

Title: **High-rise construction in Russia: Asian way vs. Middle-Eastern way**

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Subjects: Economics/Financial
History, Theory & Criticism
Urban Design

Keywords: Construction
Economics
Vertical Urbanism

Publication Date: 2015

Original Publication: Global Interchanges: Resurgence of the Skyscraper City

Paper Type:

1. Book chapter/Part chapter
2. Journal paper
3. **Conference proceeding**
4. Unpublished conference paper
5. Magazine article
6. Unpublished

High-rise construction in Russia: Asian way vs. Middle-Eastern way



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Abstract

A new period of flourishing of high-rise construction in Russia began in the 2000s. The data of this study show that 64% of the tallest buildings in Russia (ie, above 109 m.) was built during the abovementioned period. This happened due to the successful recovery of the national economy after the 1998 crisis and, consequently, an increase of interest in real estate investment. The last issue facilitated development of high-rise construction in Moscow and in the regions during the second tall buildings' peak in 2000s. The paper shows trends and perspectives of high-rise construction development in Russia.

Keywords: 101 Tallest Buildings in Russia; Economic growth; High-Rise Construction; Skyscraper Index; Skyscrapers

The Main Stages of High-Rise Construction Development

Development of high-rise construction in Russia has been very uneven. The first construction peak, during which the so-called Stalin skyscrapers¹ were built, came at the end of the 1940s and the beginning of the 1950s. Although trying to replicate American skyscraper experiences, Russia didn't take into account the fact that the development of high-rise construction requires big corporations. After the death of Joseph Stalin, interest in high-rise construction in our country noticeably waned.

1996 can be considered the starting point for the second peak of high-rise construction in Russia. It was then that a report concerning development of a large-scale business district – "Moscow City" – within one of the former industrial zones was discussed at one of the Moscow City Government sessions. Thus, a new period of flourishing high-rise construction in Russia began in the late 1990s and early 2000s. Data from a current study points out that 64% of the tallest buildings in Russia (i.e. above 109 m. height) were built in the 2000s. This fact can be explained by the successful recovery of the national economy after the crisis of 1998, and, consequently, the immense growth of interest in real estate investments.

Main types of Tall Buildings in Russia

Residential complexes (RC) and mixed-use complexes (MUC) dominate Russian tall building typology. Their combined share equates to 55% of the tallest buildings in Russia. This can be explained by the constantly elevating prestige of business-class and luxury housing. In addition, the construction of MUCs is a great opportunity to secure investment in real estate development in a volatile economy. This type of high-rise development can be qualified as "Asian," as it models the development that has taken place on that continent. As of 2015, Asia accounts for nearly 65% of the world's tallest buildings (alone, China claims over 30% of the tallest buildings in the world).²

An exception to this common practice can be found in the high-rise construction of Grozny. Here, a "Middle Eastern" methodology is employed, meaning investment is obtained under the personal authority of the head of the city and / or country. This system is employed in the UAE, Qatar, and Saudi Arabia, as well as neighboring Azerbaijan and Kazakhstan. It is noteworthy that this type of development can be more effective especially at initial stages, including the development of interest in high-rise construction, attracting initial investments, and establishing and regulating the construction process. This distinctive type of development of skyscrapers was actually utilized in Moscow during the reign of Stalin.

1. Elena A. Shuvalova. Renaissance of High-Rise Construction in Russia: Common Sense vs Po-litical Ambitions. A new Generation of Tall Buildings in Asia: Korean CTBUH Conference 2010, Proceedings, pp. 133-151.

2. Georges Binder. Buildings & Data, 2014



Figure 1. Federation Tower (Source: Lobby Agency)

Main obstacles for development of high-rise construction in Russia

In terms of skyscraper development, some might ask how Russia can be compared to China. To start, both countries belong to the BRICS group (i.e. Brazil, Russia, India, China and South Africa); as BRICS members, they may demonstrate uncertain economic behavior. The other resemblance between the two countries lies in their great respect for foreign borrowing.

Prof. Andrea Boltho³ of Oxford University describes the current Situation in China:

“China’s growth is slowing down and this trend looks likely to continue, despite the efforts of the monetary authorities to sustain activity. Elsewhere, lower Chinese growth is reducing the demand for, and the prices of, numerous commodities (including, of course, oil). In addition, many developing countries may have to face additional financial difficulties. Over the past few years, governments and companies in these countries were encouraged to borrow in America given the low interest rates that have prevailed in the US. The recent strengthening of the dollar is now raising debt servicing costs and the negative impact this is having on emerging countries’ demand could grow in the wake of the almost inevitable increase in US interest rates expected to occur some time this year. The latter might also encourage capital flight.”

The Russian economy also suffers greatly from rapidly increasing loans and declining economic growth.⁴ Real GDP growth is expected to have slowed down further in 2014 in the wake of geopolitical tensions and economic sanctions, even though economic activity showed some resilience up to Q3 (resulting in average 0.8% growth in Q1 – Q3 2014 y-o-y), supported by net exports and better than expected outcomes in agriculture and manufacturing. The slowdown in growth was mainly driven by a sharp contraction of investment and a deceleration of private consumption, on the back of rising capital outflows, soaring borrowing costs, and rising inflation.

There is one issue at least where the China dominates Russia unconditionally – Chinese skyscrapers are being built under rigorous standards and codes for tall buildings.

3. Prof. Andrea Boltho: A Confused (and Confusing) Picture – January 2015. See: <http://www.reag-aa.eu/professor-speech/334-prof-andrea-boltho-a-confused-and-confusing-picture>

4. European Economic Forecast (Winter 2015). Chapter «Russian Federation». European Union 2015.



Figure 2. Moscow-City view - 1 (Source: Lobby Agency)

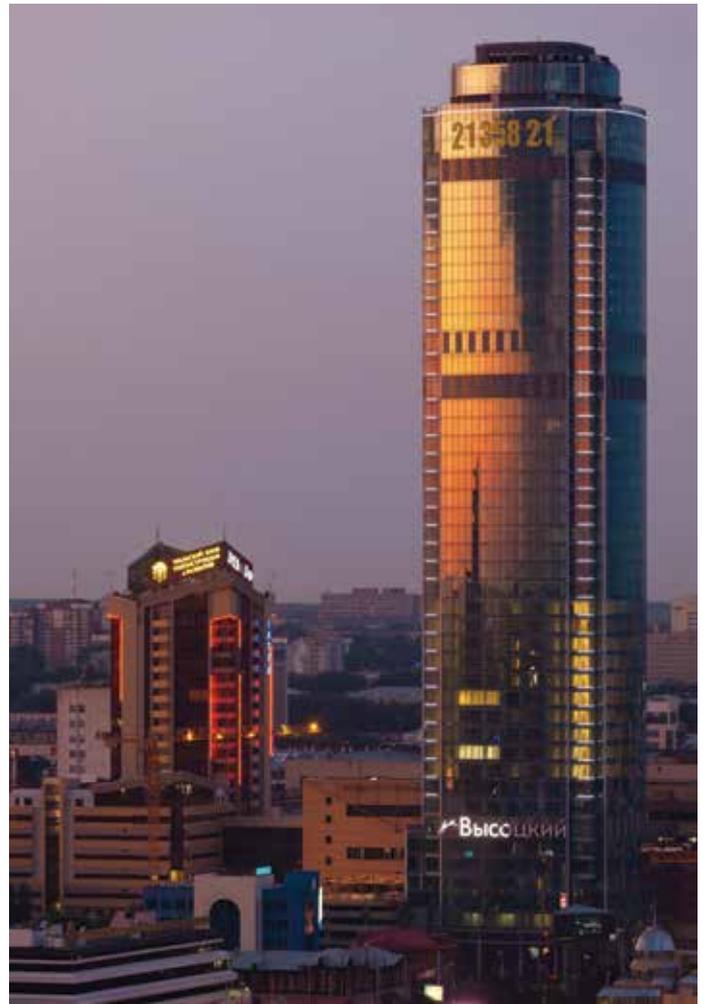


Figure 3. Moscow-City view - 2 (Source: Lobby Agency)

Russian realities differ greatly. The only document regulating the existing standards for construction of high-rise and unique buildings in Russia is Temporary Regulations MGSN 4-19.05: "Mixed-use high-rise buildings and complexes", worked out by JSC "TSNIEP

zhilisha" in 2005 on an experimental basis for Moscow. Actually, this document inspired other Russian cities – Yekaterinburg, Grozny, Volgograd, etc. – to start high-rise construction in the 2000s. As in the case of the "Moscow City" business district, construction terms were not met.

Current Economic Recession and Future of High-Rise Construction in Russia

In order to forecast high-rise construction in Russia for the next 3-5 years, we shall turn back to the current economic situation in the country. Prof. Andrea Boltho writes, "The end of 2014 saw a number of sudden events and shocks, both political and economic. On the negative side, some of the most important recent economic developments were China's deceleration... and the fully-fledged recession which Russia has now entered."⁵

This thesis is also illustrated by a recent report by PMR entitled "Construction sector in Russia H1 2015. Development forecasts for 2015-2020" published at EuropaProperty.com.⁶ (see Figure 4).

The graph shows a significant slowdown in the construction industry starting in 2012 as per Rosstat (Federal State Statistics Service) data. According to PMR⁷, in 2013 the construction industry was impeded only by

Construction output in Russia (RUB bn) and real change (% , y-o-y), 2006-2014

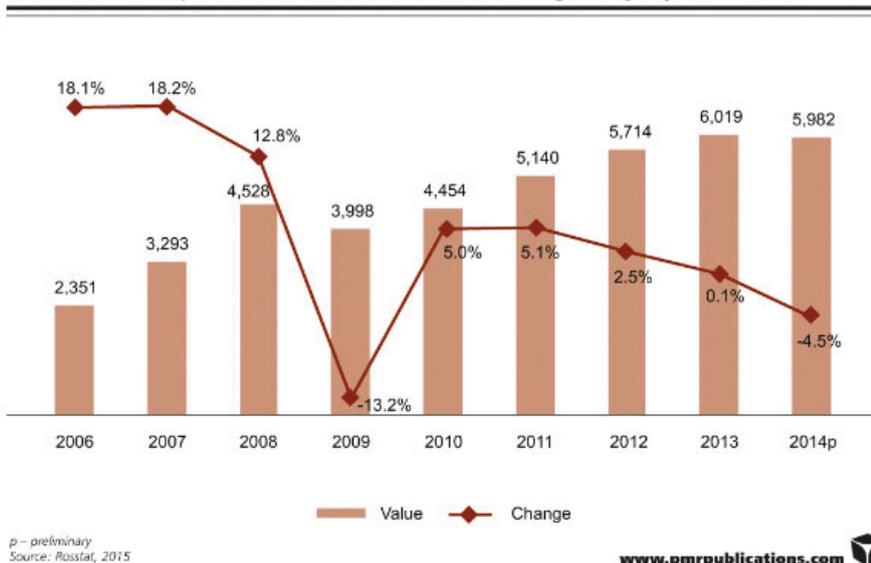


Figure 4. Construction sector in Russia H1 2015. Development forecasts for 2015-2020 (Source: EuropaProperty.com)

5. Ibid
6. See: <http://europaproperty.com/news/2015/04/construction-industry-in-russia-to-resume-growth-in-2016-1633>
7. Ibid

civil engineering construction. This trend continued in 2014, accompanied by the fall in non-residential construction activity. Many new developments have been postponed, and this has ultimately delayed the expansion of Russia's still struggling construction industry. For example, construction output in the Southern Federal District collapsed by 18.8% in 2014, mostly due to completion of the preparations for the 2014 Winter Olympics in Sochi, which had provided solid support for construction output in the region from 2010-2013.

Quoting PMR's latest report, "the Russian construction industry has recorded a substantial deterioration in the last couple of years. According to preliminary data, Russian construction output contracted by 4.5 percent year on year in 2014, after the 0.1 percent expansion achieved a year before."

According to PMR, the key factors contributing to the decline in construction activity in the last few years are:

1. Weak economic growth, with the GDP growth rate falling to 0.6 percent in 2014 from 1.3% a year earlier and expected to contract more than 3% in 2015.
2. Lack of growth in fixed capital investments, which underwent a 2.7% year-on-year decline in 2014, following a weak 0.8% growth recorded a year before.

Among the key factors that contributed to the decline in fixed capital investments in 2014 were the rouble's double-figure devaluation, which has made imports significantly more expensive, with sharply deteriorating macroeconomic performances in Russia, and negative revisions for economic development expected in the near future.

Forecast

According to PMR,⁸ the construction industry in Russia is projected to resume growth in 2016 due to following factors: low base effect created after a notable contraction in 2015, and preparation for the 2018 FIFA World Cup will start to go through the active stages of many of its large-scale infrastructure project in H2 2015. And, Inflation in Russia will start to ease gradually, thus creating background to the Central Bank for further rate cuts, which

101 Tallest Buildings in Russia							
Nº	Name	City	Height (m)	Floors	Year	Material	Type
1	Mercury City	Moscow	338,8	75	2013	Steel concrete, concrete	Mixed-use
2	Eurasia	Moscow	308,9	75	2014	Steel, steel-fibre reinforced Steel concrete	Mixed-use
3	Capital Towers (Moscow)	Moscow	301,6	76	2010	Steel concrete, concrete	Residential
4	Embankment Tower (block C)	Moscow	268	61	2007	Steel concrete, concrete	Office
5	Triumph Palace	Moscow	264,1	61	2005	Steel concrete, concrete	Residential / Hotel
6	Capital Towers (Saint-Petersburg)	Moscow	257	65	2010	Steel concrete, concrete	Residential
7	OKO (Northern Tower)	Moscow	245	49	2014	Steel concrete, concrete	Office
8	Federation Tower – West	Moscow	242,4	63	2008	Steel concrete, concrete	Residential / Hotel
9	Moscow State University (main building)	Moscow	239	39	1953	Steel	Educational Institution
10	Imperia Tower	Moscow	238,6	60	2011	Steel concrete, concrete	Mixed-use
11	House at Mosfilmovskaya (Tower A)	Moscow	213,3	53	2012	Steel concrete, concrete	Residential
12	Radisson Royal Moscow ("Ukraine" Hotel)	Moscow	206	34	1957	Steel	Hotel
13	«Continental» RC	Moscow	191,1	50	2011	Steel concrete	Residential
14	"Vysotsky" BC	Yekaterinburg	188,3	52	2011	Steel concrete	Office / Hotel
15	«Sparrow Hills» RC, bldg. 2	Moscow	188	48	2004	Steel concrete	Residential
16	«Scarlet Sails» RC, bldg. 4	Moscow	179	49	2003	Steel concrete	Residential
17	Edelweiss	Moscow	176	43	2003	Steel concrete, concrete	Residential
18	Residential Complex at Kotelnicheskaya Embankment	Moscow	176	32	1952	Steel	Residential
19	Ministry of Foreign Affairs	Moscow	172	27	1953	Steel	Office
20	«Nordstar Tower» BC	Moscow	172	42	2009	Steel concrete, concrete	Office / Hotel
21	Swishotel Krasnye Holmy	Moscow	167	35	2005	Steel concrete	Hotel
22	«Zagorye» RC	Moscow	165	48	2013	Steel concrete, concrete	Residential
23	«Wellhouse» RC at Leninsky Prospect	Moscow	162	48	2009	Steel concrete	Residential
24	«Sparrow Hills» RC, bldg. 1	Moscow	161	43	2004	Steel concrete	Residential
25	«Sparrow Hills» RC, bldg. 3	Moscow	161	43	2004	Steel concrete	Residential
26	Residential House at Kudrinskaya Square	Moscow	156	24	1954	Steel	Residential
27	Avenue 77 (block 3)	Moscow	155	43	2009	Steel concrete	Mixed-use
28	Avenue 77 (block 2)	Moscow	155	43	2009	Steel concrete	Mixed-use
29	Avenue 77 (block 1)	Moscow	155	43	2009	Steel concrete	Mixed-use
30	«Bastion» («Airship») RC	Moscow	153	40	2012	Steel concrete	Residential / Retail
31	Gazprom Headquarters	Moscow	150,9	35	1994	Steel concrete	Office

Table 1. 101 tallest buildings in Russia (Source: Sources and remarks: open data by CTBUH, Lobby Agency, "Moscow City" management company etc. The following abbreviations: Residential Complex (RC), Business Centre (BC) *Total number of floors to residential floors)

8. www.pmrpublications.com

ultimately will encourage banks to offer less expensive loans.

Also political tensions between Russia and other developed countries are expected to ease gradually from 2016. Russia will be interested in improving deteriorating relationships, as oil prices will likely not rebound to triple-figure values in the near future.

The foreign currency reserves of the Central Bank are expected to reduce further and may reach \$310-330 bn by the end of this year in comparison with \$500 bn at the beginning of 2014. All these factors may force Russian political elites to improve relationships with developed countries, which is necessary to regain access to long-term international funding.

Under existing dynamics of high-rise construction in Russia, in which 24% of the tallest buildings were put into operation within 3.5 years, it is likely that the 2010s will mark even greater flourishing of the market. Announced projects and projects under construction in terms of new business districts, new MUCs, and RCs will supply the needs of foremost cities and regions with modern and comfortable buildings. According to preliminary estimates, two leading cities outside of Moscow are expected to become leaders of high-rise construction, Yekaterinburg and Grozny. Public investment may also bring dynamic development to the market in Sochi. That city also has some tax exemptions, so it will surely benefit from the rapidly developing market. As for the city of Saint-Petersburg, which has only 3% of the tallest buildings in the country (including the Saint Peter and Paul's Cathedral built in the 18th century), it may become a little less conservative and increase the number of high-rise buildings due to construction of the LC at the outskirts.

A new renaissance of high-rise construction in Russia could begin in 2016 when the main economic trends will change from recession to positive growth, and Russian GDP in percentage-change on preceding year will reach 0.2 versus -3.5 in 2015.⁹

At the turn of the current decade, if we look at ALL buildings over (and including) 150 m we note the same trends observed in the previous charts. The tall buildings which used to be predominantly (85%) located in North America are now located in Asia (70% when combining Asia and the Middle-East). We also note that the total amount of tall buildings under construction in the

Nº	Name	City	Height (m)	Floors	Year	Material	Type
32	House in Sokolniki	Moscow	146.9	43	2008	Steel concrete	Mixed-use
33	«Phoenix» («Olimp») RC	Grozny	145	40	2011	Steel concrete	Residential
34	«Domnikov» BC	Moscow	141	28	2009	Steel concrete	Office
35	«Leader» BC	Saint-Petersburg	140	42	2013	Steel concrete	Office
36	«Izmailovsky» RC, bldg. 1	Moscow	140	37	2010	Steel concrete	Residential
37	«Izmailovsky» RC, bldg. 2	Moscow	140	37	2010	Steel concrete	Residential
38	«February Revolution» RC	Yekaterinburg	139.6	42	2010	Steel concrete	Mixed-use
39	«Astrus» Hotel (former Central House of Tourism)	Moscow	138.4	33	1979	Steel concrete	Hotel / Recreation
40	«Villange» RC	Moscow	138	40	2010	Steel concrete	Residential
41	Institutional and Residential Building at Krasnye Vorota	Moscow	138	24	1953	Steel	Office / Residential
42	Research Institute «Delta» Building	Moscow	137.5	25	1982	Steel concrete, concrete	Office / Retail
43	Grozny City Hotel	Grozny	137	32	2011	Steel concrete	Hotel / Recreation
44	Hilton Moscow Leningradskaya Hotel	Moscow	136	26	1954	Steel	Hotel
45	«Falcon Mountain» BC	Moscow	135	36	2008	Steel concrete	Office
46	«House at Begovaya» RC, bldg. 1	Moscow	134.6	38	2008	Steel concrete	Residential / Retail
47	«House at Begovaya» RC, bldg. 2	Moscow	134.6	38	2008	Steel concrete	Residential / Retail
48	«Monarch» mixed-use complex	Moscow	134	36	2009	Steel concrete	Office / Hotel
49	«ART» RC, bldg. 2	Krasnogorsk	132.5	45	2014	Steel concrete	Residential
50	«ART» RC, bldg. 4	Krasnogorsk	132.5	45	2014	Steel concrete	Residential
51	«ART» RC, bldg. 1	Krasnogorsk	132.5	45	2015	Steel concrete	Residential
52	«ART» RC, bldg. 3	Krasnogorsk	132.5	45	2015	Steel concrete	Residential
53	«Northern Crown» RC	Moscow	132	40	2011	Steel concrete	Residential
54	House on Mosfilmovskaya (Tower C)	Moscow	132	35	2010	Steel concrete	Residential
55	«Rublev Lights» RC	Moscow	132	40	2013	Steel concrete	Residential
56	«Amber City» RC, bldg. 2	Moscow	130	39	2008	Steel concrete	Residential
57	«Olympia» RC, bldg. 2	Moscow	129	39	2003	Steel concrete	Residential
58	WTC-3 Building	Moscow	128	29	2009	Steel concrete	Office
59	Embankment Tower (block B)	Moscow	127	29	2006	Steel concrete	Office
60	«Mirax Park» RC («Winter» Tower)	Moscow	126	37	2007	Steel concrete	Residential
61	«Krylatskiye Lights» RC	Moscow	125	35	2009	Steel concrete	Residential
62	«Two Captains» RC, bldg. 1	Moscow	125	34	2002	Steel concrete	Residential / Retail
63	«Two Captains» RC, bldg. 2	Moscow	122	33	2002	Steel concrete	Residential / Retail
64	Prince Alexandre Nevsky	Saint-Petersburg	124	36	2013	Steel concrete	Residential
65	«Aerobus» RC, bldg. 1	Moscow	123	35	2006	Steel concrete	Residential
66	«Aerobus» RC, bldg. 2	Moscow	123	35	2008	Steel concrete	Residential

Table 1 (continued) 101 tallest buildings in Russia (Source: Sources and remarks: open data by CTBUH, Lobby Agency, «Moscow City» management company etc. The following abbreviations: Residential Complex (RC), Business Centre (BC) *Total number of floors to residential floors)

9. See Table 5. World GDP, volume (percentage change on preceding year, 2010-2016). European Economic Forecast (Winter 2015). European Union 2015.

Americas now account for less than 15% of the world-wide total.

Mixed-Used Tall Buildings Construction Boom

If we look at the projects over (and including) 150 m under construction, we note that the office building category accounts for less than 30% of the total, while the residential sector is now close to 50% of all tall buildings being built. It is important to note that with a total of 18.5% of the tallest buildings under construction, the mixed-use category has seen the biggest growth. (see Tables 1 and 2)

Several conclusions can be drawn with data from the first decade of the new millennium. Eight of the top 10 buildings are now located in Asia, with North America definitively left behind.

There is only one all-steel building on the list, thus expressing other regional cultural ways of buildings and technological changes that now allow for building taller concrete-only buildings. We note that the major change of the decade is the fact that we now find that 70% of the projects are mixed-use. Office buildings have lost the powerful dominance they used to benefit from during the previous century.

Advantages of building mixed-use tall buildings

Once a developer decides to build an MUC he is taking on higher risks as well as potential benefits. So, let's enumerate the main advantages of an MUC:

- A split financial risk from having different types of occupants/tenants mixed together.
- Opening the project in phases allows a cash infusion while the building is still under construction.
- Opportunity to adapt the occupants'/tenants' mix according to current or future socioeconomic situations and trends.
- High land costs can be split among multiple owners.
- Because mixed-use tall buildings generally have more elaborate entrances, lobbies, and vertical transportation systems than single use projects, we can expect mixed-use projects to adapt themselves more easily to any unexpected future change of use.
- A reduction in overall transportation needs if the building type should be

№	Name	City	Height (m)	Floors	Year	Material	Type
67	«VDNKh Tower» RC	Moscow	123	35	2007	Steel concrete	Residential
68	«Elena» RC	Moscow	123	33	2007	Steel concrete	Residential / Retail / Recreation
69	«Emerald» RC	Moscow	123	32	2014	Steel concrete	Residential
70	Petrovsky Cathedral	Saint-Petersburg	122.5	9	1733	Stone / Wood	Религиозное
71	«Scarlet Sails» RC, bldg. 3	Moscow	122	31	2001	Steel concrete	Residential / Recreation
72	«Scarlet Sails» RC, bldg. 1	Moscow	122	31	2001	Steel concrete	Residential
73	«Ferry» RC, bldg. 2	Samara	122	25	2006	Steel concrete	Residential
74	«Ferry» RC, bldg. 3	Samara	122	25	2008	Steel concrete	Residential
75	«Azure Skies» RC	Kazan	122	37	2013	Steel concrete	Residential / Office
76	«House at Begovaya» RC, bldg. 3	Moscow	121.8	32/22*	2011	Steel concrete	Residential / Retail
77	«Golden Brain» (Presidium of Russian Academy of Science)	Moscow	120	29	1997	Steel concrete, concrete	Institutional / Research
78	Grozny City Office Tower	Grozny	120	30	2011	Steel concrete	Office
79	«Mirax Park» RC ("Autumn" Tower)	Moscow	120	35	2007	Steel concrete	Residential
80	«Krylatskaya Panorama» RC	Moscow	120	34	2007	Steel concrete	Residential
81	«Welton Park» RC, bldg. 9	Moscow	120	32	2010	Steel concrete	Residential
82	House of Government of RF	Moscow	119	20	1979	Steel concrete, concrete	Governmental
83	«Monolit Gold» BC	Krasnoyarsk	118	27	2009	Steel concrete	Office
84	«House in Pinery» RC	Moscow	116.4	32	2010	Steel concrete	Residential
85	«House in Teplichny Lane» RC	Moscow	116	28	2002	Steel concrete	Residential
86	«Sun» RC	Moscow	116	33	2013	Steel concrete	Residential
87	«Volgograd City» RC, BC	Volgograd	116	27	2010	Steel concrete	Office / Hotel
88	«Actor Galaxy» RC	Sochi	116	30	2014	Steel concrete	Apartments
89	«Mirax Park» RC ("Summer" Tower)	Moscow	115	33	2007	Steel concrete	Residential
90	Leninsky Prospect, 116, bldg. 1	Moscow	114.6	30	1998	Steel concrete	Residential
91	«Scarlet Sails» RC, bldg. 1	Moscow	113.9	32	2001	Steel concrete	Residential
92	«Izmailovsky» RC, bldg. 3	Moscow	112	28	2010	Steel concrete	Residential
93	«Izmailovsky» RC, bldg. 4	Moscow	112	28	2010	Steel concrete	Residential
94	«Profiko» BC	Moscow	112	28	2007	Steel concrete	Office
95	«Scarlet Sails» RC, bldg. 3	Moscow	111.4	31	2001	Steel concrete	Residential
96	«Paveletskaya Plaza» BC	Moscow	111	27	2003	Steel concrete	Office
97	Chelyabinsk City	Chelyabinsk	111	23	2008	Steel concrete	Office / Retail
98	Leninsky Prospect, 98, bldg. 1	Moscow	110.9	30	1998	Steel concrete	Residential
99	«Volzhskye Sails» RC, bldg. 1	Volgograd	110	32	2008	Steel concrete	Residential
100	«Kutuzovsky Riviera» RC, bldg. 1	Moscow	110	31	2008	Steel concrete	Residential
101	«Northern Gates» RC	Moscow	110	30	2003	Steel concrete	Residential

Table 1 (continued) 101 tallest buildings in Russia (Source: Sources and remarks: open data by CTBUH, Lobby Agency, "Moscow City" management company etc. The following abbreviations: Residential Complex (RC), Business Centre (BC) *Total number of floors to residential floors)

101 Tallest Buildings in Russia

Nº	Name	City	Country	Year	Stories	Meters	Feet	Structure	Use
1	Burj Khalifa (originally Burj Dubai)	Dubai	UAE	2010	163	828	2717	Mixed	Mixed-use
2	TAIPEI 101	Taipei	Taiwan	2004	101	509	1670	Mixed	Mixed-use
3	Shanghai World Financial Center	Shanghai	China	2008	101	492	1614	Mixed	Mixed-use
4	International Commerce Center	Hong Kong	China	2010	118	484	1588	Mixed	Mixed-use
5	PETRONAS Twin Towers 1	K Lumpur	Malaysia	1998	88	452	1483	Mixed	Office
6	PETRONAS Twin Towers 2	K Lumpur	Malaysia	1998	88	452	1483	Mixed	Office
7	Nanjing Greenland Financial Center	Nanjing	China	2010	66	450	1476	Mixed	Mixed-use
8	Willis Tower (formerly Sears Tower)	Chicago	USA	1974	110	442	1451	Steel	Office
9	Trump International Hotel & Tower	Chicago	USA	2009	98	423	1388	Concrete	Mixed-use
10	Jin Mao Tower	Shanghai	China	1999	88	421	1380	Mixed	Mixed-use

Table 2. World's tallest buildings in 2010 (Source: G. Binder/Buildings & Data SA, 2011)

uplicated in the city.

- Adds density to the location where the building sits, not just during business hours as would be the case with an office project. Density is a major aspect when considering a global view on sustainable development.
- If a mixed-use project includes a hotel, a well known brand could help to sell the residential component of the building because of the potential

added services for the resident and because of the prestige that comes with living in a building named after a prestigious international brand.

- Mixed-use projects add social life to the area.
- Depending of local urban rules and habits, and this is valid for any type of tall building, negotiating with City officials for higher floor area ratios (FAR) means more return on investment for developers and

investors, and can create more advantages for the city and the society such as arcades, plazas, green roofs, and other public amenities.

Disadvantages of Building Mixed-Use Tall Buildings

- Requires more complex building management because of different users and legal ownership systems.
- Could possibly, but not necessarily, require bigger lobbies at ground level.



Figure 5. Capital Towers (Source: Lobby Agency)



Figure 6. Moscow-City view - 3 (Source: Lobby Agency)



Figure 7. Yekaterinburg-City is planned to be built within next 5 years (Source: Lobby Agency)

- Could possibly, but not necessarily, require a more complex vertical circulation system possibly requiring more volume, thus slightly reducing useable space.
- Could possibly make future renovation programs more complex to implement because office, residential, and hospitality spaces may have different obsolescence cycles.

Some Conclusions

The following research is intended to contribute to solving the main problem of high-rise construction – building economically-efficient (cost-effective) tall buildings. The biggest uncertainty within the Chinese economy lies with the state of the construction sector, the country's largest growth engine over the last several years. House prices, which in some localities have risen sharply, are now declining throughout the country. This may lead to a slump in residential construction. Excessive investment in infrastructure has left many local authorities in debt, with consequent retrenching. Despite the fact that monetary policy has been eased and the Chinese government has fiscal instruments for reviving activity, a slowdown, probably a sharp one, seems inevitable. In 2012, the GDP growth rate decreased to 7.5% from 9.2% in 2011.

So what is the real way to prevent a slowdown in Chinese construction? According to latest research by Georges Binder, CTBUH Member and Managing Director of "Buildings and Data," the percent of high-rise office buildings worldwide is significantly decreasing (from 84.7% in 1980 to approximately 26% in 2012).

On the contra-ry, the percent of mixed-use buildings increased three-fold during the last 17 years (from 6.6% in 1995 to approximately 19.3% in 2012). The other good news is that mixed-used tall buildings are more profitable in terms of eco-nomic crisis and recession. The developer may choose one of the most popular types of mixed-use buildings: of-ifice/hotel or hotel/residential or office/residential. The landmark mixed-use buildings built recently in China (e.g. Shanghai World Financial Center (492 m) which contains an office section, hotel section, and public observation deck) are complex mixed-use buildings consisting of more than 2 programs. Hong Kong International Commercial Center (484 m) also contains many uses including hotel, office, retail, and public (observation deck). Because the modern architectural design is based on flexibility of spaces, the disastrous residential high-rise projects may be easily transformed to profitable mixed-use buildings. This will surely help to increase return on investments and prevent construction sphere from sharp slowdown.

By decreasing the percent of residential high-rise buildings in favor of mixed-use high-rise buildings in China, we'll get an opportunity to prevent the big slowdown of Chinese economy on the whole.

And this will be an effective preventative measure to defend the Chinese economy from the effect of a weakening Eurozone economy. In case of a breakdown within the European Monetary Union, the Chinese economy will surely suffer, but a consistent policy in the construction sphere may prevent it from a crucial and dramatic collapse.

But let's come back, to Russia. Realization

of large-scale high-rise projects in Moscow, Yekaterinburg and Grozny entered its final stage – the definite terms are announced and basic teams "developer – architect - engineer" are already formed for most of the projects. As for the other cities with high-rise components – Kazan, Ufa, Volgograd, Vladivostok, Novosibirsk, Saint-Petersburg – here the tall buildings are located like point blocks. The number of such blocks tends to increase annually. The political will of city governments changes to better. E.g. public representatives in Saint-Petersburg were against construction of Lakhtha-Centre (Headquarters of Gazprom-Neft Corporation) during a long period. It took CTBUH Russian activists almost 3 years to convince the people in positive impact of the tall buildings to the city. Now 2 of the 101 tallest buildings in Russia are located in Saint-Petersburg and almost 10 are under construction.

Today it's hard time for high-rise construction in Russia. The banking crisis took place in December 2014 when a handful of insiders got fantastically rich in a moment. Thus the flow of cheap credits stopped and the amounts of investments in development drastically falled. As a result, several major projects in Moscow, Yekaterinburg and other million+ cities were not put into operation in time. We need new technologies, modern construction materials and innovative approach to economic efficiency of the tall buildings to make the high-rise construction market in Russia grow and flourish. This is the main condition of survival of the industry in terms of economic recession.

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