FACTSHEET RISK REDUCTION MEASURES

Repair of a mill ditch system and a quarry lake - Kirchsteigbachtal

Where was it implemented?

City of Meissen, Saxony, Germany

Fields of action

Watercourses

Related to measure from the catalogue of measures

- Drainage ditches; swales
- Increasing the retention capacity of existing channels and floodplains by restoration

Area characterisation

Area type: rural/urban, settlement area

Landscape type: hilly

Unused mill ditch which acted as a drainage system during the heavy rain event.
Source: Sabine Scharfe, LfULG

Problem

On 27 May 2014, the district Meissen-Triebischtal was affected by a heavy rain event of 40-60 l/m² precipitation per hour in the catchment area of the Triebisch river and its tributaries. Resulting floodings and mud flows on and from farmlands passed the forested valleys, reached the settlement area of Triebischtal and caused damages of 6 mio. Euro. The damage in the populated area would have been even higher if a large volume of water had not been collected and retained or drained off by an old mill ditch, which was partly closed in the past.

Description and aim

The old and unused mill ditch system "Mühlgraben" fortunately collected and redirected much water, mud and sludge during the heavy rain event and protected the residential area from damages. The functional benefits of the existing system of → **drainage ditches** for controlled surface runoff and for → **increasing the retention capacity of existing channels and floodplains** was recognised and the ditches were restored immediately after the heavy rain event (picture above). Restoring measures are not completed yet.

Additionally, the quarry lake "Kleiner Königssee", located at the slope of a stone quarry (picture below), was connected to the "Mühlgraben" by intense erosion processes during the heavy rain event, which created a canyon-like situation. This canyon was kept, partially expanded and is designated to be considered for controlled surface water runoff from the stone quarry area in future plannings.

Effect of measure

The unused mill ditch system acts as a linear structure and retention area for controlled water runoff in case of heavy rain events and protects the underlying area from floods. Intense and uncontrolled water runoff is retarded and its peak is attenuated. This measure almost restores the full functionality of the mill ditch system.

Stone quarry lake in the valley “Kirchsteigbachtal”. Source: P. Voigt

Description of implementation

Effect horizon:
long-term

Costs:
80.000 €

Involved stakeholders:
building department, lower water authority

Initiator / responsible:
City of Meissen

Lessons-learned

Main success factor:
Restoring of old, existing drainage systems brings many benefits: its effect becomes visible when it comes to a flood event. In contrast to a totally new investment, restoring of the existing drainage system might be less costly and is hence regarded as a reasonable decision by inhabitants. Little effort, high effect.

Main challenge:
Finding a common solution with neighbouring property owners of the mill ditch for renaturation.

Consideration of nature conservancy concerns.

Ensuring long-term financing for continuous incidental maintenance costs.

Synergies / beneficial aspects:
Not executed yet, but planned, is the recultivation of the quarry lake “Kleiner Königssee” as a spawning ground. Currently it is already a salamander habitat.

Old mill ditches and stone quarries are relics of historical land use. Restoring measures can bring advantages for protecting such a historical cultural landscape and can increase its experiental value.

Conflicts / constraints:
The full functionality of the old mill ditch could not had been restored anymore due to development in building structure in the past.

Possible complaints by adjacent residents if high water level is long-lasting, puddles of water remain or water infiltrates into the settlement area.

Key message to others starting with a similar task

Check maps and documents for old and possibly forgotten watercourses in your region. They serve as a solid starting point for further measurements.

Contact

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Further information (in German)

Steffen Wackwitz (2015): Das Starkniederschlagsereignis in Meissen im Sommer 2014, in: WasserWirtschaft 9/2015, URL: https://www.springerprofessional.de/das-starkniederschlagsereignis-in-Meissen-im-sommer-2014/6110106, 13.11.2019.