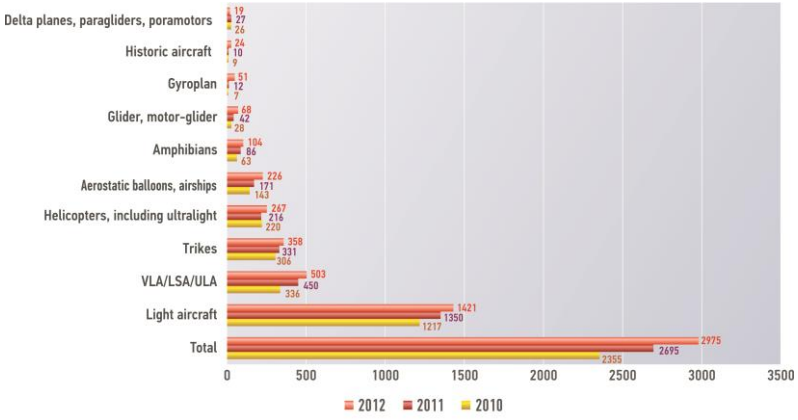
PERSPECTIVES AND REALITY

Aviation life bears strongly marked seasonal character. The same way our journal in different seasons of the year publishes articles dedicated to different issues. In summer we write about the events in piloting life and airshows. In winter, when the life becomes calmer, we have the opportunity to give the information about flying vehicles, their development and production. There is a saying: do not count your chickens before they are hatched. We evaluate GA fleet by the end of summer. It is a tradition.

It is not by chance that we placed the photo of apron of "Yoshkar Ola" airport at the heading of the article. It is not a Photoshop. That is how the airport looked like during the days of the 7-th All Russia meeting of the aviation fans, when 73 GA aircraft arrived in Mariy El capital.

For the time being the situation which we see in Russia is an exception to the rule.

We believe that in the nearest future most of Russian airports will have the same outlook. Comparing status of Russian GA in the past and at present, I can objectively say, that positive changes are quite obvious. Nevertheless there are certain grounds to assert, that for the time being the level of GA does not comply with the country scale, and GA contribution to Russian economy could be much bigger.



ABOUT 3000 GA AIRCRAFT WERE REGISTERED IN RUSSIA IN 2012

In 2012 in Russia about 3000 GA aircraft were registered

Definitely, in order to estimate the perspectives it is necessary to fix reference point, initial condition of GA in Russia. Unfortunately it is not an easy task, since there is no regular official statistics about GA fleet, annual flying time, about number of pilots, airfields, enterprises and maintenance centers.

That is why we publish in our journal evaluation of Russian GA on annual basis. According to our data in Aviation Administration of Russia (Rosaviatcia) Register 1660 aircraft with side numbers which end with letters G and A, and which could be considered to belong to GA category, are registered. Out of this number 1549 aircraft have Certificates of individual copies of aircraft (CIC). Along with that, about 200 aircraft more, having five-digit side numbers of Aviation Administration of Russia, could be treated as GA aircraft. Therefore, about 1860 GA aircraft are registered in Federal Agency for Air Transportation (FAAT), disregarding business and corporate aircraft.

	2010				2011				2012			
Категория ВС АОН	ААR	FAE	VSAAFN	TOTAL	ААR	FAE	VSAAFN	TOTAL	ААR	ФЛА[1]	VSAAFN	TOTAL
Helicopters, including ultralight	114	106	66	220	99	117	66	216	135	132	66	267
Light aircraft	471	746	356	1217	439	911	356	1350	520	901	356	1421
VLA/LSA/ULA	287	49		336	397	53		450	450	53		503
Historic aircraft	9			9	10			10	14	10		24
Amphibians	41	22		63	57	29		86	74	30		104
Gyroplanes	7			7	12			12	30	21		51
Gliders, motor-gliders	8	20	127	28	21	21	127	42	34	34	127	68
Trikes	306			306	331			331	358			358
Hanggliders, paragliders	26			26	27			27	19			19
Aerostatic balloons, airships	143			143	171			171	226			226
Total	1412	943	549	2355	1564	1131	549	2695	1860	1115	549	2975

Changes in GA fleet (registered in Aviation Administration of Russia and FAE RF) in 2010–2012

Along with that, according to item 3, article 21 of Russian Federation Air Code, aircraft of Federation of aviation enthusiasts of the Russian Federation (FAE RF) could be treated as GA aircraft. Today 1115 aircraft fly with FAE RF side numbers. The number of aircraft which belong to the United Federation of light aviation of the Russian Federation (UF OLA RF) is known only on the basis of expert estimates that is why, for the time being, we will exclude them from our analysis. aircraft which belong to the Voluntary Society for Assistance to the Army, Air Force and Navy of the Russian Federation (VSAAFN RF) are considered to be state aviation that is why we will also not take them into consideration in GA fleet.

Thus, at present 2975 GA aircraft are registered in Russia, disregarding corporate and business aircraft and aircraft which belong to VSAAFN RF. In reality GA fleet in Russia is bigger, since not all aircraft are registered.

One can judge about this according to diagram and table: the number of ultralight aircraft, such as paramotors, paraplanes, hang gliders, is much less in them than in reality. I assume that GA helicopters number in Russia is bigger, since most of them are being used as corporate transport, but are being operated in commercial companies under lease conditions. Today only with Aviation Administration of Russia side numbers 415 light helicopters fly, disregarding Mi-2 and Ka-26, which also entail GA helicopters.

But for our analysis we will use the most reliable information, which, if desired, could be documentary checked. And this information gives evidence for two facts:

– GA fleet registered in Russia is increasing (in 2011 – by 14%, in 2012 – by 10%);

– despite GA fleet growth, its share in civil aviation (24% disregarding aircraft of FAE RF and 33% together with AIRCRAFT of FAE RF) is less in comparison with world statistical data (95%), which witnesses that general aviation in Russia is still in its initial development stage.

It is obvious that three thousand GA aircraft are not enough for Russia.

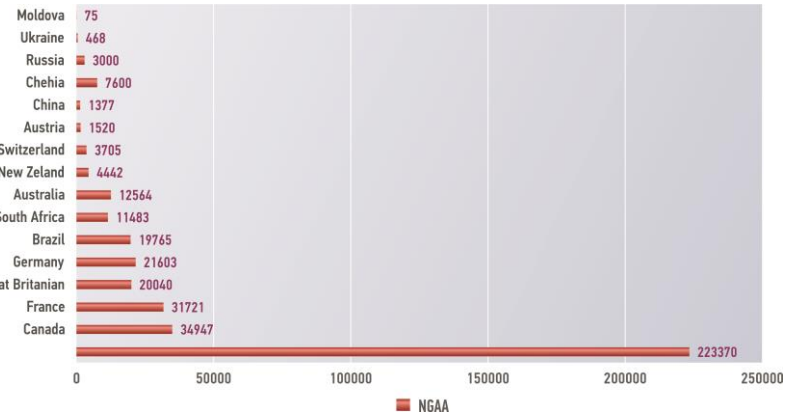
If we look at the diagram characterizing GA aircraft in different countries, we will notice that in the USA this index is 75 times higher than in Russia! Even GA fleet in New Zealand exceeds the Russian, and in Czech Republic GA fleet is 2.5 times bigger than in Russia. Why is it so?

We see that in economically more developed countries GA aircraft number is bigger: in Germany and Great Britain their number exceeds 20 thousand aircraft in each country. But, for instance, in not less developed Switzerland and quite successful Austria there are only from 1.5 up to 3.7 thousands GA aircraft. It is evident that the level of GA development is influenced both by space of the state territory and population size, as well as by the number of the airfields on which GA aircraft could be based. It can be seen on example of Canada, where there are 35 thousand of aircraft, and Australia, where there are13 thousand of them.

One more factor is strictness of air law. For example in France there are nearly 32 thousand of GA aircraft, which is by 45–60% higher comparing to more economically developed Germany and Great Britain, where there are the most tough demands of aviation authorities.

Naturally time factor is important too. For instance in China, which is one of the most powerful economies at present, GA has just started development process that is why its fleet is not big for the time being.

On the contrary, the USA is distinct both in high living standard and big territory, as well as population and loyalty of aviation authorities. GA in that country has been developing for 70 years, and its indices are much ahead of those reached in other countries.



In Russia less GA aircraft are registered than in New Zealand

Country	NGAA	P	GDP	IPC	HDI	AC	D	HNWI	NA
USA	223370	313	14256	46381	0,91	9519	32,2	3068	19729
Canada	34947	34	1303	47066	0,908	9985	3,4	280	1525
France	31721	65	2216	33832	0,884	675	115	404	465
Great Britain	20040	63	2247	36119	0,863	244	246	441	482
Germany	21603	82	3089	37814	0,905	357	229	951	584
Brazil	19765	191	2181	11289	0,699	8515	22	165	737
South Africa	11483	50	505	10243	0,683	1220	41	100	86
Australian	12564	21	1015	40240	0,929	7687	2,7	180	270
New Zeeland	4442	4,44	146	34121	0,908	269	16	15	209
Switzerland	3705	7,7	492	55510	0,903	41	181	252	126
Austria	1520	8,4	330	49082	0,885	84	100	101	9
China	1377	1347	5745	4264		9957	139,6	562	192
Czechia	7600	10,5	190,26	18135	0,865	79	133	50	67
Russia	3000	142	1680	9660	0,755	17075	8,3	136	315
Ukraine	468	46	180	3210	0,729	604	76,7	6	64
Moldova	75	4,5	6,07	1349	0,649	32	110	1	4

NGAA (Number of General Aviation Aircraft) – GA Fleet in 2008, aircraft;
P (Population) – population of the country, million people;
GDP – Gross domestic product, US $, billion;
IPC – Income per capita in 2008 г., $;
HDI (Human development index) – integral index, which calculated on annual basis for inter-state comparison and measurement of living, literacy, education and longevity;
AC – The area of the country, thousand square km;
D – Density, person./sq. km;
HNWI – High Net Worth Individual, thousand person in 2011;
NA – Number of airports .

Comparison of GA aircraft fleet in different countries according to economic and geographical indices

What number of GA aircraft corresponds to economic and geographical indices of Russia? To answer this question it is necessary to have the idea, which factors determine general aviation development.

Commercial aviation fleet depends on required transportation or aerial work scope, as well as on carrying capacity of passenger and transportation aircraft and productivity of special aircraft.

General aviation fleet depends on general indices, which characterize economy of the country and the status of the aviation infrastructures. In the table the named indices are compared with GA fleet.

Correlative analysis shows that the most convincing predictors, forecasting factors, are the following: the number of persons with big private capital, the number of airfields which could be used by GA aircraft, Gross Domestic Product and population size. The first index characterizes the level of private capital concentration, which determines investments in GA; the number of airfields, meaning infrastructure development; Gross Domestic Product, meaning level of economy development; population size is a convincing demographic factor. All the other factors, including specific factors, may not be taken into consideration in the process of forecasting.

On the picture two regressive models are shown: one model has two independent variables, the other model has four independent variables, which are characterized by high magnitudes of multiple correlation coefficient. Besides, meaningfulness of simpler model is higher. As we see, at achieved economic, social, infrastructural, demographic indices GA fleet in Russia could have been three-four times bigger than today, and amount from 10 up to 13 thousand GA aircraft.

Why the country, successor of one of the world leaders in the field of aircraft engineering and civil aviation, today is lagging behind in GA development from the states which have no long-standing aviation traditions?

1.Regression model with two independent variables:

NGAA = 2075,127 + 8,398*HNWI + 21,975*NA NGAA = 10179, R = 0,99

2.Regression model with four independent variables:

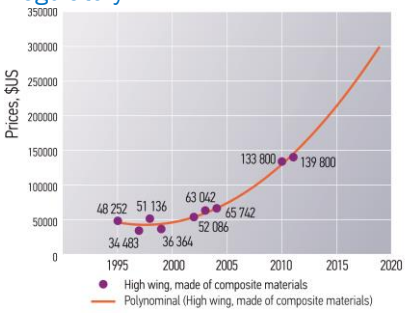
NGAA = 1852,065 – 26,512*P + 5,514*GDP – 1,068* HNWI +17,245*NA NGAA = 12639, R = 0,89

NGAA (Number of General Aviation Aircraft) – GA Fleet, aircraft;
P (Population) – population of the country, million people;
GDP – Gross domestic product, US $, billion;
HNWI – High Net Worth Individual, thousand person in 2011;
NA – Number of airports .

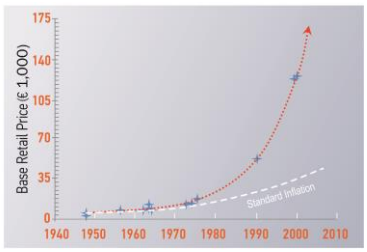
Potential GA fleet in Russia in 2012

The reasons are numerous.

For the sake of demonstrativeness let us bring them together in three groups: global, domestic economical and domestic regulatory.



PRICES GROWTH FOR TWO-SEAT LSA, (S&T CENTER OF GA, LLC)



Cessna 172

PRICES GROWTH FOR FOUR-SEAT LIGHT AIRCRAFT, (GAMA)

Global factors: rapid prices growth
in all aircraft industry sectors

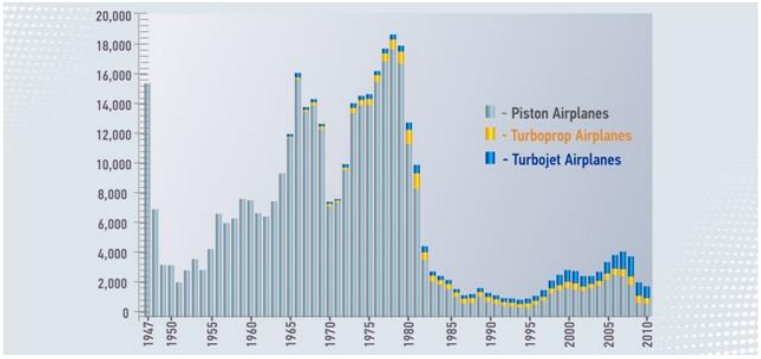
Let us look at two diagrams which illustrate price increase for four-seat light aircraft and two-seat sports aircraft LSA category. As we see, prices growth in both cases is by far ahead the inflation. Specialists of GAMA (Greg Bowles), who plotted the graph for four-seat aircraft, make an example: the price for Cessna 172 in 1956 amounted to 6250 Euro. Today, after 55 years, the price for this aircraft is 36 times higher!

Our graph of price increase for LSA looks the same way: two-seat aircraft which in 1996 used to cost about: 35.000 US$, in 2011 was already being sold for 140.000 US$.

Since prices growth for aviation equipment outruns the inflation and personal income, the number of individuals capable to become the owners of GA aircraft in all the countries of the world becomes less and less. For this purpose they have to spend more and more of their incomes.

Partially it explains why in the USA there is so many private light aircraft and helicopters. The average age of the aircraft there is equal to 40 years and it means they were bought much cheaper, and for purchase the future owners had to spend smaller part of their income than today.

On the other hand, on the background of global prices increase in aircraft engineering it is quite reasonable to ask a question: *whether it is expedient to increase the prices level for individuals and enterprises at the expense of revenues from customs duties?* Especially, after Russia joined World Trade Organization.



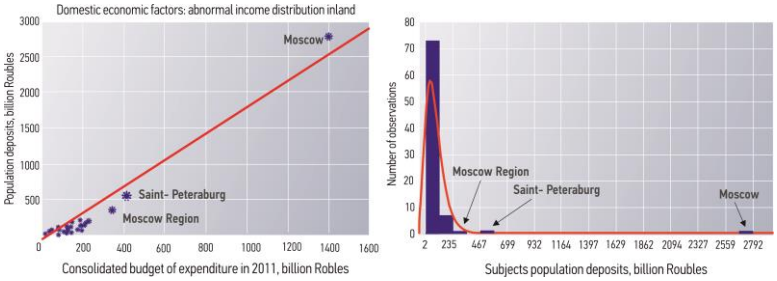
Global factors: reduction in light aircraft production
(using US example)

One of the reasons for prices increase for aircraftis increase of assembly companies' expenditures for purchase of materials and components, which determine from 60 up to 75% of aircraft or helicopter price. We revealed this tendency not only by the example of GA AIRCRAFT, but also for passenger civil aviation aircraft.

One more reason for global prices growth, noticed by American specialists, is more and more tough demands of the aviation rules, which determine increasing costs for development of new aviation equipment, and which consequently produces negative effect on the price of serial production airplanes.

In this connection in aviation community different proposals are being discussed, which concern reduction of the expenditures for aircraft type certification.

Anyhow, the growing prices for GA aircraft bring down the number of consumers, at this, the production scope reduces, which causes further prices increase. According to the opinion of the leading world economists, aircraft industry moves to the area of unprofitable production, which also influences GA market in Russia in a negative way.



Domestic economic factors: abnormal income distribution inland

Domestic economic factors also produce influence on GA development in their own way. One of such factors is non-uniform income distribution of the Federation subjects and for the population inside the country. Judge yourself.

We plotted several graphs in compliance with the data provided by Russian Committee for Statistics and Ministry for Finance of Russian Federation.

For instance, we analyze dependence of the individuals' deposits on consolidated budgets of expenditures of the same Federation subjects. Regressive relationship shows, that deposits of the population are proportional to the budgets of the Federation subjects, but the indices in Moscow are much ahead of the indices of the other regions: they are five-eight times higher comparing to Saint-Petersburg and Moscow Region, and with respect to other regions and territories the difference constitutes 600-1400 times!

On the histogram one can clearly see that population deposits distribution on the territory of Russia has considerable asymmetry with the shift in the direction of minor savings, and it does not conform to normal distribution.

LOW DEMAND FOR GA AIRCRAFT

Domestic economic factors: GA aircraft distribution
in relation to deposits of the population of federal subjects

We do not exactly know GA aircraft dislocation in Russia, but when we allocated them proportionally to the population deposits, we received the picture, which, to our mind, is pretty close to the real one (later it was confirmed by the data of Federal Taxation Authority of Russia, according to the information of which, however, in Moscow Region there are less GA aircraft, than it was estimated by us).

Naturally, the bulk of GA aircraft is located in Moscow Region which is followed with considerable break-away by Leningrad Region. It is also followed with big break-away by Sverdlovsk Region, Krasnodarsk Territory, Samara Region, Tatarstan, Rostov Region, Bashkortostan, Cheliabinsk Region and the other subjects of Russian Federation.

For sure, real distribution of aircraft among the regions will coincide with the model with accuracy up to a single aircraft number. For example, some GA aircraft, which belong to the Moscow residents, are based in the neighboring regions, and there are some other reasons for dissimilarities. For instance, in Kamchatka area there is no sense in buying private aircraft, since there is no place to fly it, and for helicopter purchase much more money is required, which the most part of wealthy inhabitants of the area do not have. But, in general, the tendency of GA fleet distribution across the country proportionally to population savings is confirmed.

It is typical, that in the areas where GA could play an important role as an element of the transportation system, i.e. in the most of regions in Siberia, Far East, Chukotka area economic prerequisites for its developments have not been formed. Though, if we go across the Bering Strait, the situation is quite different: in Alaska area, in some settlements, for each ten people there is one aircraft or amphibian aircraft.

Today there are more and more speculations about raising the population mobility as important factor of economy development. We completely share these qualms, but we would like to draw your attention that GA raises the mobility of the most active part of the population, which contributes to economy development to maximum extent.

Under the existing conditions there is a need in the strategy for development of general aviation in Russian Federation, which will take into consideration all the factors with the only purpose to facilitate GA contribution to the economy of the country.

Damaged ground infrastructure

One of the most important factors of GA development is the development level of ground infrastructures. Today Aviation Administration of Russia has only 315 certified airfields, which comply with all the aviation safety requirements. But these requirements create the situation when airport charges constitute almost 50% of one flying hour cost of light aircraft which is based in such airport. Considering the growing prices for equipment and fuel, only commercial aviation companies with high income can practically use such airports.

We should notice that airport expenditures are pretty high in the international airports of the other countries too. But in many countries for GA aircraft cheaper landing fields are also available. For example in the USA only 559 airports comply with FAR requirements (Part 139), for regular passenger transportation 5178 airports are being used, and out of this number only 4000 have hard coating. Along with that there are 14120 private airfields, helicopter landing sites and air harbors available in the country.

In Russia there are also more landing sites than those certified by Aviation Administration of Russia, which could be used for the purposes of GA. For the time being only 129 of such landing sites are in operation, though the potential is big. According to AOPA Russia data, more than 1300 landing fields are put out of operation, including ex-military with runways quite suitable for operation of different GA aircraft types, including business aircraft!


Ownerless airfield

But they remain ownerless not because nobody need them, but because their current owners can not properly manage them or the legislation does not afford it.

If proper conditions are created for transfer of such air fields to private investors, it will give a powerful impulse for Russian GA development.

One of the factors which hampers GA development in Russia, is imperfect air law, though in this respect the situation is slowly getting better. Within several years several changes were introduced into some Federal Aviation Rules (FAR, such as FAR-147, FAR-118 and Federal Rules for Air Space Use), which facilitated development of general aviation.

In the article «Little pigeons can carry great messages!» in «GA journal» №07'2012 there was an example of the market reaction to introduction of FAR-118 to tackle the problem of the flying vehicles, which do not have type certification. *But this decision created the situation that many aircraft certified in the other countries, but not in the International Air Commission (IAC), fly in Russia with the status of individual copies of aircraft which is not quite correct.* There is no need to invent solution for this problem: in many countries of the world there exist agreements between certification authorities about mutual recognition of type certificate, and this excludes repeated certification and additional expenditures associated with it. But in Russia there is no domestic certification body.

There are some other solutions, which make it possible to reduce certification expenditures for GA aircraft. And it is not a long way to reach them. For example in May in Ukraine new air codes were approved, where Article 44 permits the aviation authorities to give clearance for flights of GA aircraft which are certified in other countries, even in case if these aircraft still do not have type

certificate in Ukraine. This rule is not applicable to commercial flying vehicles, but makes it possible for GA aircraft owners not only to fly, but to maintain and operate them on the basis of developer technical manuals, to follow all developer bulletins, to preserve warranties, to provide insurance for the aircraft on more favorable terms and appreciate the other privileges.

This decision not only gives the green light to more active GA development in the country, but facilitates flights safety increase.

Naturally, the above example imposes certain restriction for use of GA for commercial purposes. That is why type certification is necessary if it is planned to use the flying vehicle for transportation of people or aerial work. In the above mentioned journal article the reaction of the Russian market is shown with respect to type certification in IAC of helicopter Robinson R44 in January 2002. After four years the boom conditions for this helicopter began: within seven years the number of R44 increased by more than seven times: from 34 up to 250. It is obvious, that we if we have less certification problems in Russia, then we could have more aircraft of different types.

As we see in all these examples neither global nor domestic economic factors never changed, but GA fleet turned to be considerable factor due to favorable changes exclusively in the legal area.

To summarize the above, we should note, that if aviation authorities can not influence the global and domestic economic factors, determining GA development processes, they can only take them into consideration when taking certain decisions, then in the sphere of creating the most favorable legal conditions for GA development aviation authorities could do a lot, if interested.

Here the issue arises about the criteria of aviation authorities operation.

In system theory there is such a rule: the system is optimum only in the case it is optimized according to the criteria of the system of a higher level. To put simple way, the operation of any administration is optimum only when it complies with economic interests of the state. In the field of civil aviation the state is interested for the country to have more aircraft, more pilots and more personnel servicing their operation.

In the USA, for instance, the budget of aviation authorities largely depends on the income which is received from excise duty for aircraft fuel. For GA aircraft it is the only type of tax. That is why the authorities are interested in more aircraft exercising flights and in higher income from fuel procurement to support flight operations.

What Russia is loosing?

According to our evaluation, the value of GA aircraft, which belong to Russian citizens, last year amounted 2.5 billion Dollars and additionally about 330 million US$ were spent on maintenance procedures. But if we exclude the cost of business aircraft, then the remaining share of the Russian GA fleet will account for only about 0.6 billion US$, including maintenance. These figures are incomparable with the data on GA contribution to the USA economy: 150 billion US$s annually! In US GA 1.3 million people are involved, within one year GA aircraft transport about 160 million passengers!

One of the reasons for such a big difference in the results of GA operation in Russia and the USA lies in the fact that in Russia GA does not include commercial air lifts and aerial work, and at the same time in the USA general aviation embraces all the areas of civil aviation operation, except for routine scheduled flights of commercial aviation.

To our point of view, the phraseology adopted in the USA, more logically distinguish between different types of aviation activities. General aviation in all countries is really more general aviation comparing to commercial one: with respect to aircraft fleet, with respect to its goals and purposes, with respect to employees involved. At the same time, the attempts to introduce term “small aviation”, which is not widely used in the world, and define it with orientation on take-off mass, as it is done in some documents drafts in Russia, is not expedient.

We will not repeat the reasoning narrated in article “Little pigeons can carry great messages!” We will just point out that, if in Russia the interpretation of term GA would still have been in operation, as fixed in Part II of Appendix 6 to Convention on International Civil Aviation as reworded in 1969, GA fleet in Russia today would have been at least two times bigger. Respectively, its contribution to Russian economy would have corresponded more to the scales of the state.

In our journal we have a lot of examples illustrating this statement. Without repeating our statements, we should notice, that in the country, where civil aviation suffers shortage of aircraft, pilots and air fields, the opportunities of general aviation are used extremely little. At the All-Russian Forum for Small Aviation the reasons for this situation were investigated comprehensively and certain solutions were proposed. The only thing remaining is to hope that the people upon whom these solutions depend, will use the recommendations, and the perspectives of Russian GA will become a reality.

Sergey Araslanov, Yuri Scherbak