

“Green” Construction as a Fashion



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When did the buildings cease to be “green” and for what reason?

As little as 100 years ago, a mud hut, a log or stone house (not to be confused with the brick one) or a yurt were not only environmentally friendly, but also energy-efficient buildings, since in most cases, they were heated and lighted with “alternative” and renewable resources.

History is a cyclical process, and will certainly bring back to the houses their self-sustaining and rational nature, but this time on a different technological, aesthetic and functional level.

In countries experiencing shortage of resources, this process gets boosted. In countries with excessive energy resources it is slowed down, since it obviously contradicts the sales policy pursued by energy and utility monopolies.

Which countries are at the forefront of “green” building?

First and foremost, these are the counties of Northern Europe and Great Britain. The U.S. does a lot of innovation work. Deep down, it’s an innovation-oriented country. America is very good at commercialization in a sense that solar panels are much cheaper there than in Europe or Russia. Things that America does for environmental protection can be described as a straight-line process. They don’t make much fuss about it, which is partly due to the size of the country, fairly favorable climatic conditions and lack of strong energy dependence that is prevalent in Europe. Therefore, Europe is certainly taking the most drastic efforts to achieve autonomy.

How do Europe and America encourage private companies to engage in “green” building?

The way the U.S. government provides incentives is unusual for us. There’s little of it in the form we are familiar with, such as subsidies, tax deductions, etc. However certain European countries come up with some serious incentives providing subsidies covering as much as 50% of such housing

construction. They subsidize materials and equipment used in improving energy efficiency. From the greening standpoint, they primarily support pilot projects with zero CO2 emissions, which implies the use of internal absorbents. The issue is about properly sealed homes, which use different CO2 disposal methods. For example, they use “green” walls or “green” ceilings, which are known to absorb CO2. Households emit low CO2 volumes, and the internal autonomous ecosystem can absorb CO2 in full using certain species of plants. This is the basic mechanism. In addition, they use environmentally safe materials and internal microclimate.

What is the percentage of “green” building in Europe?

In terms of volume, I would say the percentage is negligible. They have better progress with commercial buildings, because that’s where the financial system and the building certification system have their focus on. They are more cost-effective.

“Green” building also includes construction of various eco settlements. However, I wouldn’t say that it is a mainstream activity. Certainly, they increase energy efficiency up to about 85% as compared with conventional buildings. On the other hand, cost increases by 20%. The list of materials and equipment precludes any assumptions about this being a 100% environmentally friendly construction. Therefore, “green” innovations in housing construction have so far remained a thing related to enthusiasm, state propaganda, advertising and experiment.

How fast will these technologies be widely implemented and become common practice?

This will happen quickly, no doubt about it. I’d refer to what we do in the “Russian Future House” project as applied futurology. Ten years from now, this business will lose its status as something fashionable or experimental and become a routine occurrence. I think that this market will grow in Russia, as the market for imported materials for so-called «Eurostyle renovation” did in its time. Initially, these materials were used only by wealthy people, and later they became affordable to just about everyone. “Green” materials and equipment will get cheaper and become increasingly available.

It’s been almost 200 years since the photovoltaic effect was discovered by Becquerel, but “solar house” has so far remained an exotic dream rather than a mass phenomenon. What could turn the tide, and under what circumstances?

Energy systems efficiency based on this effect will inevitably rise; however, two problems need be solved before such a breakthrough has a chance to materialize. First, power engineering needs be localized in the smallest consumer niche available, which is an individual residential house, aiming at energy redundancy right from the get-go. Secondly, build a range of standard (all-purpose) integrated all-in-one energy solutions, which would bring the strengths of multiple energy sources and systems in a single package. Today, such combination comes as a result of isolated research efforts, and equipment suppliers are few and far between.

How efficient is the use of solar panels in Russia given climatic characteristics in central Russia?

Solar panels alone cannot be a fix-it-all solution even despite the potential increase in their efficiency. Area of land around a modern house is not large. There's no way one can cover it all with solar panels. In a similar climate in Sweden, an energy-active building requires installation of fifty square meters of solar panels. Fifty square meters doesn't look like a lot of surface. However if you place these panels on the ground, they'll add up to cover a very significant area. At the same time, the main objective is not to boost the output of generated power, but to cut the consumption. In other words, there's need to improve the efficiency of lighting, heating, ventilation, household appliances, etc. The overall consumption has to go down. Actually, this process began long ago. With large-scale replacement of lighting bulbs with cheaper LED ones, the change will be fairly significant.

Then again, solar energy should be used in combination with other steps. In and by themselves, solar batteries do not provide the solution. There's need for additional installation of heat supply autonomization system, such as solar collectors, both heat and infrared ones, heat pumps, etc. I can see a market-based, efficient solution enhancing the overall efficiency only as a complex solution. This complex should be treated as a whole rather than a bunch of isolated units randomly installed according to individual designs.

If we manage to figure out such a solution, we'll certainly start moving ahead at greater strides. I believe we are heading that way. How is it going to be, what will it look like? Most likely, it will come as an all-in-one modular unit, which will provide access to solar panels and pipes buried in the ground or taken to the outside and to the ventilation systems. So far, I haven't seen an integrated system like that. They are effectively a craft, an unbalanced combination of units built by different manufacturers.

What are the international "green" building standards? Where, do you think, the "green" building standards have been most appropriately formulated?

These are primarily voluntary certification systems for buildings and developments (such as LEED), which are the focus of the national financial systems and government programs. I believe they are all imperfect, or rather archaic, since they had been developed more than 20 years ago. There's need for expansive approach, or should I say for transition from ecological compatibility to comprehensive efficiency.

How widely is LEED-like certification used in Russia?

So far, not at all. LEED has been recognized by the Olympic Committee, which means that Sochi 2014 buildings will be certified according to the LEED system. In fact, they are developing a Russian answer to the LEED system. The issue is about the corporate Olimpstroy standard and Green Standards Project under the auspices of the Russian Ministry of Natural Resources. In general, it's a direct loan from foreign certification systems that have not yet been adapted to the Russian climate and resource base.

First of all, Russia should strive to improve and adapt foreign "green" building experience for its own benefit. It should also focus on export-oriented sector of environmentally friendly production facilities in order to find its niche in the international division of labor.

Is there anything that makes it drastically different from foreign certification systems?

Nothing drastic at all. Unfortunately, we are still mastering the ABC of certification based on foreign systems. Now, at least three of them are being implemented in Russia. Eventually, these systems begin to compete. Or, in fact, they provide protection to domestic burgeoning seedlings. Maybe, these problems are due to the fact that the accumulated foreign expertise should have been reconsidered and then used in developing more integrated, more coherent certification systems, which would be capable of evaluating living space in a more detailed manner.

How do research and development projects in the area of "green" building blend with the national innovation system as a whole?

Fashion provocation is the best way to secure across-the-board implementation of ecological knowledge, innovations and business solutions. Such fashion is created using fashion runways, i.e. demonstration sites. All countries practicing (not declaring) "green" building begin with a demonstration of samples, ultimate goals and "carrots", and then create an incentive system (subsidies, tax breaks, etc.) to promote such samples, goals, etc.

How does the use of "green" technologies increase construction costs?

By about 20% in Europe, and I think this number will be as high as 60% in Russia. This difference is due to the fact that all equipment is imported and we don't have enough experience. Therefore, each project in Russia is much more expensive in terms of physical costs and design expenses. In addition to that, they have certain subsidy systems in the West, which bring down the costs in various ways. We don't have such subsidies in Russia. Therefore, everything falls on the builders. However, this is a very approximate number, since we build too few such facilities in Russia. Also, these facilities are built with partial use of these systems. Comprehensive solutions aren't available. That's why the "Russian Future House", two boards on environmentally friendly construction business, the Russian Union of Architects, the Social Development Fund and three magazines launched the prize project entitled Dom-Avtonom (Self-Sustaining House). The goal is to hang a carrot in the form of a prize for effectively built houses that have proved their environmental and operational efficiency. If we get any responses, we will at least be able to draft a roster of projects for environmental and energy efficient construction business and individual housing projects.

What does the contest winner get as a prize?

They have just begun to raise funds for the prize. We have announced the start of the project on December 1. Our goal is to raise 15 million rubles for three nominations, 5 million per nomination. Currently, the total prize amount stands at 150,000 rubles, but sponsors are becoming increasingly active, so we are quite optimistic about the outlook for the project. Moreover, we have a whole year to discuss criteria for evaluating the efficiency of such houses, and will begin to evaluate candidates and analyze the actually built houses only a year from now. The claimants, whether potential ones or the ones who had registered with us, have an entire year to build and begin to operate, prove the efficiency and popularize their project.