

## **Community based ecological restoration of peatland in Central Mongolia for climate change mitigation and adaptation**

Tatiana Minayeva (1), Dugarjav Chultem (2), Ab Grootjans (3), Jambaljav Yamkhin (4), Andrey Sirin (5), Gennady Suvorov (5), Oyunbileg Batdorj (6), and Batdorj Tsamba (6)

(1) Care for Ecosystems UG, Bonn, Germany (tania.minajewa@gmail.com), (2) Institute of General and Experimental Biology Mongolian Academy of Sciences, Mongolia, (3) Radboud University Nijmegen, The Netherlands, (4) Institute of Geography & Geoecology Mongolian Academy of Sciences, Mongolia, (5) Institute of Forest Science Russian Academy of Sciences, Russian Federation, (6) Monhydroconstruction LLC, Mongolia

Peatlands cover almost 2 % of Mongolia. They play crucial role in regulation of key natural processes in ecosystems and provide unique resources to maintain traditional way of life and livelihoods of herders. During the last decades, Mongolian peatlands severely degraded both due to the climate related events and due to overgrazing. The peat degradation causes significant losses of carbon store, GHG emissions and is followed by changes in water balance and water composition. The issue arises if such a type of ecosystems as peatlands could be a subject for ecosystem restoration in this arid and subhumid climate. Could it be considered as measure for climate change mitigation and adaptation?

With funding opportunities from the Asian Development Bank a pilot project for peatland restoration had been launched in 2016 in Khashaat soum, Arkhangai aimag in Central Mongolia. The pilot aimed to merge local interests of herders with global targets of climate change mitigation. The following questions are addressed: what are the losses of natural functions and ecosystem services of peatland; what are expectations and demands of local communities and incentives for their involvement; how should and could look the target ecosystem; what are the technical solutions in order to achieve the target ecosystem characteristics; and what are the parameters for monitoring to assess the success of the project?

The comprehensive baseline study addressed both natural and social aspects. The conclusions are: most of peat in the study area had been mineralised and has turned to organic rich soil with carbon content between 20 to 40 %, the key sources of water – small springs - are partly destroyed by cattle; the permafrost disappeared in this area and could not be the subject for restoration; local herders understand the value of peatland as water source and had carried out some voluntary activities for water storage and regulation such as dam construction; nevertheless there is no understanding of functional particularities of peatland ecosystem and restoration efforts are not effective.

Following the baseline study the concept for ecosystem restoration project had been developed. The approach was to merge community based solution with scientific approaches. Restoration in subhumid conditions should avoid creation of open water surfaces, like channels or reservoirs, and deal with integrative ecosystem management. The restoration concept involved fencing of springs, preventing erosion and enhancing water accumulation in soil by cascades of small dams and other small scale ecological solutions. At the same time to meet the needs of local herders, it was decided to repair the dam, constructed by herders, even if it has little value for peatland restoration. The engineering design is now ready and will be implemented next months.

The last part of the pilot is monitoring. The parameters determined in the baseline study are included in monitoring program to help to evaluate: carbon sequestration rate, GHG emission reduction, water retention, soil humidity, pasture productivity, social integrity and impact on livelihoods.