| Company/Organization PROJECT LIAISON | Project Title | Project Description |
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| PROF. YURI V. TROFIMENKO Head, Department of Technical Safety ywtrofimenko@mail.ru/<br><br>Moscow Automobile and Road Construction University (МАДИ)<br><br>*in collaboration with*<br><br>ФИНАНСОВЫЙ УНИВЕРСИТЕТ ПРИ ПРАВИТЕЛЬСТВЕ РОССИЙСКОЙ ФЕДЕРАЦИИ<br><br>PROF. A. ILYINSKY<br><br>DEAN, INTERNATIONAL FINANCE DEPT.<br><br>+79099510513 ailyinsky@fa.ru<br><br>*Financial University under the Government of the Russian Federation* | **Developing a Strategy for the Use of Gas-Engine Fuel in Automobile Transportation in Russia** | **Current Problem**<br><br>1.1. Assessment of quantities (for the period of 1990-2016 and forecasting up to 2020) of personal vehicles, trucks, buses that run on natural gas; assessment of the levels of gas –engine fuel consumption and of the number of natural gas filling stations for automobiles and their incidence in different countries including the United States, Russia and large metropolises; assessment of what is being transported and in what quantities.<br><br>1.2. Exploring legal and economic regulations that currently govern the use of natural gas as automobile fuel in the United States and in Russia.<br><br>1.3. Exploring the construction of the current means of transportation, their technical, service and ecological characteristics in comparison to petrol and diesel engine automobiles. Study of the maintenance and repair services for gas-engine vehicles.<br><br>1.4. Identifying obstacles that stand in the way of the transition of automobile transportation to gas-engine fuel<br><br>**2.** Analysis of legal, administrative, economic, engineering and technological measures needed for expanding the use of natural gas fuel for automobiles<br><br>**3.** Working out the details for developing 2-3 events or initiatives in Moscow to evaluate their ecological impact (toxic substance and greenhouse gases' release), traffic safety, fire and explosion safety of the buses and automobiles (their structural integrity) and the safety of their service infrastructure.<br><br>4. Providing technical and economic justification or feasibility study for gas-engine fuel implementation utilizing cost-benefit analysis, risk assessment, SWOT analysis and other complementary methods of quantitative analysis. |

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# HEDGING WEATHER RISKS FOR THE RUSSIAN FARMERS:

*BUILDING LOCAL MERCANTILE EXCHANGE SYSTEM USING BLOCKCHAIN TECHNOLOGY*

According to the Trade Commission of the United States, a large share of the world economy of about 1 trillion US dollars is highly sensitive to weather conditions. In other world, weather has an effect on more than 20% of world economy. To manage weather risks, the international currency markets have started offering various financial weather derivatives which made it possible to hedge against the inclement weather conditions.

CME (Chicago Mercantile Exchange) has played a crucial role in the development of trading in weather derivatives. It started regular stock trading of weather derivatives back in the summer of 1999. The Chicago Stock Exchange introduced two standardized weather indices: - Heating Degree Days (HDDs) and Cooling Degree Days (CDDs) and offered monthly futures and options for these indices. Despite the seemingly unorthodox nature of weather derivatives, the volume of trading in weather futures and options has been growing fast. In the first five years, 25 thousand weather contracts have been traded at the CME and by winter of 2005-2006, the trading volume in weather derivatives hit a record 45 billon dollar level.

Non-financial temperature risks have to be standardized and become part of the incomplete financial markets. Temperature index needs to be transparently fixed and put out of reach of market manipulators. It has to be publically recognized and widely accessible with a posted long-term history, which would allow to correctly determine all the statistical characteristics and construct temperature forecasting models. An important aspect of the temperature index is its spatial heterogeneity since it is difficult to use the index calculated for Moscow to hedge against weather risks in Saint-Petersburg and totally impossible to use it for Vladivostok, for example.

The project thus involves:
- Study of the world experience in the area of hedging against weather risks for small and medium-sized agricultural farms;
- Research risk hedging in incomplete markets
- Explore statistical characteristics of the meteorological temporal rows and their models
- Explore and build financial weather instruments
- Analyze how local hedging systems of weather risks and weather instrument trading are put together
- Explore the application of Blockchain technologies to hedging against weather risks

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| | | | References<br>A. Alexandridis K., A.D. Zapranis, Weather Derivatives-Modeling and Pricing Weather-Related Risk, 2013, XVI, 300 p. Springer<br>Pauline Barrieu and Olivier Scaillet, A primer on weather derivatives/<br>http://1cellonelight.com/pdf/weatherCambridge.pdf |

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DEPT. OF DATA ANALYSIS, DECISION MAKING AND FINANCIAL TECHNOLOGIES

*Financial University under the Government of the Russian Federation*

## REPOSITORY PROJECT:

*ORGANIZING ECONOMIC MODELS TO HELP FORECAST ECONOMIC AND SOCIAL TRENDS IN RUSSIA*

The Financial University under the Government of the Russian Federation is one of the largest and most prominent academic institutions in Russia in the area of modelling of economic and social developments in the Russian economy and beyond. The creation of the University's Data Warehouse and Repository of Economic Models will make modeling and forecasting of social and economic processes in the country possible with the application of a wide range of methods. It will also allow to understand the nature and interdependence of economic factors better. This project will involve the application of the traditional as well as cutting-edge methods of Big Data processing, including the methods of machine learning. It will allow to shorten the cycle of data preparation and calculation of models. The results of modeling will make the comparative economic analysis possible and will allow for the consensus-forecasting with altering the modeled parameters of the processes.

The implementation of this Repository will improve the quality teaching and research work and it will also contribute to charting the economic trajectory of sustainable development and economic growth through the dissemination expert reviews and reports among various governmental bodies of the Russian Federation. Dasboard construction will help forecast and avert various problems and issues in the Russian economy.

Project Goals

Selection of Models to add to the Repository of Economic Models
Determining and Compiling of Data Lists for Data Warehouse
Model Description and Introduction of Algorithms for Performing Calculations
Dashboard Development with Controlling Parameters
Scenario and Consensus-Forecast Modeling

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