

Information on the State of Conservation of the Gelati Monastery World Heritage Property, Georgia

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NATIONAL AGENCY FOR
CULTURAL HERITAGE
PRESERVATION OF GEORGIA

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Context

In winter 2020 the roofing of Gelati Church of Virgin Mary, namely, the glazed roof tiles, made of white ceramics, got damaged. In addition to the damaged roofing, in the Church, namely, in the West arm, the water-related problem was identified, which, assumedly, caused damage of wall paintings. For the purpose of assessment of the defects, identified after rehabilitation works, field mission of the working group of the National Agency was organized on March 11, 2020.

During the field inspection, various damages and defects of roofing were identified. After the field mission, carried out in March, the National Agency, with involvement of the relevant specialists of the field, carries out step-by-step monitoring for the purpose of general assessment of the existing condition of the wall paintings and architecture/roofing and possible causes of damage/deterioration. Consequently, for the purpose of detailed assessment and analysis of the condition, 9 scheduled and 2 unscheduled monitoring missions were carried out in 2020-2021.



Photos: Upper part: May 22, 2020. Lower part: June 17, 2020. Exterior and interior parts of the south wall of the west arm.

In the framework of the monitoring missions of March 11, April 30, May 22, June 16-19, August 10-11, October 2-3, November 24, 2020 and January 10-11, March 8, April 29, 2021:

- Condition assessment of the wall paintings, existing in the Church of Nativity of Mary, St. George Church and the King David's Entrance was undertaken; historically damaged/deteriorated, stable areas and areas with active deterioration were sorted. The condition phenomena were recorded according to the types and the activation process of deterioration was determined.
- The condition of the facades and interior was visually studied and possible correlations between them were established;
- The roof rehabilitation of the main church was broadly undertaken in stages between 2013-2019. In 2020 the defects of roofing were revealed. The defects have affected the wall paintings of the church, which was recorded during the 2020 monitoring.
- Condition monitoring of the deteriorated fragments was undertaken and partial removal of salt efflorescence on the west arm was regularly conducted in 2020.

Condition as per March 11, 2020. **Condition as per April 30, 2020, before partial removal of salt** **Condition as per April 30, 2020, after partial removal of salt** **Condition as per June 19, 2020, before partial removal of salt**



An increased amount of salt efflorescence

An increased amount of salt efflorescence. A distribution pattern of the efflorescence is changed.

Note: all monitoring activities, carried out by the National Agency for Cultural Heritage Preservation of Georgia is performed from the floor level (for the exception of the west arm of the central space of the main church), consequently, general (macroscopic) condition of the church is shown. For detailed assessment of wall painting condition, scaffolds should be constructed in all spaces and paintings should be studied from close up.

On the basis of study of general condition it outlined, that ***one of the main*** source of deterioration of Gelati Monastery Complex is atmospheric precipitations, and the activation mechanism is fluctuation of humidity and temperature.

Impact of rainwater and uncontrolled environment at the churches of Nativity of Mary and St. George have been led to direct damage and deterioration process of the building material and wall paintings of the monument.

The major recent damages of the façade and wall paintings at the churches at Gelati monastery complex seems to be mostly associated with improper condition of roofing and impact of the water on the structure.

After July 2020, based on the demand of the National Agency for Cultural Heritage Preservation of Georgia, preventive measures of roofings are being implemented step-by-step in the Church of Nativity of Mary and Saint George, aiming at termination/hampering of water infiltration process in the interior in the Church of Nativity of Mary and protecting the church of Saint George from possible damages, as well as termination of the impact of the water, coming from the roof, on the façade.

The Results of Monitoring

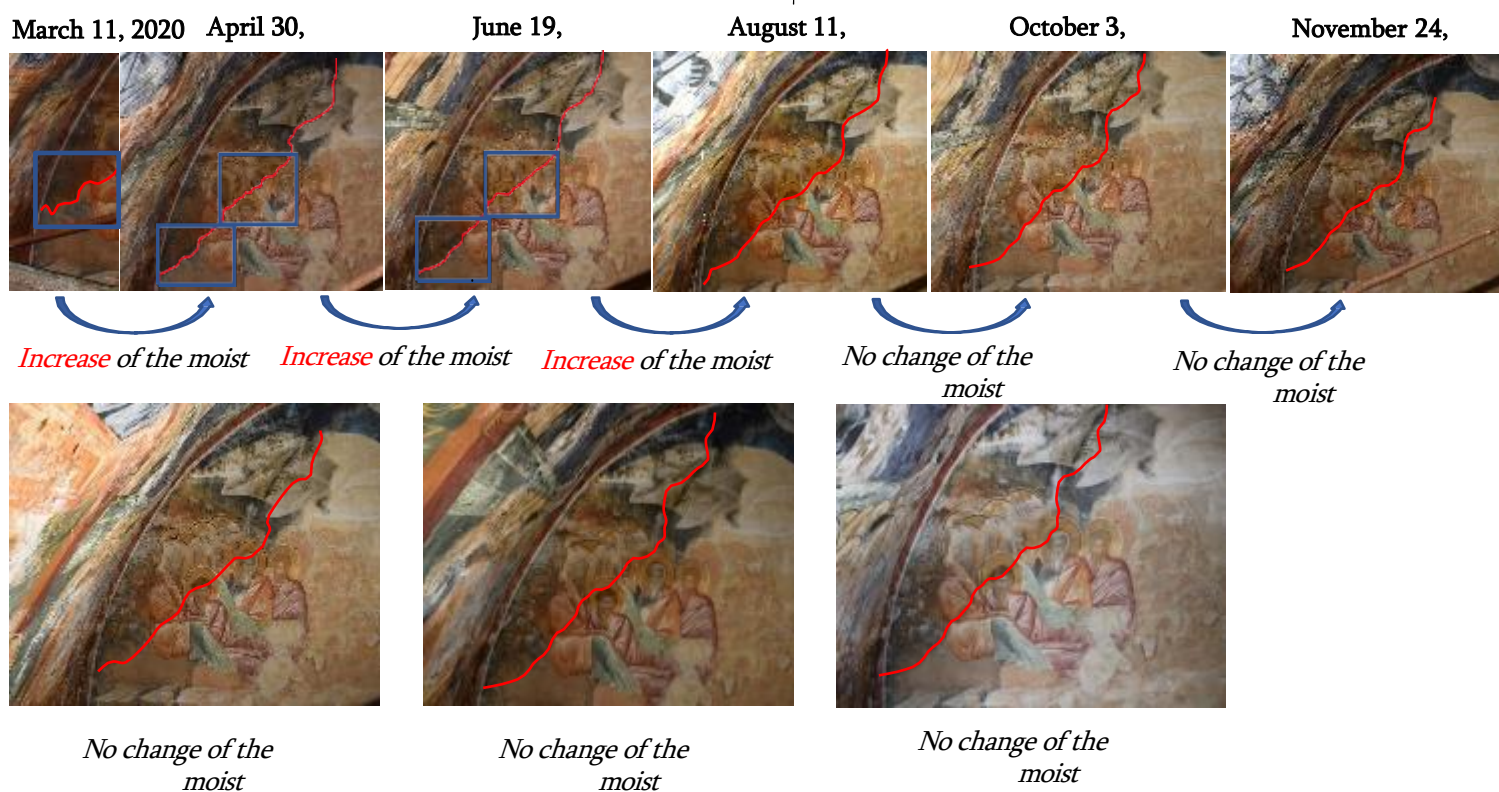
Church of Nativity of Mary

On the basis of archive materials (2005-2019) of Gelati main church and on-site assessment of the condition (2020-2021), loss of wall paintings and historical repairs were revealed. Moreover, severe and complex condition phenomena were observed, such as biological activity, plaster and repair material delamination and powdering, flaking and powdering of the paint layer, salt efflorescence.

The above-mentioned condition phenomena are mainly related to the infiltration of water from the roof into the interior, impact of the water flow, coming from the roof, on the façades (especially on cornices and at socle level), uncontrolled environmental conditions, activation of salts in the wall structure, and, as a result, disintegration of the wall paintings. It should be mentioned, that in the Church of Nativity of Mary not only new, but also historical damages/deterioration and their activity are recorded.

According to the data collected on scheduled monitoring, active source of deterioration – ongoing problem of water infiltration – in the Church of Nativity of Mary *was recorded only in the west arm*. After August 10-11, 2020, according to the data of October 2-3 and November 24, 2020 and January 10-11, March 8, April 29, 2021 the process of ‘wetting’ of walls, caused by water infiltration in the west arm, seems terminated, which should be related to the preventive measures, arranged on the roof.

West Wall - West Arm



It should also be mentioned that active source of deterioration of the facades and interior of chapels and entrance was the impact of water, flowing to the facade from the roof, namely, the rain water was flowing from the roof to the façade walls, especially cornices, falling onto the socle stones and accumulating around the church along the perimeter. Preventive measures (temporary solid roofing and system of gutters) should slow down the deterioration process of wall paintings and façade.

Despite the circumstance that at this stage water infiltration process in the west arm seems to be terminated and water diversion system is arranged, the problem related to the activation mechanism of deterioration persists in the entire space of the central church, which should be related to the uncontrolled environmental conditions and degradation process of wall paintings.

The above-mentioned issue requires long-term monitoring of environmental conditions, data analysis and development of conservation strategy of the wall paintings.

Presently, the deterioration in the narthex, chapels and entrances of the central church are mostly stable (no visible change). The degradation process of wall paintings at the level of the vault of the south and north arms is slow, but ongoing. The degradation rate of the wall paintings on the north wall of St. Marine chapel, walls of the vault of the west arm of the central space is quite high, which is caused by termination of the source of water infiltration and quick drying process of the structure.

St. George Church

As a result of the scheduled and unscheduled monitoring missions, conducted in St. George Church in 2020-2021 it was established, that no major visible damages are noticed on the roofs, joints of glazed roof tiles and/ or walls.

The deterioration process of the church facades, cornices, socle and the parts, adjacent to the socle is ongoing. On the monitoring areas of the façade visible major deterioration process has not been noticed, however, façade remains under critical circumstance due to the long-term absence of gutters, which was causing deterioration with the direct impact of water on facades; because of it, in the interior of the church, in the lower parts of the walls, active biodeterioration (deposition is recorded in the photos, taken on the verge of 2017-2018 as well) and salt crystallization process occurs.

General condition of wall paintings of St. George church is stable. As a result of condition analysis/assessment of monitoring areas it can be said, that apart to the donors' figure, presented on the south wall and south wall of the west arm, minor changes, existing in other sections, expressed in falling and/or disintegration of salt layer, should be related to the existence of unstable environmental conditions and not to the currently occurring water infiltration.

Consequently, the fallen smallest particles, occurring in the lower parts of the walls and in the space under the dome, is mainly likely be related to: 1. Falling/loss of thick layer of salt, existing on the pendentives and dome belt and/ or falling of powdered plaster particles in the same sections; 2. Falling of salt crystals existing in the lower parts of the walls.

Recommendations

Recommendations of the first phase

Long-term monitoring of environmental conditions

- Arranged long-term monitoring system of environmental conditions in St. George Church and Church of Nativity of Mary in order to identify the activation mechanism of deterioration, impact of macro-climate (environment, existing outside the church) on microclimate (internal space of the church) and their possible impact on the condition of the wall paintings. Besides, long-term strategy of conservation of the wall paintings should be developed. It should be mentioned that changes of environment will be related to the number of measures until the problems on the roofs of the Church of Nativity of Mary and St. George Church are completely eliminated and works obtain final form.

Scheduled monitoring and immediate interventions

- Continuation of regular monitoring of the condition of paintings of both churches till initiation of full-scale conservation study of wall paintings.

- In both churches, in the framework of emergency remedial intervention, local stabilization of the extremely deteriorated plaster layer must be undertaken (using relevant methodology and documentation).
- As a part of emergency remedial intervention, mechanical removal of newly crystallized salt from wall paintings should be undertaken. Intervention should use dry cleaning method and attach a relevant documentation. Minimum intervention is necessary for slowing down of wall painting degradation process. The above-mentioned intervention should be implemented by conservation specialists of wall paintings.

Full-scale studies:

- In-depth study of the condition of roofings and façade and technology (original and added materials) of the Church of Nativity of Mary and St. George Church with involvement of international institutions and guest experts in order to identify the sources of damage/deterioration and ways of their elimination.
- Initiation of long-term conservation study of wall paintings of the Church of Nativity of Mary and St. George Church with involvement of international institutions and guest experts. It should be taken into consideration, that complete implementation of conservation study of the wall paintings is impossible before study of damages, related to roofings and their complete elimination, consequently, it is necessary to observe the sequence of conservation projects of architecture and wall painting.