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## Rehabilitation of Recent Multiapartment Houses in Croatia

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### Summary

Multiapartment houses in Croatia, built between 1945. and 1985., represent a specific and quantitatively very prominent category. Nowadays, they are in a bad condition as a result of partly substandard construction and insufficient maintenance so that their constructive rehabilitation is really necessary. The interventions that are indispensable for technical reasons, mainly on facades, offer the opportunity for an artistic rehabilitation at the same time and at the same expense. Due to the actual circumstances in Croatia - the transition period and the inherited difficulties in management of houses, as well as the inability of making investments - the cost of this rehabilitations will have to be divided between the users and the social community.

### 1. Housing capacities in Croatia - condition, causes, potentials

The housing architecture in Croatia is also important from various aspects. Beside a high investment value which, for an adequate apartment, engages the biggest part of the whole life income of an individual or a family (up to 50% of an income compared with the developed countries where that percent is 5 to 10 times smaller), construction of apartment houses induces up to 20% of national production. Operation costs, which are higher when the buildings are of poor construction and bad maintenance (up to 5% of the investment value annually) represent a significant expense item. Having a disposable apartment is also an elementary social question, and with regard to their frequency and prominence, the apartment buildings are ambiantal, artistic and city-forming elements.

The recent political and economic changes will be reflected on the construction of apartment houses as well. There will be no more planned and politically motivated ventures typical for the former period. Now the houses will be built in accordance with the real possibilities of investors and of the relative constructive environment. Instead of constructing completely new settlements, the interpolations in narrow urban area will take place, but they will be of a considerably higher technical and artistic quality than the previous constructions. This will establish new estimations for the existing apartment houses and accentuate the already obvious necessity for their technical and artistic rehabilitation.

## **2. Some specific characteristics of the recent multiapartment buildings in Croatia**

The lack of financial assets and other difficult circumstances were not equally manifested in all constructive aspects. For example: the constructive safety of these multiapartment buildings is relatively very correct. The supporting construction is made in accordance with the existing static standards and regulations. It has been controlled and tested and then approved by the corresponding attestations necessary for issuing the licence for use. The functional solutions of flats, although of small surfaces and less "room space" than in the western averages of the time, have been also correct. The value of applicability of singular flats, if they would be used for the anticipated number of lodgers, is satisfactory from the functional aspects. Namely, these solutions have depended more on the designer's ability than on some material conditions. The critical side of these realizations is the finalization. After the rough construction works and after the correct execution of the supporting construction, final works on the skin of the building (facade and roof), on windows and doors, on the interior walls and floors were not properly realized and there was no quality level determined. Very often these final works were badly organized, causing mutual damages, and lasted unproportionally longer than these works had been included in the total price of the building. Regulations concerning the constructive physics required only a low level of the physical protection which is insufficient according to the today's regulations in force.

## **3. Rehabilitation of the "skin" of multiapartment houses**

The skin (or membrane) of a building includes roofs and facades i.e. the exterior surfaces (structures) which are very much exposed to damages. Due to the previously mentioned reasons, these structures in the after-war apartment houses were poorly built and have been damaged during the time - the damage which requires a constructor's intervention. Most of these buildings have flat roofs which have been leaking in spite of numerous repairs and the sloping roofs had to be added (although not designed). As the waterproofing layers and other layers of these roofs have been of a poor quality and insufficient, the subsequent addition of sloping roofs can be accepted under the condition that the new roof is elaborate in architectural terms and only on those buildings where the shape/design allows it. It is recommended to use the attic (which would rent the construction), provided that the new roof surfaces are correctly constructed from the physical and artistic point of view. The question of facade improvement from the architectural point of view, is even more exposed. Beside repairing damages, it should include the physical improvement according to the recent and more strict physical regulations, and the artistic improvement at the same time.

All these questions are out of organisational or financial reach of the tenants or even of their community, and they will have to be solved by the society/government both from the architectural and investment point of view. Rehabilitation of the "skin" of these buildings is evaluated to 5 to 10% of their investment value.