

论文

能源安全综合评价方法探讨

吴初国¹, 何贤杰², 盛昌明², 刘增洁¹, 万会³

- 1. 国土资源部 信息中心, 北京 10081;
- 2. 国土资源部 咨询研究中心, 北京 100035;
- 3. 国土资源部 储量评审中心, 北京 100035

摘要:

能源安全是指一个国家或地区可以获取稳定、足量、经济、清洁的能源供给,以满足需求,保障经济社会稳健运行和持续、协调发展的能力和状态。它可用加权综合模型计算得来的“能源安全度”指数进行描述,取值范围最高为1,最低为0,分值越高越安全。研究表明,现实情景下,我国能源安全度平均为0.712 5,处于“基本安全”状态。未来发展规划得当,措施得力,到2020年、2030年能源安全度可提高到0.841 1、0.847 7,进入“安全”区间。若遇针对我国的能源封锁,则能源安全度可能会降至0.552 0的“不安全”区间。解决我国能源安全问题的关键,主要是增加战略储备、实行供应多元化、加强地质勘查、发展替代能源、提高能源效益,而且能源外交也要摆在显著位置。

关键词: 能源资源 能源安全度 综合评分法 熵权系数法

Comprehensive Method for Evaluating Energy Security

WU Chu-quo¹, HE Xian-jie², SHENG Chang-ming², LIU Zen-jie¹, WAN Hui³

- 1. Information Center, Ministry of Land and Resources, Beijing 10081;
- 2. Consultation Research Center, Ministry of Land and Resources, Beijing 100035, China;
- 3. Reserves of Mineral Resources Assessment Center, Ministry of Land and Resources, Beijing 100035, China

Abstract:

"Energy security" refers to capability and state that a country or a region may obtain stable, sufficient and clean energy supply to meet the requirements of ensuring prudent operation and sustainable and balanced development of its economy and society. For the evaluation of China's energy security situation, the technical key is how to quantitatively analyze the guarantee degree of energy supply under the multivariate energy structures, such as petroleum, gas, coal, civil nuclear and so on. We firstly design an evaluating system of energy security by ten factors from five aspects, according to three levels of "Composite Index-Essential Indicators-Key Factor". The five aspects are: 1) domestic energy supporting capability, 2) domestic production capacity, 3) ability of international market energy acquisition, 4) national emergency control ability, and 5) environmental safety control ability. And the ten factors include: 1) reserves-production ratio, 2) reserve replacement ratio, 3) production share, 4) self-sufficiency ratio, 5) import shares, 6) price, 7) reserves level, 8) energy consumption intensity, 9) carbon emissions, and 10) the proportion of clean energy. Then, we use the weighted aggregative model to make an integrated index of "energy security degree". Finally, the general state of energy security can be characterized and described by the integrated index. We choose 1 and 0 as the maximum and minimum of the value range of the integrated index, the higher the index, the safer the energy situation. Based on successive decrease of step width of 0.2, energy security degree is divided into five grades: safe, basically safe, unsafe, seriously unsafe and in crisis state, which correspond to five colors for early warning, they are in the order of green, blue, yellow, orange and red. Study indicates that currently the degree of China's energy security is 0.7125 averagely, being "basically safe". With proper future development programs and powerful measures, the degree of China's energy security will reach 0.8411 and 0.8477 respectively in 2020 and 2030, entering the "safe" interval. In case our country is implemented the energy blockade internationally, the indicator maybe decrease to 0.5520 of the state of "unsafe". To solve China's energy security, the key is to not only increase its strategic reserves, diversify the energy supply, strengthen geological exploration, develop alternative energy and raise energy efficiency, but also place energy diplomacy in a prominent position.

Keywords: energy resources energy security degree comprehensive scoring method entropy coefficient method

收稿日期 2010-10-09 修回日期 2011-01-24 网络版发布日期

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基金项目:

中国地质调查局"我国能源安全评价及对策研究"项目(1212010535702-4)。

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