use of such energy wood resources as woods, fuel chip and also the production of fuel briquettes and wood granules – pellets out of these resources. It is influenced by the development of European market of wood granules, which is 8 million tons per year, out of which 400 thousand is exported by Russia, 80 thousand tons by Byelorussia, 50 thousand tons by Ukraine. In 2020 the capacity of European market of wood granules is estimated at least as 80 – 100 million tons [3].

The second direction is a deep thermal and biochemical processing of wood and non wood primary resources, which help to obtain products with new consumer energy properties. It includes the production of charcoal, generator gas for use as fuel in water heating and steam boilers, as fuel for internal combustion engines and gas turbines and also production of such products as liquid motor fuel, methanol and ethanol, bio diesel fuel.

The term “Energy use of forest resources” has a much wider meaning than “Use of forest energy resources”. Saying energy use of forest resources we understand ecological-economic processes which occur during the use of forest as DMFR system as renewable source of resources for the needs of constant energy supply and also as a component of biosphere which can directly or indirectly influence the ecological – economic processes of the use of other renewable and non-renewable energy resources.

In this sense forest as a DMRF system is viewed as a source of potential renewable energy resources (wood energy resources) and as a unique component of biosphere, which directly influences one of the most important branches of energy supply – hydro power (hydroelectricity) through its water control functions, and allows to save a lot of money for premises heating in winter and cooling in summer through climate control functions (smoothing of temperature extreme values and control of wind flows).

Nowadays one of the most important areas of energy use of forest resources is the suspension of greenhouse gas accumulation in the atmosphere by forest ecosystems including them in the processes of assimilation, the decrease of greenhouse gas concentration and providing stable balance between their formation and absorption in future. In particular, according to the data of researches the annual burning of technically available energy wood resources in Ukraine (2,1 million tons of fuel) provides emission of about 1,7 million tons of carbon, and at the same time the annual deposition of atmospheric carbon (trunks and root systems of trees) in Ukrainian forests is now about 11 million tons [4].

Thanks to its forests, Ukraine has huge reserves for international trade with carbon quotas, and money from their selling will significantly increase the ecological-economic efficiency of stable energy supply of our country.

### **References:**

1. Tupytsya Y.Y. Economic problems of complex use and protection of forest resources / Y.Y. Tupytsya. - Lviv: High school, 1976. - 212 p.
2. Tunytsya Y.Y. Ecoeconomics and Market: Overcoming of contradictions / Y.Y. Tunytsya. – K., 2006. - 314 p.
3. Europe hopes for Russia - Tree. RU [electronic resource]. / G. Malikova / Magazine on wood processing. - 2011. - № 2. - P. 44-47. - Mode of access to the magazine: [http://www.derewo.ru/derewo\\_jornal\\_pdf/2011/bio-one-page.pdf](http://www.derewo.ru/derewo_jornal_pdf/2011/bio-one-page.pdf)
4. Lakyda P. I. Energy use of Ukrainian forests biomass in conditions of global climate change / P. Lakyda, R. Vasylyshyn, L. Matushevych, S.Zibtsev / NFUU Ukraine Scientific herald . - 2009. - Vol. 19.4. - P. 18-22