

Assessment of Competitiveness of Shipbuilding Industry in Russia

Procjena konkurentnosti brodograđevne industrije u Rusiji

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DOI 10.17818/NM/2017/3.6

UDK 330.34:629.5(470)

Review / Pregledni rad

Paper accepted / Rukopis primljen: 12. 4. 2017.

Summary

Russia has a rich centuries-old tradition of naval and civilian shipbuilding. Upon the end of the ideological confrontation, the competition of the main sea-faring nations of the world took on the new and at the same time – more traditional form for the market economy. The global economic crisis and the decrease of the freight traffic, including the sea freight, led to the exacerbation of the competitive struggle in this market. Whereas the Naval Engineering and Armament (NEA) in Russia are at a very high level, which is proved by the position Russia holds within the global markets of this kind of production, the civilian shipbuilding is not only unable to compete in the global market, but even barely present on the domestic one. The future of the civilian shipbuilding is in such promising niches as the development of the equipment for the exploration of the Arctic oil fields, the iceboats for the maintenance of the Northern Sea Route, and the sea- and river-going vessels for the domestic operations. In this article, the authors analyse the current state policy in regards of both civilian and naval shipbuilding, the position of Russia in the global market of the NEA, assess the current state of this industry and the competitive potential of the Russian Federation, reveal the problems and consider the prospects for the development. The analysis is based on the rich factual material and the available statistical data. The careful study and its results allowed the authors to come to the certain conclusions and to provide advice for the improvement of the state policy in regards to the shipbuilding.

Sažetak

Rusija ima bogatu, stoljećima dugu tradiciju gradnje vojnih i civilnih brodova. Po prestanku ideoloških sukoba, glavne pomorske države diljem svijeta natječu se u novom i istovremeno tradicionalnijem obliku tržišne ekonomije. Globalna ekonomska kriza i smanjenje ukupnoga prijevoza robe, uključujući pomorski prijevoz, doveli su do žešće borbe za konkurenciju na ovom tržištu. Dok je u Rusiji vojno inženjerstvo i naoružanje (NEA) na vrlo visokoj razini, što dokazuje položaj koji Rusija drži na globalnom tržištu u ovom polju, civilna brodogradnja, ne samo da se ne može natjecati na globalnom tržištu, već je i jedva prisutna na domaćemu. Budućnost brodogradnje civilnih brodova leži u prostoru za razvoj opreme za istraživanje arktičkih naftnih polja, ledolomcima za održavanje morskih puteva na Sjevernom moru, te morskim i riječnim brodovima za domaće potrebe. U ovom radu autori analiziraju sadašnju nacionalnu politiku civilne i vojne brodogradnje, mjesto Rusije na globalnom tržištu vojnog inženjerstva i naoružanja, procjenjuju sadašnje stanje ove industrije i konkurentski potencijal Ruske federacije, otkrivaju problem i razmatraju mogućnosti za razvoj. Analiza se temelji na značajnoj bazi podataka i raspoloživim statističkim podatcima. Pažljivo istraživanje i rezultati toga istraživanja omogućili su autorima da donesu određene zaključke i daju prijedloge za poboljšanje državne politike u brodograđevnoj industriji.

KEY WORDS

civil shipbuilding
military shipbuilding
naval equipment
branch problems
state support

KLJUČNE RIJEČI

civilna brodogradnja
vojna brodogradnja
opremanje ratnih brodova
problemi sa sporednim granama
državna potpora

1. INTRODUCTION / Uvod

Throughout the history of Russia, the shipbuilding was and continues to be one of the most important industries. The country borders on a multitude of seas and many of its internal regions interconnect with each other and with the central part by means of the river and sea transport. Due to the specific geographical position, huge amounts of transit freight travel through the waterways of Russia from Europe to Asia and

back. Besides, there is also the fishing fleet and the scientific exploration of the Arctic. All such activities create the demand for the production of the civilian shipbuilding.

The needs of the national security – with the shoreline of almost 40 thousand kilometres – create the demand for the production of the naval engineering.

Both kinds of the shipbuilding, civilian and naval alike, have

been actively developing for the 300 years since the reforms of Peter I. Despite that, now there is a marked imbalance in the development of the civilian shipbuilding and naval engineering. In the field of the naval engineering, the Russian Federation not only satisfies its own needs, but is also a major supplier of the NEA to the global markets. Quite the opposite situation exists in the civilian shipbuilding, the production of which can satisfy but a tiny portion of the domestic demand.

This article is a direct continuation of our previous research in this field [21], [24], [23].

The importance and timeliness of this topic attracts a wide interest on the part of the Russian scientists. Their articles analyse the current state of the global and Russian shipbuilding [15], the problems of the industry and the directions of its future development [22], the history of its progress and its current state [20], as well as the potential of domestic shipbuilding in the post-crisis period [17].

The analysis of the existing literature on the topic of our research demonstrates that beside the assessment of the separate aspects of the problem, there is a need for an integrated assessment. Such an assessment would help to correct the governmentally approved programs and, perhaps, to shift the accents of the technological and economic policy in regards to the shipbuilding. A wide variety of problems in the Russian shipbuilding makes it necessary to more actively implement the state policy.

2. METHODOLOGY / Metodologija

The analysis of the problems concerning the current state of the shipbuilding industry includes, primarily, the study of the regulations, and the Executive Orders of the President of the Russian Federation (RF) and the Government. The assessment encompasses the process of their implementation and the results thereof, the structural changes and the spatial location of the subjects of management.

The assessment of the competitive potential of the Russian naval engineering in the global armaments markets uses the statistical data, provided by various research centres.

The most respected agencies in the world are the Stockholm International Peace Research Institute (SIPRI) and the Congressional Research Service (CRS). Many scientists use the statistical data provided by these agencies.

In Russia, there are several national research agencies, including the Centre for Analysis of World Arms Trade (CAWAT) and the Centre for Analysis of Strategies and Technologies (CAST).

However, using the data of these research centres one should take into the account that the different calculation methods provide the widely differing results. In particular, the data of the SIPRI, due to the so-called "trend-indicator" tend to overestimate the values for the countries that supply the low-cost armament systems. According to this method, similar types of weapons get similar value estimates. Therefore, the export shares of the Russian Federation and the People's Republic of China are often overvalued compared to the shares of other exporting countries, such as the US, France, and the UK.

The CAWAT calculates the total value upon the delivery to the customer. So one can only agree with the SIPRI on the point that the US and the RF hold the first and second places in regards of the exported volumes of the armaments and military equipment (AME) [2].

For the study of the domestic and global markets of the civilian shipbuilding, the authors used the statistical data, provided in the annual reports of the United Shipbuilding Corporation (USC).

The data evaluation tools implemented in this article are the statistical and system analysis methods.

3. THE STATE POLICY IN THE FIELD OF SHIPBUILDING / Državna politika u brodogradnji

In the Soviet times, the shipbuilding, enjoying the state-support, rapidly progressed and was considered as one of the strongest on the global scale. However, in the 1990s, due to the lack of financing and the cutback in orders, the shipbuilding along with the other manufacturing sectors of the economy suffered the decrease of the growth rate and, as a result, lost the competitive edge compared to their foreign counterparts. At the same time, for the sake of national defence and military-technical cooperation (MTC), the naval engineering could always depend on the support of the State Defence Order.

The shipbuilding industry has a number of particular characteristics, which make the governments of many countries grant it a special attention and a special support. The specifics of the shipbuilding include a lengthy production cycle time, expensive advanced technology products, strong interrelation between the research-and-development, production and consumer sectors, and a complicated system of financing [14].

These specifics cause the main problems of the Russian shipyards. The condition of the capital funds and the HR situation within the industry are unsuitable for the task of developing the advanced technology products. As in the majority of the other manufacturing industries, the physical deterioration and obsolescence of the capital funds in the shipbuilding is very high. It is caused by a drastic scarcity of investments for the last several decades. The lack of highly qualified engineering and working personnel, together with the above-listed reasons, does not allow the industry to reach a high productivity level. We can agree with Gregova E., who maintains that without a streamlined system of training for a qualified working force, the shipyards cannot hope to meet the globally competitive standards [6]. The experience of the multi-criterion strategic planning, researched by Kliestik, T., Misankova, M., Bartosova, V., may also be useful to the shipbuilding companies in the existing situation [11].

The loss of the competitive advantage due to the appreciation of products is compounded by the credit granting system in the RF. Where in the countries with highly developed shipbuilding the banks are ready to grant the shipyards loans of up to 80% of the cost of a ship for 10 and more years and that at only 6-8% of interest, the Russian banks grant at most the 4-5 year long loans of less amount and at higher percent. Moreover, since the Russian manufacturers often have to import the hull equipment and other components that are only available abroad, the high import customs duties also lead to the rise of the ship costs [19].

The problem of insurance is also very pressing for the shipbuilding industry. The cause of these problems also comes back to the unique characteristics of the industry: the lengthy cycle time, the specific operational assets, and consequently the giant costs, that could be easily wasted by the failure to fulfil the multi-billion orders, possible penalties, lengthy

payback periods, higher risks of the operation of the marine equipment etc., all this leads to the increasingly complex and costly process of risk insurance in the shipbuilding, creates the problems of moral hazard and adverse selection, and demands the development of special detection tools, as well as the tools preventing the opportunist behaviour of the parties [3], [10]. As proved by the experience, the statistical model [5], [1] and the model of the fuzzy sets can be successfully used for the assessment of the credit risk of major companies in the leading industries of national economy [5], [26].

One of the problems is the disproportional structure of the industry, heavily leaning towards the higher developed naval engineering. Despite the considerable demand for the civilian vessels, the domestic market tends to rely for their procurement on the imported supply. At the same time, for years, the Russian naval engineering has been mainly satisfying the demands of the foreign Navy. Since all the Russian shipyards manufacture both the civilian and naval products, they clearly need the orders for both, to be operating at full capacity.

If all these problems are left unsolved, there are very serious risks for the future of the Russian Federation. One of them is the risk of a complete displacement of the domestic manufacturers of civilian ships not only from the foreign markets (where our presence is barely perceptible as it is), but also from a very large domestic market (which above-all poses the danger to transport independence). If the country loses the competitive civilian shipbuilding, it will eventually encounter the difficulties in the development of the NEA products as well (which would then pose a danger to the national security itself). Besides, since the shipbuilding industry is one of the major employers within the country, if the development of this industry follows the bad-case scenario, the serious social problems may be equally possible.

The state-support for the shipbuilding has recently come in the form of the state-adopted programs for the development of the shipbuilding industry and related sectors of the economy, as well as the implementation of certain measures for the restructuring of the industry itself.

In 2008, the government approved a number of programs, defining the strategy for the development of the shipbuilding industry, civilian shipbuilding and naval engineering. The documents paid special attention to the progress of the scientific and technological research in the field of marine technology.

In 2012, the Government of the Russian Federation approved another state-run program "The Development of the Shipbuilding for the Years 2013-2030".

The goal of the Program is, firstly, the full satisfaction of the state and business demand for the shipbuilding products, and secondly, the improvement of the position of the Russian shipbuilding in the world. The program postulates some very ambitious aims, such as – to develop the new technologies for both river- and sea-going ships, to strengthen both the scientific potential and production capabilities of the industry, to ensure the fulfilment of the State Defence Order, to increase the workforce capacity of the shipbuilding industry. All those measures should lead to the achievement of the performance figures stipulated in the Program, which would define the competitive potential of the products in the domestic and foreign markets. In particular, the Program should result in the increase of the production output of the civilian shipbuilding,

as well as in the increase of its productivity, in part – due to the modernization of the capital funds, which will allow the Russian civilian shipbuilding to acquire a 10% share in the global market (in terms of value) and a 2% share (in terms of tonnage). At the same time, the reasonably good position in the global NEA market should be maintained and even improved upon, with the Russian shipbuilding reaching a 16% share (in terms of tonnage).

The budgetary allocations for the implementation of the Program constitute almost 338 billion rubles, of which 36% will be spent on the progress of the shipbuilding science, 27% - on the development of the civilian river- and sea-going vessels, and 8% - on the improvement of the manufacturing facilities of the civilian shipbuilding and the infrastructure of the industry in general.

While assessing the prospective financing for the programs in the shipbuilding industry, one should take into consideration the deep economic crisis that the RF faced in 2014-2016. To fulfil the task of not exceeding the three-percent budget deficit, it is possible that the state has to reduce even the expenses for the State Defence Order. The present economic sanctions against the RF pose certain problems with the purchase of the imported equipment, though on the other hand, they promote a more active fade-out of the imported engineering products in our country.

Besides adopting the programs for the development of the industry, the state also supported a structural reorganization thereof. For the preservation and development of the scientific and manufacturing potential of the Russian shipbuilding, as well as for the increased competitive ability of the industry, the Executive Order of the President of the RF No 394 from March 21, 2007, decreed the foundation of the USC, 100% of shares of which are in the federal ownership.

Presently, the USC is the largest shipbuilding company in Russia, with the workforce of over 80 thousand people, and includes more than 60 shipbuilding yards, design engineering departments and ship-repairing boatyards. The USC yards handle more than 80% of the production of the national shipbuilding industry.

In the last few years, the USC shows both the expansion of the operations and the increase in revenue. The financial results of the activities of the USC are presented in the Table 1.

Table 1 Revenue and Net Profit of USC for the period 2009-2014 (in millions of rubles at current prices)

Tablica 1. Prihod i neto profit USC u periodu 2009-2014 (u milijunima rubalja po sadašnjim cijenama)

	2009	2010	2011	2012	2013	2014
Revenue, millions of rubles	104,0	21,2	416,3	187,9	3975,1	23161
Net profit, millions of rubles	96,2	154,2	779,2	-635,7	-391,5	510

Source: http://www.oaoosk.ru/upload/iblock/4b7/1_report_30_06_2015.pdf; http://www.oaoosk.ru/upload/iblock/cb3/2_report_08_09_2014.pdf

The USC has shipyards in several regions: Western, Northern, Southern and Far Eastern. However, the majority of them are in the North Western Federal District.

St. Petersburg is the largest shipbuilding centre of the country. Peter I himself founded the oldest shipbuilding yard in the city. It is the "Admiralty Shipyards", famous for its production, such as the conventional submarines, deep submergence

vehicles and complex sea craft (research and expedition vessels, icebreakers, ice-class tankers etc.). The "Baltic Shipyard" produces complex naval vessels (frigates, destroyers), as well as the commercial ships (specialty vessels and icebreakers). The third shipyard within the city, the "Northern Shipyard", has been founded in the beginning of the 20th century and currently specializes in the surface warships and commercial vessels. In St. Petersburg, there are also a few major ship-repairing boatyards.

St. Petersburg is best known as the cultural capital of Russia. In this quality, it is widely famous even outside our country [18]. It is my deep belief that promoting the brand of St. Petersburg as one of the global shipbuilding centres could become a brilliant marketing pitch, which could help the development of the shipbuilding industry both in the city and in the country as a whole. Theoretical aspects of branch brand building discussed in a paper written by Križanová, A., Majerová, J., Klišťik, T., Majerčák, P. [13].

St. Petersburg houses not only the manufacturers, but also the designers and developers of the industry. In fact, the city is home to almost 90% of the Russian scientific shipbuilding potential, which includes the well-known design engineering agencies "Rubin" (the design of submarines and offshore facilities), "Malakhit" (the design of submarines, deep submergence rescue vehicles, other complex mechanical products), "Almaz" (the design of small and amphibious assault ships, as well as air-cushion vehicles) and others [23].

4. RUSSIA'S POSITION IN THE GLOBAL MARKET OF NAVAL EQUIPMENT / *Položaj Rusije na globalnom tržištu brodske opreme*

The analysis of the state of the global AME markets, to which the NEA market commonly belongs, is possible if there are available quantitative indicators of this market. As we have already pointed out above, this kind of statistical data is provided by the international and national research centres.

According to the data provided by the CAWAT, in the general structure of the global trade within the period 2007-2014, the NEA held a considerable share of 10,67% of the total volume of the world export, which is equivalent to the amount of 404,3 billion dollars.

The volume of the NEA sales in 2007-2014 is estimated as 46.97 billion dollars, and in the last years the export of the NEA has been steadily growing [2]. The dynamic and the relative share of the NEA in the total volume of the armaments sales are shown in the Table 2.

Table 2 Structure of the Supply of Naval Equipment for the period 2007-2014 (billions of dollars at current prices)
Tablica 2. Struktura nabave brodske opreme u periodu 2007-2014 (bilijuni dolara po sadašnjim cijenama)

	2007	2008	2009	2010	2011	2012	2013	2014	2007-2014
Naval military equipment (NME)	4,6	4,4	4,2	5,8	4,9	6,9	7,4	8,6	46,97
All types of arms and military equipment (A&ME)	46,9	47,0	44,6	53,8	59,1	57,1	57,2	74,5	440,31
The share of NME in the total amount of A&ME (%)	9,9	9,4	9,4	10,8	8,3	12,2	13,0	11,5	10,7

Source: <http://www.armstrade.org/files/analytics/183.pdf>

The bestseller position among the NEA within the period of 2007-2014 belongs to the surface warships (SW). Their share in the total volume of sales constitutes 53,2%. The second place belongs to the small and amphibious assault ships with the share of 26,9%. The third place in the NEA sales is taken by the submarines with the share of 19,9% from the total volume of sales.

According to the prognosis of the CAWAT experts, within the period from 2015 to 2018 the situation with the demand for the NEA products will somewhat improve and their relative share will reach 12,8%.

The SW will retain their bestseller position (47,6%), while the second place will belong to the conventional submarines with the share of 28,95%, and the third – to the small craft of all types with the share of 23,5%.

The chief exporters in the NEA market in the period of 2007-2014 could be rated as represented in the following table.

Nineteen countries supply the SW into the global market, with the five major market "players" having approximately equal volumes of the SW production. The Figure 1 shows their production volumes and market shares.

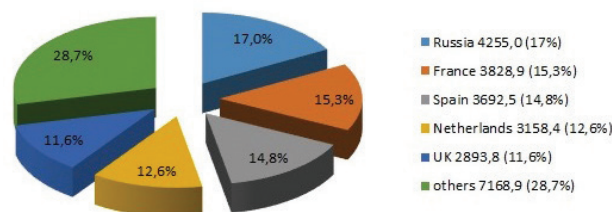


Figure 1 Valuation of Supplies of Surface Warships for the period 2007-2014 (millions of dollars at current prices percentage of total 24997,5 in US\$ m.)

Slika 1. Procjena nabave vojnih brodova u periodu 2007-2014 (milijuni dolara po sadašnjim cijenama i postotak od ukupno 24997,5 u USD m.)

Source: <http://www.armstrade.org/files/analytics/183.pdf>

The submarines are mainly produced by nine countries, while the scale of offer of this type of NEA and the shares of the three major manufacturers (Germany, Russia and France) make it possible to speak about the existence of a considerably "hardline" oligopoly in this market (fig. 2). Of course, there is no question of the coordinated pricing policy; however, the players definitely need to look back on each other's behaviour.

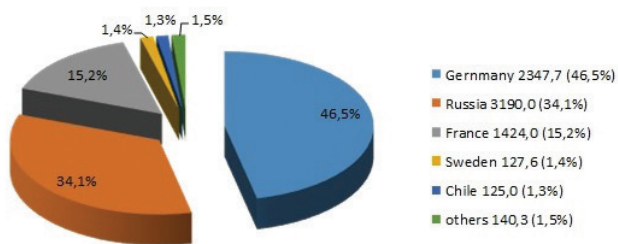


Figure 2 Valuation of Supply of Submarines for the period 2007-2014 (millions of dollars at current prices & percentage of total 9354,6 in US\$ m.)

Slika 2. Procjena nabave podmornica u periodu 2007-2014 (milijuni dolara po sadašnjim cijenama i postotak od ukupno 9354,6 u USD m.)

Source: <http://www.armstrade.org/files/analytics/183.pdf>

A much larger number of countries has mastered the production of the small ships; overall, there are about thirty exporters. The positions of the five major exporters are shown in the Figure 5. Thus, with a great deal of confidence we can define this market as a market of monopolistic competition.

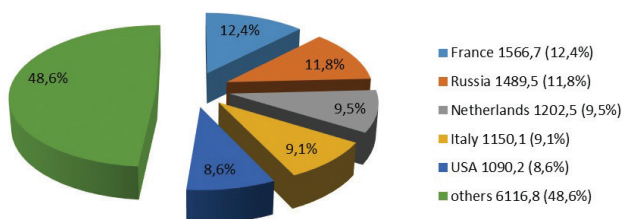


Figure 3 Valuation of supply of small boats and landing craft for the period 2007-2014 (millions of dollars at current prices & percentage of total 12615,8 in US\$ m.)

Slika 3. Procjena nabave malih plovila i desantnih čamaca u periodu 2007-2014 (milijuni dolara po sadašnjim cijenama i postotak od ukupno 12615,8 u USD m.)

Source: <http://www.armstrade.org/files/analytics/183.pdf>

The presented information shows that unlike the civilian shipbuilding the main production of the naval engineering is still concentrated in Europe and the US, and the leading position belongs to the Russian Federation with the first place in the production of the SW and the second – in the production of the submarines and small ships.

Quite a large group of countries is active as the importers of the shipbuilding production.

The old and traditional partner of the RF in terms of the MTC, in the period of 2007-2014, India is the leader in the purchase of the SW with a share of 18,9% (4717,3 out of 24997,5 million dollars), as well as the leading importer of the submarines with the share of 14,6% (1370,0 out of 9354,6 million dollars). The US hold the first place in the import of the small craft and small

amphibious ships with the share of 10,6% (1332,8 out of 12615,8 million dollars).

According to the data of the CAWAT, the global export of all the categories of the AME in the period of 2007-2014 constituted 440308,8 million dollars. Within the same period, the actual export of Russia constituted 72869,2 million dollars, of which the NEA is responsible for 4300,9 million dollars or 6% (in terms of the main traded production).

According to the data of the SIPRI, the Russian export of the naval vessels for the same period looks as follows (tab. 3).

The yearly relative share does not give the true picture, since the deliveries per year are very uneven due to the lengthy production time, characteristic to the shipbuilding. However, the value of the relative share for the period 2007-2014 as a whole reflects the considerable amount of the Russian NEA sales (10%).

The leading position of the country in the global market proves the high competitive potential of the Russian production. Russia has always been and for the nearest future will remain the primary exporter of the NEA. The hard-earned respect to the Russian NEA is reinforced by the high reliability and, as was recently proved during the military operations of the MSF of the RF against the ISIL (Daish), the high accuracy of the Russian armaments as well. The forced participation in the conflict in the Near East resulted in a marketing success in the form of the increased orders from both traditional and new trading partners of the RF.

5. RUSSIA ON THE MARKET OF CIVIL SHIPBUILDING / Rusija na tržištu civilne brodogradnje

Quite the opposite situation exists for the Russian Federation in the market of civilian shipbuilding. Currently (in 2014) the leader of global shipbuilding is the People's Republic of China with the share of 40% from the whole volume of orders for civilian ships. 86% of the global volume of orders is handled by the shipyards of the Big Three (PR China, South Korea and Japan). The position of the Big Three stems from the low costs of production and technological engineering, as well as the reputation the shipyards of those countries have earned as the reliable suppliers [25].

The shipbuilding is also successfully developing in such countries as Brazil, Philippines, Taiwan, and Vietnam, while the European manufacturers have only a 6% share.

In the last years, the share of the Russian shipbuilders in the global market unchangingly constitutes 0.6%, and the majority of those ships are built for the domestic customers. The export sales include the traditional trading partners of the Russian Federation: Kazakhstan, Turkmenistan and Azerbaijan.

The bestsellers in the global market of the civilian shipbuilding are the bulkers, tankers, container ships, liquefied-gas carriers, liners and cruise ships [25].

Table 3 Ships in the Total Russian Export in US\$ m. at constant (1990) prices

Tablica 3. Brodovi u ukupnom izvozu Rusije u USD m. po stalnim (1990) cijenama

	2007	2008	2009	2010	2011	2012	2013	2014	total
Total	5568	6265	5070	6172	8695	8480	8107	5468	53824
Ships	-	126	10	559	526	1689	1819	660	5389
The share (%)	-	2,0	0,1	9,0	6,0	19,9	22,4	12,0	10,0

Source: http://armstrade.sipri.org/armstrade/html/export_values.php

The Russian shipbuilders cannot satisfy the demand of the domestic market, and the majority of the production purchased therein comes from the Asian shipyards. As you can see from the following figure 4, only 4% of the domestic market belongs to the Russian manufacturers. It is due to the fierce competition with the stronger Asian (the Big Three) and European (Croatia and Germany) players. However, the main reason still comes down to the serious internal problems of the shipbuilding industry in the Russian Federation.

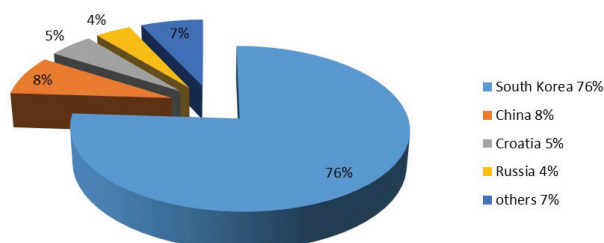


Figure 4 The Structure of the Russian Market of Civil Shipbuilding by Country-Manufacturers over the period 2004-2014 (in %)

Slika 4. Struktura ruskog tržišta civilne brodogradnje po zemlji-proizvođaču u periodu 2004-2014 (u %)

Source: http://www.oaoosk.ru/upload/iblock/4b7/1_report_30_06_2015.pdf

The next table (tab. 4) presents the situation in the Russian market of the civilian shipbuilding in value terms for two years.

Table 4 The Share of the United Shipbuilding Corporation on the Russian Market of Civil Shipbuilding (in billions of rubles)
Tablica 4. Udio United Shipbuilding korporacije na ruskom tržištu civilne brodogradnje (u milijunima rubalja)

	2013	2014
the size of the domestic market	1097	1185
the share of the USC on the Russian market of civil shipbuilding (%)	47,5	57

Source: http://www.oaoosk.ru/upload/iblock/4b7/1_report_30_06_2015.pdf

It is obvious that it is futile for the RF to try and compete with the Big Three in the building of the large-capacity civilian ships. The national civilian shipbuilding should concentrate on the priority market niches, such as the marine equipment for the exploration of the offshore fields and deposits of the Far East and Arctic, the vessels for the maintenance of the NSR, and the vessels for the existing civilian fleet [12].

Both the maintenance of the NSR and the exploration of the offshore fields demand the certain quantity and quality of the ice-class vessels. According to the assessment of the Russian oil and gas companies, the exploration of the continental shelf will necessitate the development of the complex marine facilities, and Russia has gained the experience in the development and production of such facilities that foreign companies almost totally lack. Therefore, the Russian products are not only able to compete on the equal terms, but even clearly surpass their foreign alternatives in regards of their technical characteristics. According to the prognosis of the customers of marine equipment for the extraction and transporting of the hydrocarbons, the volume of

orders for the period up to 2030 will constitute 400 billion rubles per year in the money terms [25].

The cargo shipments along the NSR have a high potential as well. However, even now, there is a marked shortage of the icebreakers, which causes the lengthening of the wait for the ice escort and the slowdown of the commercial shipments. Besides, the high cost of the ice escorts inhibits the growth of the transit shipments [7]. It requires a systematic approach to logistics solutions to optimize costs in the supply chain [16]. In solving this problem, it would be useful to use the experience of such scholars as Jeřábek, K., Majercak, P., Kliestik, T., Valaskova, K. in the application of Clark and Wright savings algorithm model to solve the routing problem in supply logistics [9]. For the development of the NSR, by 2030, the country will need 300 new ships, such as nuclear- and diesel-powered icebreakers, tankers, lumber-carriers etc.

Another significant niche for the civilian shipbuilding is the development of the river and mixed river- and sea-going ships. According to some assessments, the demand for such products by 2030 will constitute 760 ships per year. The average age of the ships of that class, functioning within the Russian Federation, is nearing 40 years, and in the next five years the majority of such ships would have to be put out of commission, which inevitably will lead to a deficit of craft [25].

Thus, for the products of the Russian civilian shipbuilding, there is both a demand and the resources for its satisfaction. All the Russian shipbuilding yards can produce both the civilian and naval products. Such a diversification is necessary to ensure the full use of the production capacities, and consequently, the lowering of the production costs.

The situation in the Russian market with the division between the naval orders and the civilian ones is shown in the Table 5, compiled according to the rating of the major Russian shipbuilding companies INFOLine Shipbuilding Russia TOP, published in the "Kommersant" newspaper.

Table 5 Dynamics of the Number of Ships Handed over to the Russian Shipyards Customers
Tablica 5. Dinamika broja brodova isporučenih kupcima ruskih brodogradilišta

	2010	2011	2012	2013	2014	2015
civil	115	95	155	174	120	83
military	39	63	87	132	116	99

Source: <http://infoline.spb.ru/news/?news=140498>

During the period of 2010-2014, the number of the civilian ships was larger than the number of naval vessels. However, in the value terms the naval engineering exceeds the civilian shipbuilding, since the naval ships are usually more technologically complex. In 2015, the number of the naval vessels exceeded the number of civilian ones. As the civilian ships are often mass produced and easy to build, in 2015, the naval engineering fulfilled 82% (in the value terms) of the orders of the Russian shipyards (in the amount of 102,6 billion rubles), while the volume of the civilian orders amounted only to 22,8 billion rubles.

For the last two years, the imbalance in favour of the naval engineering continues to grow, while both the naval and the civilian markets show a falling behaviour. The share of the

defence order in the portfolio of the shipyards is also growing [8]. It is strongly due to the adoption of the State Armaments Program, aimed on the procurement of the new kinds of the AME for both the Army and Navy. At the same time, the behaviour of the oil prices causes the stalling in the orders related to the exploration of the offshore oil fields.

The development of the civilian shipbuilding is further inhibited by the prolonged global economic crisis, which undoubtedly influences the freight traffic, including the sea freight. In addition, the drop in the global demand for oil is not the only factor influencing the falling demand for the sea shipments. The demand for shipment of other kinds of cargo is decreasing as well. All of that surely influences the demand for the new civilian ships as well.

In the sphere of river ships, in our opinion, the shipbuilders should not forget about the production and sales (both in the domestic and foreign markets) of the river-going passenger ships including the recreational craft such as "Meteor" and "Raketa". During the Soviet period, the Russian Federation gained a lot of experience in the production of such ships, and the countries of the Eastern Europe were always eager to buy and use them. In the last 20 years, we have lost this market, though there is still a demand for this class of craft. The domestic fleet of such ships is also quite old and deteriorated. At the same time, it is much easier to re-establish the production of something that used to be successfully produced and sold before, rather than learn to produce something completely novel for us (such as, for instance, expensive pleasure boats for wealthy individuals).

6. CONCLUSIONS / *Zaključci*

1. It is hard to overestimate the importance of the shipbuilding for the RF. The history, geographic position, climate and natural conditions of our country make the proper development of both the civilian and naval shipbuilding a guarantee of the national political, food and transport security. Right now, the civilian shipbuilding is not able to satisfy even the domestic demand and has completely lost a competitive edge in the foreign market. The progress in the naval engineering has always been an object of close attention and thus this part of the industry was successfully developing, especially in the Soviet times. Presently, the country is still one of the major players in the global NEA market.
2. The wide scope of problems in the shipbuilding industry, especially in the field of the civilian shipbuilding, causes serious doubts in regards of the probability of production of the globally competitive products. In the last decade, the government has taken a number of measures to solve these problems. In particular, there is a currently adopted program of development, aimed on the promotion of the scientific research in the field of the marine technologies and the modernization of the production capacities of the industry. The industry has also undergone significant structural re-organization, resulting in particular in the creation of the USC, the activities of which in the last few years have been steadily expanding. According to the state program for the development of the shipbuilding, the situation in the market of the civilian shipbuilding should significantly improve by 2030.
3. Despite the difficult economic and financial position of the

country that finds itself in the situation of a deep economic crisis, on the one hand, compounded by the drop in the inflow of the foreign currency from the traditional export products of Russia (such as oil and gas), on the other hand, and the economic sanctions on the part of the EU and the US, on the third hand, the Russian Federation still has to fulfil its rearmament program, invest in the financing for the military research, modernize its military technical facilities, find the new and extend the existing sources of the currency inflow, including the NEA sales, and – however difficult it may be, implement the import faze-out in the field of the engineering products.

4. A valid advice to the Russian manufacturers could be – to re-establish the production of those types of civilian craft, which need a relatively short production cycle and do not need huge investment outlays, unique technologies or expensive materials, the types for which there is a stable demand. It is important to implement the kind of projects that promise a relatively quick return. As for the Government, it needs to provide the "target" support for such projects, granting them credits on favourable terms.
5. The competitive potential of the naval engineering, able not only to satisfy the internal needs of the state, but also to bring in the export revenues from the sales in the global market, is proved by the statistical data on the dynamics and volumes of the Russian NEA export. The forced participation of the Russian Federation in the local military conflicts, such as, for example, the war with the ISIL in Syria, proved the high-degree combat effectiveness of the Russian AME, including the NEA, and resulted in the marketing success in the form of new multi-billion orders from the foreign partners.

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