MIRE RESTORATION IN DEGRADATION LANDSCAPES CAN BE ACHIEVED IN VARIOUS WAYS. THE MOST COMMONLY USED IS THE WATER LEVEL ELEVATION BY BLOCKING THE DRAINAGE SYSTEM. IF WETLAND CONDITIONS ARE SUCCESSFULLY RESTORED, EXTRACTED PEATLANDS WILL OVERGROW WITH MOISTURE-LOVING PLANT SPECIES WHICH WILL DECAY AND FORM THE PEAT WASTE, WHICH CAN AMOUNT TO MANY HUNDRED YEARS. PLANNING OR RE-INTRODUCTION OF MIRE PLANTS IS A NEW AND A TERRIBLE TESTED SOLUTION IN LATVIA. IT AIMS AT ACCELERATING THE RESTORATION OF THE CHARACTERISTIC MIRE VEGETATION IN AREAS AFFECTED BY PEAT EXTRACTION, WHICH MAY SPEED UP THE RESTORATION OF A FUNCTIONING WETLAND ECOSYSTEM. IN ORDER TO FACILITATE REGENERATION OF THE MIRE VEGETATION, IN MAY 2015 EXPERIMENTAL PLANTING OR RE-INTRODUCTION OF SPHAGNUM AND OTHER MIRE PLANTS WAS CARRIED OUT ON A PARTIALLY EXTRACTIVE PEAT FIELD IN THE DEMO SITE OF THE PROJECT “SUSTAINABLE AND RESPONSIBLE MANAGEMENT AND RE-USE OF DEGRADATION PEATLANDS IN LATVIA” (LIFE RESTORE, LIFE14 CCM/LV/001103).

After the site selection and the development of a cultivation plan, the creation of conditions suitable for mire vegetation restoration had to be created:

1. Excessive vegetation was removed. Field ditch was blocked at the northern edge. The surface level was lowered (3.60 m a.s.l.) towards northern and southern edges and topographic terraces were created. To prevent long-term waterlogging, two curvilinear (5%) were located in southern edge of field ditch.
2. The peat core was divided into four 30 x 35 m experimental plots where sphagnum mosses were planted. In five of these plots peat surface was removed and surface was smoothed (Figure 4).

After sphagnum planting material was harvested manually in adjacent Drabiņu basin one day before planting. Vegetation was collected as clumps. The collected vegetation consisted of sphagnum and other mire plants.

On May 18, 2018, the mosses were planted with the help of 62 volunteers. In total, 2200 kg of sphagnum were planted in an area of 3200 m² (Figure 2). Sphagnum was planted as clusters (5x5 cm) instead of scattering sphagnum fragments. Sphagnum groups were evenly planted 0.5 m apart from each other. In some places, individual mire plants were also spread, to see if it will start to grow.

Fields were covered with straw (Figure 6), in order to protect plants from direct sun exposure and drying out. 1500 kg of straw were spread evenly across the area. The summer of 2018 was very dry. Sphagnum plantings were watered during the first vegetation season.

In autumn of 2018, sapling planting experiment was supplemented by a small terrace-irrigation planting experiment. Two 2 x 3 m experimental plots were established at various depths (0.30 m and 0.15 m) (Figure 4, Figure 7), after removing the top layer of peat so that the surface to be planted was close to the groundwater table.

Groundwater table was monitored. 8 groundwater observation wells were erected (Figure 8) in demo site and in its immediate vicinity. Hydrological measurements were undertaken manually with Electric Contact Meter Selia KLL Mini, 10m.

In 2017, 18 permanent vegetation plots were established in the buffer zone of the demo site, before the sphagnum planting. This will provide a possibility to compare the vegetation development in sphagnum planting plots with the areas where peat surface was not restored and sphagnum mosses were not planted.

The experiment carried out in Kemeri Mire is valid for the evaluation of the re-vegetation possibilities of sphagnum mosses and other mire plants in Latvian conditions. The renaturalisation of peat extraction sites requires work that can only be assessed in long term. This is an experiment whose success or failure will be measurable after several years, so a regular vegetation and groundwater table monitoring must continue.