

## **Estimation of greenhouse gases emission for energy production in Ukraine**

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Analysis of different sources of greenhouse gases emission shows that the bulk of it – 80-90% - results from energy production. Hence, it is important to study the structure and the principles of greenhouse gases formation in power industry. Such research can help modify objective parameters of equipment efficiency that would economically stimulate energy producers to work on reduction of greenhouse emission.

Replacing fossil fuel by biomass may be regarded as one of the ways to reach this ultimate goal. Conventional computational methods of greenhouse emission are based on a systematic approach, which means that for every case under consideration it is necessary to gather the complete data about all the technological processes concerned with energy and equipment production. This approach being undoubtedly time- and money-consuming, it can only be applied if a definite power-producing unit is being designed. Estimation of the total amount of greenhouse gases emission can be done on the basis of average data, which allows to determine the most efficient ways of emission reduction and detect the influential factors, on the one hand; while on the other hand, it enables to compute the extreme values of emission. Such assessment method has been used for analyzing the level of the greenhouse gases emission in power production in Ukraine.

The accuracy of the computation is determined by the effect produced by N<sub>2</sub>O and CH<sub>4</sub> on the total emission value. The data obtained from literature and practice allow to evaluate their influence only indirectly.

The research shows that the amount of greenhouse gases depends on the way the fossil fuel is produced, transported and processed and equals 28% or 5 % for coal or natural gas respectively. Thus, the impact of this factor should be taken into consideration if we replace fossil fuel by biomass.

Utilization of coal is concerned with the maximum value of greenhouse gases emission that exceeds the same parameter for crude oil by 28% and for natural gas by 47%. It is noteworthy that the value of emission for coal production is determined by coal methane emission. High values of emission for oil products are explained by the considerable energy losses during oil refining, low level of refining (63%) and low efficiency of technological processes.