**10th International Student Scientific Conference**

**"Russia in the global world: new challenges and opportunities"**

Panel "Russian foreign policy and the global energy transition"

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**Hydrogen cooperation between Russia and Germany: problems and prospects**

(Водородное сотрудничество России и Германии: проблемы и перспективы)

**Theses** *(7460 symbols)*

The history of Russian-German energy cooperation dates back decades and is a solid foundation for economic cooperation between these two countries. In the era of cool intergovernmental relations (over the past four years, the Russian Federation and Germany have not signed a single interstate agreement), a successful partnership in the field of hydrogen energy can give a new impetus to economic relations between the two countries, taking into account Russia's raw material export orientation and Germany's achievements in the field of high technologies, which makes this study relevant. Both domestic and foreign scientific literature has so far focused on the study of Russian-German cooperation on the extraction and supply of traditional types of fossil raw materials, as well as the regulation of the energy market of the European Union and its interaction with external actors. Insufficient knowledge of the issues of the "energy transition" and the subsequent development of global energy confirms the scientific novelty of the report. The work aims to build prospects for hydrogen cooperation between Russia and Germany. The report is also aimed at increasing knowledge about Russia's capabilities in the global hydrogen policy.

The methodology of this study includes:

* the use of the concept of neorealism, which will help to understand the **‘***Realpolitik***’** - intentions and actions of Russia and its partners;
* using/ drawing on the concept of structuralism, which allows considering/ examining hydrogen relations at all levels;
* application of game theory for estimating the most profitable strategies of action for Russia and the most acceptable ones for Germany;
* comparative analysis of two documents – Hydrogen strategies of Germany and the Russian Federation.

It could be stated with a certain amount of confidence that despite numerous obstacles Russia will continue to act as the main energy partner of European countries and one of the leading energy partners of other major subjects of world politics in the next decade. Nevertheless, the decline of the "oil era" is inevitable. Professor of Economics, expert of the Valdai Club S. L. Tkachenko, in an interview with the Sputnik media agency, forecasts that the peak of oil demand is expected to be left behind in the 2030s. In this situation, the best option/course of action for Russia is to seize leadership in the field of hydrogen production and start exporting it as early as possible, before the time when the demand for hydrogen energy exceeds the demand for other types of fossil fuels.

The export of hydrogen by Russia and the building of relations with hydrogen recipient countries are significant problems of world economic relations for the near future. Finding the path towards the solution suggests turning to both theoretical and conceptual approaches. Based on the fact that the main actors in the global transit of energy are still national states (and not post-national quasi-state entities like the EU), the most appropriate element of the theoretical and methodological framework is the concept of neorealism. So, it could be clearly traced that the plans for the creation of the EU hydrogen market differ from those of individual European countries. The EU Hydrogen Strategy includes a list of countries that are to be included in the export-import relations on hydrogen energy; however, Russia is not among them. It is impossible to refer here to the desire for cooperation exclusively within the EU since Ukraine is also mentioned in this strategy. In contrast to the EU's plans, German and Austrian politicians, who have formed a tandem with business and science on this issue, declare that Russia is almost the only possible permanent exporter of hydrogen to European countries.

Germany is still assumed to prefer grasping the existing opportunities. Nord Stream–2 was built on the assumption that it may double as a transportation channel not only for natural gas in liquefied form but also for lighter hydrogen. Consequently, this could ensure reliable cooperation between Russia and Germany. However, Germany in June 2020 adopted a detailed National Hydrogen Strategy closely related to the climate agenda for Germany. By 2035, Germany plans to have developed equipment based on water electrolysis for the production of "green hydrogen" in a less "harmful" way. This may threaten Russia with "energy isolation"; as a result, Russia will not be able to transit "yellow" hydrogen to European countries.

It is also worth remembering about "energy security", which obtained different interpretations within the European and Russian political traditions. "Energy security" is one of the most important terms of the neorealist concept of international energy; post-Western countries and especially Germany are actively adopting this concept. In this regard, Russia needs to prove its readiness to rebuild the scientific and technical base to meet the requirements of global security with a focus on the production of "light" hydrogen. Possibly, if Russia switches to clean hydrogen production, it will no longer be perceived as a threat to both environmental and national security of Germany.

Russia should be the first to offer to the leaders of the Federal Republic of Germany hydrogen cooperation that is enshrined in interstate acts. The rationale for this is as follows: it is Russia that is interested in not being left "overboard" of global energy transit. "*Russia and Germany need a full-fledged agreement in the field of energy cooperation, where it would be clearly stated how much energy imports Germany needs in the foreseeable future. This step would allow us to increase the level of global energy security and would make the prospects for reducing the carbon footprint more feasible. We are interested in creating a single European hydrogen space. But for doing so we need to talk less and act more*," Vladimir Litvinenko, Rector of the Mining University of St. Petersburg, summed up.

The potential of this cooperation is partially reflected in the energy strategy of the Russian Federation. In the document, hydrogen is designated as a fuel with high export potential. By 2024, Russian hydrogen exports are expected to reach 0.2 million tons, and by 2035 they are projected to level off at 2 million tons. According to the plans of the Ministry of Energy, Russia should account for 16% of the global hydrogen market.

From a structuralism perspective, the first steps towards reaching agreements on hydrogen cooperation have already been made. Russian and German businesses have been discussing possible cooperation in the field of hydrogen energy for several years at various events. In particular, the Russian-German Chamber of Commerce has established a working group on hydrogen, within which several large Russian and German companies are working together on all parts of the chain: from production and transportation to consumption and the use of hydrogen to create a hydrogen market and new areas of cooperation in the future. For example, Wintershall Dea together with Gazprom are launching hydrogen production technology as part of the scientific and technical cooperation program.  In December 2021, the Organization for the Development of Scientific and Technical Cooperation in the Raw Materials Sector, in collaboration with the Russian-German Raw Materials Forum, dubbed Rohstoff-Forum, held the second Russian-German Conference on hydrogen energy.

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