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Strategic Priorities of the System Modernization Environmental Safety under Sustainable Development

Grygorii KALETNIK
Faculty of Management and Law
Vinnytsia National Agrarian University, Ukraine
vitontiras2017@gmail.com

Svitlana LUTKOVSKA
Faculty of Management and Law
Vinnytsia National Agrarian University, Ukraine
svetvsau@gmail.com

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Abstract:

In this article it is proved that strategic planning and implementation of strategic priorities of guaranteeing environmental safety as a phenomenon and process of predicting the future and preparing for the future is interpreted quite widely: as an integrated process of preparation and decision making of a certain type, as formulating goals and defining ways to achieve them, as ensuring preparedness of economic and social objects for competition in the markets, etc. Strategic planning is found to be an adaptive process that regularly develops and corrects a system of sufficiently formalized plans, reviewing the content of their implementation measures on the basis of continuous monitoring and evaluating changes occurring externally and internally. The mechanism of realization of interrelation of strategic tasks and operational decisions in strategic planning is developed. Priorities of improvement of modernization measures in the field of ecological safety development have been elaborated, which consist of the following components: 1) development of normative and legal base in the sphere of ensuring ecological and natural-anthropogenic safety, its adaptation to the norms of international and European law; 2) institutionalization of ecological and natural anthropogenic safety on the basis of sustainable development; 3) development of information-analytical, scientifically sound monitoring system of environmental and natural-anthropogenic safety; 4) forecasting the state of environmental and anthropogenic safety by 2030; 5) increasing attention to the problems of ensuring environmental and natural-anthropogenic safety at the regional level and identifying strategic directions for overcoming them, based on regional peculiarities of the danger; 6) state control over ecological development of sectors of national economy, development of innovative technologies, ecological modernization; 7) overcoming problems of industrial and household waste management; 8) the social imperative to ensure environmental safety; 9) improvement of mechanisms of financial extrabudgetary provision of ecological and natural anthropogenic safety at micro and macro levels; 10) support for bilateral and multilateral parity security cooperation.

Keywords: strategy; environmental security; sustainable development; priority.

JEL Classification: Q01; Q56; Q57.

Introduction

For a long time, there was a belief that the development of the world economy will be stable and continuous, and natural resources - inexhaustible. Environmental problems were considered to be technical in nature and also to be solved by technical means. Technological optimism gave rise to illusions about the limitless possibilities of

economic growth, and the rapid and spontaneous technological attack of man on nature, without regard to possible consequences, has become the cause of modern environmental problems. Thus, today global environmental security is characterized by the following features: lack and degradation of natural resources or environmentally dangerous situations exacerbate conflicts and exacerbate tensions within and between states; cooperation on the environment is a potentially stabilizing factor in interstate relations, which exacerbates tensions related to the sharing of resources; the processes of strengthening dialogue and expanding mutual trust, openness in the ecosphere develop more slowly than new conflicts are generated; the state of ecological security threatens socio-ecological-economic stability (demographic trends, mass migration, declining welfare, instability and destruction of social institutions, etc.). These problems can be solved by developing an effective breakthrough strategy in this area. It is this issue and determined the purpose of this study.

1. Literature Review

Recently, fundamental scientific research has been deepened, in which environmental and economic-environmental problems are the object of special attention of domestic and foreign scientists. In particular, the development of these issues is devoted to the works of: S.P. Ivaniuty, K.V. Taraniuk, A.B. Kachynskyi, B. V. Vitlinskyi, G.M. Kaletnik, S.V Kozlovskyi, O.V. Dluhopolskyi, O.O. Veklych, M.V. Holovanenko, C.M. Iliashenko, O.V. Kozmenko, S.K. Kharichkova, O.H. Rusak, O.B. Sadchenko, K.F. Frolova, O.V. Kharlamova, V.M. Shmandii and others (Kaletnik, Kozlovskyi and Kozlovskyi 2012; Koziuk, Hayda, Dluhopolskyi and Kozlovskyi 2020; Obihod 2012). In addition, the modern scientific literature and current regulations contain a large number of separate approaches to the description of environmental safety, but there is no comprehensive study on the development of strategies to ensure environmentally sustainable development.

2. Methodology

The purpose of the study is to develop strategic priorities for environmentally sustainable development based on the use of modern scientific methods and approaches.

3. Case Studies

Description of the new studies/software/artwork and the process of production. What has been done, how was it achieved and Case studiesPresentation of the main research material. Strategic planning and implementation of strategic priorities of environmental safety as a phenomenon and process of predicting the future and preparing for the future is interpreted quite broadly: as an integrated process of preparation and decision-making of a certain type, as the formulation of goals and identifying ways to achieve them, as ensuring the preparedness of economic and social facilities for competition in markets, etc.

It should be noted that strategic planning is an adaptive process through which the regular development and correction of a system of fairly formalized plans, reviewing the content of measures for their implementation based on continuous monitoring and assessment of changes occurring outside and inside the system (Obihod 2012; Hvesik, Stepanenko and Obihod 2013). Strategic planning covers a system of long-, medium- and short-term plans, projects and programs. However, the main substantive emphasis is placed on long-term goals and strategies to achieve them.

Strategic planning has become a necessary part of security regulation, as today's situation, characterized by globalization of world economic relations, rapidly changing technologies, global and regional security organization, requires states to be able to adapt their planning and security policy to respond effectively to changing conditions.

The activity of introduction of the strategic security planning system is explained by the following (Malish 2009):

- strategic planning - a defined element in the world practice in the system of management and regulation, which allows to create conditions for long-term development;
- in the conditions of radical social and economic transformations which provide adaptation of the country to requirements of market economy and the open international competitive market, this approach allows to make current decisions considering the strategic purposes;
- strategic planning is the most adequate tool that can consolidate efforts to address the safety of life.

The logic of substantiation of strategy provides carrying out of the following analytical procedures:

- general characteristics of the main subsystems of hazards and threats, which are analyzed;
- identification of trends that have formed in each subsystem, and forecast their development;
- assessment of models of these trends in the form of three or four scenarios of development of dangers and threats in the future: options of steady, moderate, weak growth or negative development of events;

- development of practical recommendations (measures to stimulate positive trends and prevent or smooth out negative phenomena).

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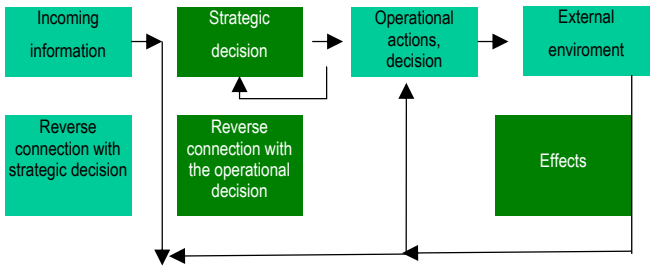
Strategic planning cannot exist out of time. This is manifested in maintaining a constant relationship of strategic objectives and current decisions. The mechanism for implementing the relationship is as follows: changes in the external environment require urgent countermeasures, which changes operational decisions, and in the case of significant external influences - and a strategic decision (Figure 1). The method of strategic planning when used in public administration required the spread of strategic vision to all elements of the organization.

Figure 1. The mechanism of realization of interrelation of strategic tasks and operative decisions in strategic planning



Source: developed by the author

Recently, in legislative, political, environmental and other activities, environmental security has become a priority, which, on the one hand, is an integral part of national security, and on the other - goes beyond it as a phenomenon of global and even geospatial security (Gricenko 2015). The main thing here is that the concepts of security and balanced development are an interconnected system. Security itself is associated with reliability, stability of the object, process, balance of the system. Achieving security of development involves a purposeful and gradual process of implementation of modernization measures.

Based on the peculiarities of the European integration process and taking into account the EU requirements for the state of the environment, in the near future Ukraine should determine the procedure for action on the following strategic priorities for improving modernization measures in the field of environmental security:

1. Development of the regulatory framework in the field of environmental and natural and anthropogenic safety, its adaptation to international and European law. The analysis of compliance of Ukrainian legislation with the requirements of EU directives showed a low degree of overlap between both the horizontal sphere and sectoral areas. In some cases, the current legislation of Ukraine contradicts the requirements of directives, decisions and regulations; current state legislation is partially or not at all in line with EU Directives, with the exception of legislation on access to information (Directive 90/313 / EC, Directive 2003/4 / EC), where the degree of compliance is high (Biesek 2013).

The problems of Ukraine's lack of a proper environmental impact assessment procedure, which is completely unbalanced, are acute and complex. Sectoral legislation of Ukraine needs changes and additions; both the decision-making procedure and their sequence are systematically violated. There is still no common mechanism for managing the protection and security of air defense, there are many cases of duplication of functions and resources, there are no common approaches and coherence of actions on national issues, and threats are considered in a purely "departmental" context. The issue of air defense management is under constant control in all developed countries of the world and it should be noted that, in accordance with accepted norms of international law (including European), the operation of potentially dangerous facilities falls under the general management of critical infrastructure.

2. Institutionalization of ecological and natural-anthropogenic security on the basis of sustainable development. Arranging institutions according to the principles (departmental, territorial), hierarchical levels (national, regional, local), which determine the limitations and responsibilities for business entities:

- ensuring a clear division of responsibilities, responsibilities and sources of funding between institutions;
- streamlining regulatory and legal support with related industries;
- introduction of an integrated management system at the vertical and horizontal levels, which, in particular, involves the coordination of interests and risks of all stakeholders;
- stimulating the development of new forms of organization of activities, which allows to combine business interests (public-private partnership, joint responsibility, cluster associations).

Institutional changes in the state are spontaneous and chaotic. An important institutional problem now is the non-fulfillment of the basic principle of a market economy - the distribution of property and power, the intertwining of economic and political power, and the institutional weakness of the state is manifested in ineffective implementation of specifications and protection of property rights and contracts. The main problems of institutional regulation of Ukraine should be divided into two blocks: problems related to the economic and political situation and caused by the peculiarities of the interaction of formal and informal institutions.

3. Development of information-analytical, scientifically sound system of monitoring of ecological and natural-anthropogenic safety (Madelyan 2013):

- introduction of effective mechanisms to increase the coordination functions of the Ministry of Environment, including through the authority to provide proposals for the allocation of funds and other monitoring resources between entities, primarily on the functional subsystems "Observation and control of natural hydrometeorological phenomena and pollution" and "Forecasting hydrometeorological conditions and phenomena", as well as to monitor the use of the latest technologies for the regions (*e.g.,* hydrocarbon extraction, GMO distribution);
- development and approval in the prescribed manner of the National Program for Improving the Environmental Monitoring System and ensure adequate funding of this program;
- concentration of available resources and priority on the allocation of additional resources to complete the development of an open online access system to the monitoring database;
- improvement of the system of ecological indicators (indicators) of assessment of the state of the environment of Ukraine for the needs of national security, control over observance of norms of use of natural resources and ecological condition of the environment;
- on the ground: state administrations to fully promote the development of regional environmental monitoring systems and their integration into the state environmental monitoring system.

4. Forecasting the state of ecological and natural-anthropogenic security until 2030 as a scientifically sound determination of directions of development of a certain phenomenon or process in separate administrative-territorial formations, spheres of environment, etc., as well as alternative ways and terms of achieving parameters of their development (Kozlovskyi 2006). Forecasting is one of the components of the process of ensuring environmental safety. The Law of Ukraine "On Environmental Protection" contains provisions on the need to develop and adopt short-term and long-term forecasting of environmental changes. Domestic scientists provide a number of definitions of the concept of environmental forecasting. Thus, E. Kachan notes that environmental forecasting is a type of activity that consists in obtaining scientifically sound options for the development of the environment and public health, natural resource potential, risks of emergencies of natural and man-made nature, indicators of balanced development (Law of Ukraine "On Environmental Protection" of June 25, 1991 No. 1264-XII).

The forecast makes it possible to identify all possible options for the development and solution of certain problems of the future, their mutually exclusive options, spontaneous and conscious processes, to determine their temporal and spatial parameters. Depending on the content, is what contains the description of the future, they

encourage a person to either actively strive for it, or by all sorts of methods to prevent. Based on the content and purpose of different forecasts, we can distinguish four main types: search, regulatory, analytical, forecast warning. According to the content of each of the types there are up to 150 forecasting methods, although the practical value is not more than 20. Among the most used methods: modeling, expert evaluation, extrapolation (Kozlovskyi 2006).

5. Increasing attention to the problems of environmental and natural-anthropogenic security at the regional level and determining strategic directions for overcoming them, based on regional features of the manifestation of danger. Regional ecological and natural-technogenic security in Ukraine requires research of factors, causes and conditions of emergencies and determination of strategies for further development of society in accordance with them. Such research is a complex task, the solution of which requires the joint efforts of specialists in various fields of knowledge. It is necessary to combine the latest advances in disaster economics, physics of material destruction, geography and geology, mathematical modeling, synergetics, probability theory, mathematical statistics and many other fields of knowledge. At the regional and district levels, socio-demographic problems of the population are solved, the state policy of development of all branches, social, economic, ecological and other issues is implemented. The importance of the regional factor in the implementation of economic and social policy of the state and the importance of the role and responsibility of the government in ensuring the living conditions of the region are generally recognized.

The level of natural and anthropogenic and ecological danger of administrative units directly depends on the manifestations of a number of risks and threats on their territory, such as: dangerous geological and hydrometeorological phenomena, fires in natural ecosystems, medico-biological threats, and among anthropogenic - explosive and fire hazards. chemical, hydrodynamic, etc. It is worth noting that in recent years, due to additional negative factors, the problems of individual regions are exacerbated, as a result of which the environmental situation is approaching a crisis. First of all, it concerns Donetsk and Luhansk oblasts, where infrastructure facilities were destroyed as a result of hostilities. Summarizing environmental problems in the regional context, it is advisable to identify the most problematic regions, which include Donetsk, Dnipropetrovsk and Luhansk regions. It is in these regions that the problems of air pollution, surface and groundwater, and waste accumulation have become most acute at the same time.

6. State control over environmentally friendly development of sectors of the national economy, development of innovative technologies, environmental modernization (Tulchinskaya 2008):

- development, creation and implementation of new technological processes and cycles, development and coordinated development of all functional units for the extraction of resources, their processing, use of waste and reproduction of these resources;
- development and use of resource-saving equipment, development and implementation of low- and zero-waste technologies that provide integrated development of natural resources, development of biotechnology;
- development of new territories for the needs of the population and production taking into account the requirements of ecological safety;
- development and production of new environmentally friendly products and the creation of facilities for their production, development of options for the use of new and renewable energy sources;
- increasing economic efficiency with "green growth" of the economy and energy;
- formation of new thinking in innovation developers in terms of the need for their greening through the introduction of compulsory environmental education, etc.

One of the main ways to solve environmental problems is the transition to an innovative model of national economic development, as the main means of environmentally friendly modernization of production and implementation of resource conservation processes. This requires a comprehensive approach to the greening of economic development, which involves the introduction of a system of measures to reduce the burden on the environment and increase the level of environmental safety.

7. Overcoming the problems of industrial and household waste management:

- innovative development of waste management through the introduction of organizational and economic mechanisms of public-private partnership and appropriate financing models, economic modeling of resource-production relations in the field of secondary resource use, as well as consistent implementation of the principle of subsidiarity in public policy;
- shifting the center of gravity in solving problems of waste management to prevent their formation and development of recycling;
- application of cluster methodology in the formation of economic relations in the field of waste management and, in particular, in the context of cluster-network approaches to the development of regional

infrastructure for waste management as a secondary resource and optimization of regional and interregional waste flows.

The problem of waste management is gradually becoming more acute. This applies to both the growth of both waste generation and accumulation. In recent years, the storage of unusable pesticide residues, which are scattered throughout Ukraine, has remained unresolved. The issue of unauthorized landfills and the impact of existing landfills on the environment is no less acute in the country. The regions of Ukraine are quite different in the manifestation of some of the listed problems of waste management. In particular, in regions where mining industries predominate, the problem of mineral waste accumulation in landfills, tailings ponds and sludge storage facilities is significant. Due to the lack of a developed waste management infrastructure in the country and the slow introduction of resource-saving technologies, waste accumulation is becoming progressive. However, the question of the impact of waste on the environment is not so much in the volume of their generation as in their accumulation. Due to the lack of developed waste management infrastructure in the country and the delayed introduction of resource-saving technologies, waste accumulation is becoming progressive.

8. The social imperative of environmental security, which should be considered as a set of basic requirements for social relations and interactions in society, the implementation of which is necessary to maintain the stability of the socio-ecological-economic system. In its most general form, it can be defined as the total greening of consciousness and worldview of man and society:

- providing quality environmental education and upbringing of the population;
- comprehensive promotion of the ideology of sustainable development, guaranteeing access to environmental information, increasing the role of the media in shaping environmental awareness;
- involvement of the population, state and non-state formations and organizations, business community in decision-making on issues of ecological and natural-anthropogenic safety;
- formation of guidelines for a healthy lifestyle in harmony with the environment.

Modern scientific approaches to ensuring environmental safety justify the need to stimulate social activity to address pressing environmental issues. This requires the formation of institutions to involve individuals, various social groups and local communities, non-governmental organizations and businesses in defining and implementing the core values of sustainable development, discussing and making management decisions on the use of limited resources, environmental and natural safety. We believe that such institutions have a high chance of implementation in Ukraine, as they are based on historical traditions of self-government and collective mutual assistance. The main implementation mechanisms here can be: comprehensive informing of the public about the initiatives of the authorities that determine the state of environmental safety, the content of relevant programs, projects, plans; involvement of the general public in the adoption and implementation of relevant decisions; support for public and non-governmental organizations, etc.

9. Improving the mechanisms of financial extra-budgetary support of environmental and natural-anthropogenic security at the micro and macro levels:

- improving the financial component of the support of the organizational and economic mechanism of software development and implementation at the state, regional and local levels;
- increase the efficiency of reservation and distribution of funds through the special reserve fund of the State Budget and reserve funds of local (regional) budgets, which act as an auxiliary source of funding in case of budget deficit in various contingencies, including natural and anthropogenic.
- introduction of alternative forms and mechanisms for attracting extra-budgetary funds for the implementation of innovative projects for preventive prevention and forecasting of emergencies, in particular through the development of insurance mechanisms;
- creation of a special accumulative Emergency Fund for prevention and liquidation of emergencies of natural and anthropogenic origin at the state and regional levels.

10. Support for bilateral and multilateral security cooperation on a parity basis:

- fulfillment by Ukraine of the obligations arising from the mentioned multilateral agreements;
- further expansion of international cooperation in the following areas: cooperation with international organizations of the UN system in the field of environmental protection, global multifunctional organizations at the governmental and non-governmental levels;
- participation in regional environmental measures (especially in border areas and common waters);
- participation in international programs to eliminate the consequences of the Chornobyl accident (problems of waste, transfer of pollution by air and water flows, etc.);
- development and implementation of investor market access programs to attract environmentally friendly technologies and equipment for environmental protection of Ukraine (economic, technical and expert assistance):

grants (free assistance) and loans from the UN Development Program, the Environmental Protection Program. The first grants were aimed at conserving biodiversity (the Danube Delta and the Eastern Carpathians), as well as a regionally important project - the protection of the Black Sea from pollution; European Union assistance in the framework of technical assistance to the CIS countries (TACIS); international assistance to individual developed countries (USA, Canada, the Netherlands, Germany, Denmark, Great Britain) both in the framework of multilateral programs and on the basis of bilateral agreements.

The implementation of strategic directions of modernization is hindered by a number of restraining factors. Some authors (Kartashov 2014) group them by organizational, personnel, economic and other components (Table 1).

Table 1. Classification of restraining factors

View	Characteristic
Organizational	Absence in the majority of business entities of divisions (laboratories, farms, centers, etc.) which specialize in innovative production of the enterprise and are completely acquainted with innovative sphere of the internal and external markets
Human (human resources)	Lack of professional specialists in the field of patenting licensed products, knowledge of the market of new technologies at the level of major competitors and partners
Social psychological	The desire of most managers and production workers of machine-building enterprises to maintain psychological comfort, which is based on the absence of risk, always associated with innovation; the tradition of a centralized planned economy to receive orders "from above" instead of initiating innovations "from below"
Economic (financial)	Lack, often lack of start-up capital in the authors of innovations for the development of new products and obtaining a market effect for its implementation
Legal	Imperfection of the legal field of the game in the innovation sphere, in which all participants in the innovation process would have approximately equal economic conditions of direct economic reward for their own work

Source: systematized by the author based on Kartashov (2014)

Conclusion

The strategic directions of modernization are closely connected with innovation. It is through the introduction of the latest processes, materials and technologies that the appropriate level of natural and man-made and environmental safety is achieved. The vectors for overcoming the restraining factors will be the following:

Greening through the introduction of innovative environmental technologies in the technological process, namely:

- control and monitoring of environmental pollution, including biotechnology;
- treatment plants that reduce the level of environmental pollution by mobile and stationary sources;
- environmentally friendly and resource-saving: the latest production processes that reduce air pollution or use natural resources more efficiently;
- introduction of innovative equipment for capture and disposal of hazardous emissions into the atmosphere;
- implementation of innovative developments in the field of conservation of natural renewable energy.

Motivation for the introduction of environmentally friendly organizational innovations for stationary sources of air pollution, namely:

- introduction of organizational innovative methods and control systems for the improvement and implementation of air protection technologies in the production process;
- use of new methods of organization of environmentally friendly production, marketing of environmentally friendly products;
- the latest management systems, financial instruments, methods and forms of staff activation.
- Introduction of innovative products or services that provide environmental benefits - new or environmentally improved.
- Implementation and use of ecological marketing innovations:
- innovative methods and techniques for promoting environmentally friendly products on the market;
- innovations in the field of distribution of environmentally friendly products and environmentally efficient innovation product policy.

Introduction of ecological system innovations: alternative systems of production and consumption that are more ecological than the existing ones and are able to radically change production technologies, knowledge, organizational processes, product and infrastructure innovations, consumer behavior, etc.

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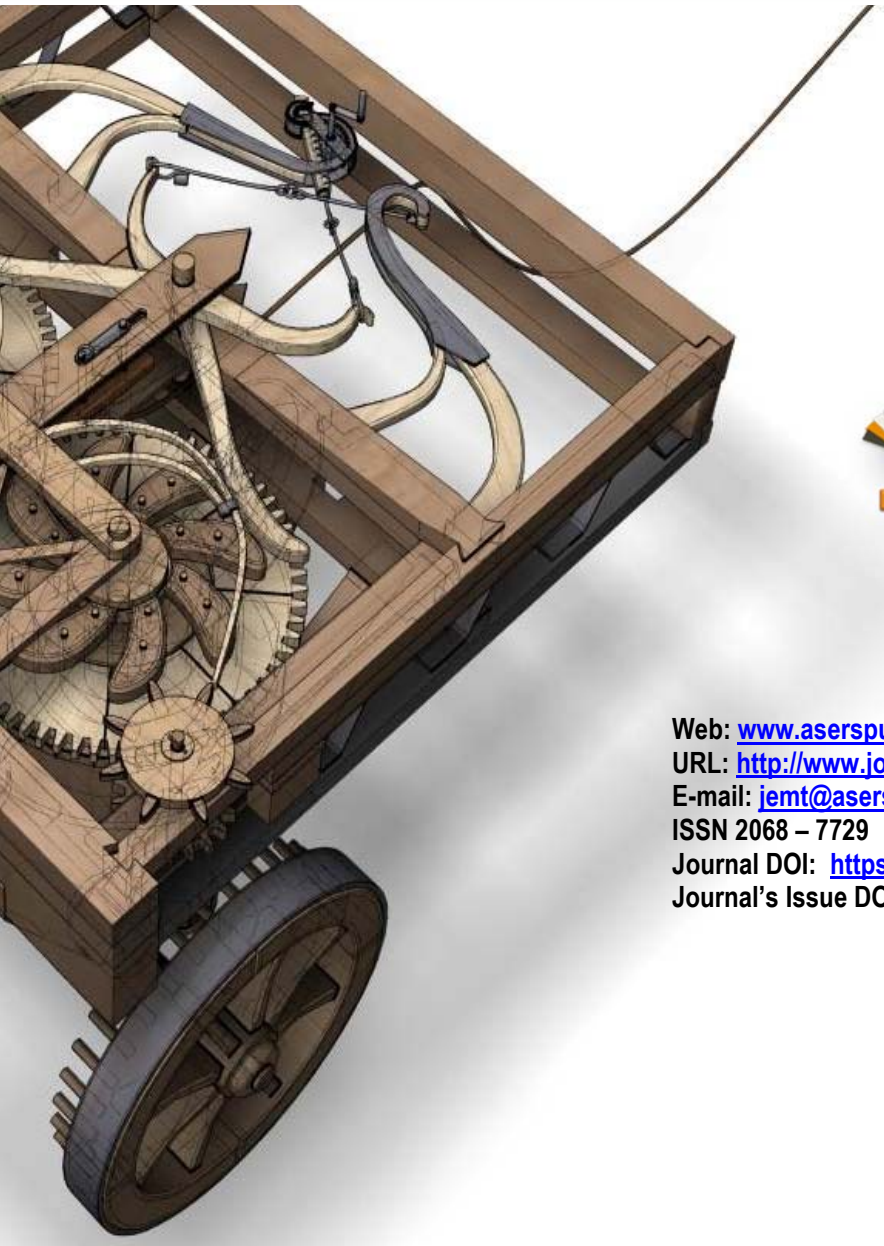

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