

GEOGRAPHICAL & GEOPOLITICAL FACTORS OF MARINE POWER ENGINEERING DEVELOPMENT

Boris V. Preobrazhensky

The article shows the urgent need to revise the paradigms, principles, methods and technologies for natural resource management on the islands and coastal areas belonging to the Far East of Russia. It's time to move away from the exploitation of nonrenewable energy sources and switch to a new framework of natural resources development, world-famous policy of "Eco".

Keywords: marine power engineering, marine energy, alternate sources of power, ecological "green" energy source, eco-development, frontier economics, marine resource management, marine energy security.

Energy production in the industrial period of mankind technological development has become a separate branch of industry, whose main goal is generation and sale of energy for the sole purpose to gain financial profit. Universal equivalent and convertible universal type of generated energy is electrical energy that can be produced, accumulated and transmitted to any distance, and then used in any concentration at any location. Today, it acquires the quality of hard currency and becomes the object and instrument of the international power impact. In 1981, the "Pan Books Ltd." reissued A. Toffler's monograph, the well-known to our readers for his book "Future Shock". For the first time the book

“The Third Wave” was published in 1980 by British publisher William Collins, Sons & Co Ltd. The book introduces the reader to a completely new for him, though very old, very strange, though familiar, creepy and seductive world analyzing the essence of the sociological and technological development of human society. The author convincingly shows that neither class struggle and political economy, according to the Marx theory, nor struggle of religious dogmata and Gumilev’s “passion-arnost” as well as not a change in world-outlook concepts revolve the wheel of history of human society. Main system regulator of human history is ... a working cycle of human self-reproduction which is composed of comprehension and usage of such categories as “space”, “time”, “type of energy used”, “a process chain in the family”, “the information”, “type of the power pyramid”, “interpersonal relations”, “religious dogmata”, and many others taken in the generalized form.

Before proceeding to develop plans and strategies for development of marine power engineering you must first sort it out in a variety of common human values, underestimation of which may lead to major blunders and global catastrophes. Solving the energy issues at first stage it is necessary to conduct energy audit, i.e. find out how much and what type of energy is required in the region and each local site, why specific activity is performed or planned, and what are the environmental and socio-economic impacts of proposed activity.

Policy makers should not forget the words of British Prime Minister Henry Palmerston (1784-1865) that the state can have no permanent friends or permanent enemies, but only permanent interests. And in terms of geo-political science, these interests are solely in maintaining the strategic power of the own state. By the way, famous Russian geopolitician of the beginning of the twentieth century A. Danilevsky also wrote about it.

Hereby for example producing the surplus of electric energy Russia is selling it to China today twice cheaper than to Russian citizens, that factor in geopolitical terms negatively influences the geopolitical solidity of Russia itself. Plans for nuclear power plant construction in Primorye region are not related with common desire to improve

safety, living conditions and environmental level for the population of Primorye region and to cover energy shortfalls in the Far East. There is no deficiency. The main purpose of this 'wild' scheme is creation of a new generating capacity, which is clearly visible as absolutely redundant and supposed to be exploited only for money making as well as the tool of political and economic influence on China and North Korea, even to the prejudice of the own people. Therefore, it is supposed to create a powerful energy consumer, e.g. an aluminum plant for the high-purity aluminum export. Everybody knows that Russian Far East does not experience such a large demand for aluminum as well as does not have raw materials and skilled personnel to produce it. Also it is clear that the project will bring the inevitable catastrophic-scale environmental damage and negative socio-economic impact as well as enormous international response among the environment protection community around the globe.

The Ussuriysk - Khasan pipeline construction with the intention of pumping gas into North Korea has already created a burst of indignation among regional and world environmentalists in connection with imminent death of all Khasan district river ecosystems as the last unique recreational resource in the Russian Far East. It will inevitably lead to the creation of another geopolitical tension area in the Far East. And this issue can be much more harmful than recent gas transit tensions between Russia, Ukraine and Belorussia. Environmental concerns in the world grow high due to the transition of all economically developed countries to a new paradigm of Nature management - "Eco-Development".

Development of marine power engineering apart from just technological capabilities is caused by the following reasons: economic, geographic, socio-economic and geopolitical. Commencing the development of even the "green" power engineering, the planning entity should take into consideration first and foremost that paradigm of nature management was hastily imposed on our society by some government officials who did not find time for properly understanding the essence of the basic paradigms available today in the world science and practice.

Among the physical-geographical and economic-geographical factors for the development of marine energy the following ones are paramount:

- Natural resource potential and presence (or absence) of the respective natural resource zoning of water areas and ability to use them;
- Environmental conditions for decision making process which considers all possible consequences of local, regional and global scale;
- Physical and geographical characteristics of the environment and the changes that will occur in it while organizing various power take-off units;
- Economic-geographical position of the site where the power plant is supposed to be constructed as well as area energy needs for present and future consumers;
- Impact of power lines on surrounding biocenoses and ecosystems;
- Socio-economical development of the adjacent areas and types of power supply they need;
- Principles of natural resources management suitable for each particular site or area.

First of all, it is necessary to consider the real economic and geographical situation in the coastal area of the North Western Pacific and to find out both the technological possibility of large energy flows including ecologically friendly types of energy in this region and its technological relevance in the framework of any of the nature management paradigm. We should fully realize what the geopolitical basis of the relationship is between society and state, what is the true goal of the planned activity along coastal areas, and what results are expected after the rapid development of marine power engineering in each particular inhabited area. Also it is necessary even to evaluate the economic and geographical justification of human presence in some certain locations and areas.

It is no secret that Australia and New Zealand for the UK, as well as Sakhalin and Magadan Regions for Russia and the Soviet Union

had long been intended as places of exile for political and criminal offenders, and even for the mass elimination of 'undesirable' persons away from the metropolis. At the same time during Karafuto period under Japanese dominance Sakhalin and the Kuril Islands experienced a phase of intensive socio-economic and technological growth. In Soviet times nobody even thought about amenities for living ashore of the Far Eastern seas and of course about any development of environmental resource management or power engineering including environmentally friendly energy sources. Until now the archipelago of the Empress Eugenie in the Gulf of Peter the Great which is a constituent part of the city of Vladivostok contains some islands with no power supply (e.g., Reineke Island).

In fact, within the framework of the post-industrial stage of technological development of the society there is no need for power generation industry itself. Energy must be produced where it is consumed. It should have as high quality and quantity as necessary to meet the requirements of the adopted life strategy for each particular location. These figures reveal the corresponding energy audit, based on both economic-geographical analysis and views / lifestyle preferred by the societies living in the particular area. And it is not always true that the principle of economic rationality of enterprises distribution is considered as the crucial reason for people settlement in a particular location and their way of existence selection.

The analysis itself must be conducted from the perspectives of community development within the adopted paradigm of natural resources management. In this paradigm the most important priority is to define activity objectives in relationship between human and nature and the threats under the influence of which people are forced to gather in this particular location and to build their behavior by one way or another. For example if you decide to build a tidal power plant in Penzhina Bay in the Okhotsk Sea the first thing you have to consider are the present and potential consumers of this energy, power line length to them and economical rationality of such consumers location there. The task is at least strange from common sense - to solve the issue by creating a series of even larger problems.

On the other hand, the construction of power plants generating electricity by a powerful sea current along the Koni peninsula in the Sea of Okhotsk may solve a range of problems of the whole Magadan region including Magadan city itself as well as small local settlements on the coast.

Today we have five most famous strategies of environmental management paradigms:

- “Frontier Economics”;
- “Environmental protection”;
- “Resource Management” = “Sustainable development”;
- “Eco-development”;
- “Deep Ecology”[1].

Each of these strategies corresponds to a peculiar stage of technology development during the change of three waves of civilization on the Earth as mentioned by Alvin Toffler in “The Third Wave “.

In the Russian Far East the extremely consuming model of the “Frontier Economic” in environmental management has been exploiting for 150 years. This model had destructive devastating effect on the nature and is characterized by brutal and uncontrolled extraction of natural resources to satisfy both personal and corporate needs claimed as the state priority ones.

At the same time the local population was completely deprived of ownership rights on those natural resources and their consumption for personal purposes. This situation has not yet changed even today.

The end of the XX century is characterized by significant shifts in the distribution of population and industry in many countries around the globe. And the coastal zone of seas and oceans became a strong center of socio-economic structures attraction. The term “coastal zone” means the region where adjacent shorelands and coastal waters are strongly influenced by each other. From the sea it is bounded by cabotage shipping, coastal fishery, mariculture. Sometimes it approximately coincides with the shelf boundary and with the boundary of the sublittoral zone in some areas as well. This tendency is particularly clear in the U.S., Japan and Australia. From the land this area is bounded by watershed vertices with streams of the first order.

The main factors determining the tendency of economy and population shifting to coastal areas can be divided into four groups.

The first group is related to the geopolitical concept of globalization, consideration of the global world economy, expansion of economic ties between countries, and intensification of international division of labor as well as growth of marine transport technological level. As a result countries situated at considerable distance from each other become united in a common economic and administrative mechanism and many branches of industry that previously were not linked to the sea such as fuel and energy sector or iron and steel industry are transformed by new economic ties into the “port” ones.

The second group is associated with the growth rate and scale of the sea coastal zone resources utilization and development of the extractive industry there.

The third group is stipulated by the preceding two. The intensive economic activities build new and improve old coastal zone infrastructure e.g. roads, railways, power lines, pipelines, etc. These factors stimulate coastal zone economic development and the area population density.

The fourth group could be called psycho-physiological and it is not connected with geopolitics of the Masonic globalization but directly opposes it. Sea coast is the most favorable place in terms of tourism and recreation, attracting people by a variety of experiences and opportunities. Climate conditions of the coast (especially the southern seas) are favorable to rapid physiological recovery of the human body. So, many people especially the older generation in developed countries have started to choose the sea coastal zone not only for recreation but also as a place of permanent residence. In this case geopolitical independence of the habitat as well as preservation of cultural and historical identity of the people is highly appreciated. The anti-globalization trends dominate exactly in such areas.

Assessing the geopolitical consequences of development of the marine power engineering which are always locally peculiar we should take into account the existence of a country’s own geopolitical vision, that in today’s Russia is gradually being revealed as a concept of Eurasianism. Comparison of the famous Russian geopolitical

concepts of such scholars as V.Semenov-Tyanshansky, N. Danilevsky, V. Tzimburgsky, A. Neklessa, A. Dugin shows that the main vector of Russia's geopolitical vision has always been the rejection of own global dominance and opposition to British Atlanticism. This implies an unnatural feature for Russian geopolitics to follow the trends of liberalism and globalization [2].

The combination of geopolitical force fields indicates such geopolitically inevitable vectors of energy development that are preferable for our country or contraindicated to it and at the same time desirable to our neighbors. Thus, the development of marine power engineering in the central part of the Kuril Islands will bring whole Sakhalin region from a retarded stagnant situation which is typical for Russia's frontier territories and change in minds of inhabitants the stereotype of the Russian Far East as mercilessly destroying colonial outskirts. Moreover it may strengthen the Russian vector in the regional field of force and reveal to our neighbors the hopelessness of their expectations that those territories break away from Russia.

The geopolitical environment of the coastal areas of Russia should not deceive itself with the illusions of the instability of Russian geopolitical construction, and the local population should be at least confident in that the state is not just a company of administrative officials opposed to the people and that they at least have the intention to carry out their main function - providing security and creating favorable environment for life and vital activities. Geo-strategic interests of the neighbors are just the opposite - in anticipation of weakening influence of Russian central government on the outskirts of the country and gradual loss of control over them with the falling away of those territories in favor of neighboring states. Such sentiments and concerns are clearly observed among the population of the Kuril Islands and Primorsky region.

The impact of globalization is the main geopolitical issue for contemporary Russia; it is also the challenge for our closest neighbors - China, Korea and Japan. So, the development of a joint marine power engineering projects would give Russia a chance to strengthen its geopolitical influence and to consolidate within the framework of a unified strategy of the possible Eurasian Union [3].

In Russia and particularly in the Far East all these processes are less popular for a number of historical, political and economic reasons. Nevertheless it is possible to foresee it and moreover, it was predicted by I.M. Mayergoyz and his students 20 years ago that the coastal zone of Primorye region especially its southern part will become the center of gravity for economic and cultural life in the Far East in the nearest future. To implement this the Russian government is taking some concrete steps. For example it is decided to organize the APEC forum in the Russkiy Island in Primorye region in 2012. Russian President's visit to the Kuril Islands has unexpectedly given new hope for the economic development of this neglected area and has aroused burning indignation in Japan. This in its turn will determine the growth of coastal resources value especially of some shore areas and adjacent waters. At the same time the grounds for geopolitical tension in the Far East have begun to revive. One of the most important resources of the Far East is its coastal zone. As ecology says, ecological efficiency of the coastal zone is directly proportional to the degree of the coastline irregularity.

To evaluate the geo-strategic potential of the USA the famous American strategist A.T. Mahan outlined the same idea, which is now the basis of the entire U.S. geopolitics. In the former USSR such Mahan's works as "Influence of Sea Power upon the French Revolution and Empire" and "The Influence of Sea Power upon History" have been published in 1940-1941. His legacy was aimed at making the U.S. the greatest naval power in the world. And if in World War I his ideas didn't bring tangible success to the U.S., during the Second World War the role of these ideas increased dramatically. The victory in the Cold War with the Soviet Union finally consolidated the success of the "Seapower" strategy. Back in 1981 the U.S. military-political authorities developed, adopted and implemented the "Leading edge" concept. Its main objective was to apply the principle of "Anaconda", i.e. isolation of the USSR continental power, blocking of its armed forces along the perimeter of the whole territory and establishing a permanent nuclear-missile threat at the outer ring.

Mahan identifies six criteria for planetary status of state:

1. Geographic location of the state, its access to open seas and existence of sea routes with other countries, land border length and ability to control the strategic regions, the Navy's ability for defense and offensives.

2. The configuration of the state, especially the shape of sea coasts and the number of actual and potential ports on which the prosperity of trade and strategic security of the country depends.

3. Length of coastline (the more the better).

4. The population of the country that is important to evaluate the ability of the state to build and maintain the Fleet.

5. National mentality as the ability of the people to engage in trade.

6. The political system of the state on which the rearrangement of the best natural and human resources for the sea power establishment depends.

The main parameters of the state sea power according to A.T. Mahan are as follows: $SP = N + MM + NB$, where SP - sea power, N - Navy, MM – marine merchandise, NB - naval bases providing control over key remote continental bases.

It is clear that similar arguments can be applied to the assessment of geostrategic potential of our country taking to consideration the development of marine power engineering sector and marine energy demands. And the solution depends on what kind of geopolitical doctrine will guide the people who plan to develop marine energy sector.

Both environmentally and geopolitically Russia does not have convenient and suitable coastline. It is low indented and has not enough bays and harbors and that's why it is relatively low productive. There are almost no places for convenient construction of ports and bases either for merchant fleet or for Navy. The coast is poorly utilized and its population is one of the most economically inactive in the world and has low density. Without vigorous action on urgent development and settlement of the Russian Far East coastal areas it is not possible to consider strengthening of the geopolitical potential of the Far East. This issue can be solved by migration of the active part of Russian population from the central regions providing they get preferential terms

and conditions such as interest free and soft loans, full tax exemption, transfer of ownership of land and coastal waters without compensation, the establishment of a free port regime and so on. This practice has been known since the late XIX century when the Old Believers started their migration to the Far East. Their families and communities had strong historical and cultural grounds for creation of reliable self-sufficient farms with strong moral principles.

The matter is that the geopolitics itself can be considered as a purely academic science on one hand, on the other hand as the own national geopolitical practice, varying in connection with the change of historical-cultural platform of the state or even entire civilizations. At the same time it is possible to observe some geostrategic trends that are being manifested through particular national ideas in the world. So, today in the world the geopolitics of globalization has become popular. This trend is aimed at creating the Masonic world government which rooted in the mists of time and suddenly manifested itself in the geopolitical constructions of theorists of global geopolitics in the U.S. when this country went beyond the Monroe Doctrine and began to capture new territories outside the Americas. In 1982 the American geopolitician E. Rosenberg noted that “Mahan’s geopolitics expressed all the expansionist impulses of the end of XIX century: the Protestant evangelism, the Anglo-Saxon destiny, fear of overproduction, the confidence in the superiority of Commerce».

The U.S. went from autarchy or political and economic self-sufficiency (Monroe Doctrine) through the openness to the world and now claims its right to control the world. At all times Russia rejected the idea to have overseas colonies and focused its interests exclusively on the Eurasian continent. Extremely autarkic tendencies of Korea and Japan led to their geopolitical isolation. Only the influence of Karl Haushofer’s geopolitical system awakened Japan’s intentions for expansion in the entire Pacific basin and Eurasia territory up to the Ural Mountains. Echoes of these aspirations can be heard today and their influence can either boost or decelerate the development of marine energy.

Coastal zone concentrates the large number of diverse resources including a particular resource of “economic and geographical location”. The most important and commonly used are the biological resources of the coastal zone. Today another resource is coming as a significant one – the energy. It arises on the basis of combination of the gradients of physical and geographical environment such as temperature, salinity, direction and speed of currents, tides, wind and waves.

The result of the resources concentration is the emergence of serious conflicts between natural resource consumers competing for the same coastal areas and adjacent waters and developing mutually exclusive activities there. In spite of the moratorium adopted on this occasion by the Legislative Assembly of Kamchatka region the intensive oil and gas exploration is conducted today on the west coast of the peninsula in the most environmentally sensitive area of the Okhotsk Sea.

Currently new types of coastal zone resources are being exploited. For example, mining of sand and gravel in the shallow shelf of Primorye region has already become an important branch of local industry. There are some projects for enhancing the existing ports and building new ones. This requires in parallel with economic and business development of the coastal zone of Primorye region to increase ecological and geographical basis of environmental resource management in the coastal zone, which should ensure the use of renewable resources with minimal damage to their recoverability; halt the deterioration of the quality of the marine environment due to economic activities; minimize conflicts and optimize relationship between different types of the coastal zone exploitation. No doubt that there is a place for the development of environment friendly power engineering including power of ocean currents and waves, energy of salinity and temperature gradients etc. Stuck in the paradigm of “Frontier economics” Russia does not have a ghost of a chance to take a leading position in the world economy without transition to another type of nature management. The concept of so-called “Sustainable development” is obsolete and well developed neither in Russia nor in the world.

Prioritizing the export of hydrocarbons, timber and water-biological

resources without developing tourism and recreation, mariculture and coastal fishery that are vitally important for the southern Far East is not simply wrong but even criminal because it undermines the basis of the economy and entire way of life of the Far East habitants. And this is a geopolitical category.

At all periods of Soviet colonization natural resources management system had the structure when every ministry or department was in charge of separate sector of economy (so called departmental-branch approach) and did not take into account the correlative interests between different economical branches, socio-economic requirements of native and migrating population and the state of ecosystems. As a result, the major number of ecosystems is degraded and could never recover to the previous productivity.

There is a necessity to revise the paradigms, principles, methods and technologies for natural resource management on the coastal areas and islands belonging to Russia. It is time to move away from the exploitation of nonrenewable energy sources and to switch to a new paradigm of world-famous policy “Eco-development”. And a leading role here may be played by balanced and coherent strategy for the development of environment friendly marine power engineering. This must be done now because further delay will lead to environmental disaster and the inevitable socio-economic shocks that have an unavoidable and entirely predictable geopolitical response.

REFERENCES:

1. Colby M.E. Environmental management in development: the evolution of paradigms// *Ecol. Econ.* 1991, pp. 193-213.
2. Колосов В.А., Мироненко Н.С. Геополитика и политическая география// М. АспектПресс 2001, с. 479. (*Kolosov V.A., Mironenko N.S. Geopolitika i politicheskaya geografiya// Moskva. AspectPress 2001, p. 479*).
3. Дугин А.Г. Манифест Евразийства// Москва 2000. (*Dugin A.G. Manifest Evraziystva// Moskva 2000*).