

Implementation of restoration measures in Switzerland between 2011 and 2019

Mise en œuvre de revitalisations en Suisse entre 2011 et 2019

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RÉSUMÉ

La biodiversité aquatique en Suisse est particulièrement menacée. Le degré élevé d'aménagement et l'exploitation intensive des cours d'eau portent atteinte à cet habitat et aux biocénoses qu'il abrite. La loi révisée sur la protection des eaux de 2011 exige que nos cours d'eau retrouvent un état plus naturel. Elle oblige les cantons à remettre dans un état proche de la nature les cours d'eau corrigés, rectifiés et aménagés (cours d'eau et rives de lacs). Sur une période de 80 ans, environ un quart des quelque 14'000 km de cours d'eau aménagés doivent être revitalisés. Les cantons ont planifié stratégiquement les revitalisations jusqu'à fin 2014. Les premiers projets ont été achevés dès 2012. Au cours des années suivantes, le nombre de revitalisations mises en œuvre a augmenté et s'est actuellement stabilisé entre 60 et 80 projets par an. Actuellement, l'objectif de revitalisation de 50 km par an n'est pas atteint avec environ 18 kilomètres par an, mais depuis 2011, 160 km au total ont pu être revalorisés. Jusqu'à présent, ce sont surtout les petits cours d'eau qui ont été revitalisés. Dans les années à venir, la mise en œuvre de projets de revitalisation doit s'accélérer. Ceci non seulement pour atteindre les objectifs quantitatifs (50 km par an), mais aussi pour faire face aux effets négatifs du changement climatique.

ABSTRACT

Aquatic biodiversity in Switzerland is particularly endangered. The high degree of construction and the intensive use of water bodies impair this habitat and the biotic communities that occur in it. The revised Water Protection Act of 2011 requires that our water bodies become more natural again. It obliges the cantons to restore corrected, straightened and obstructed watercourses (rivers and lakeshores) to a near-natural state. Over a period of 80 years, around a quarter of the approximately 14,000 km of built-up watercourses are to be restored. The cantons have strategically planned the restorations until the end of 2014. The first projects were already completed in 2012. In the following years, the number of implemented restorations increased and has currently settled between 60-80 projects per year. Currently, the restoration target of 50 km per year is not reached with about 18 kilometers annually, since 2011 a total of 160 km could be upgraded. So far, mainly small watercourses have been restored. In the coming years, the implementation of restoration projects must accelerate. This is not only to achieve the quantitative targets (50 km per year), but also to counter the negative effects of climate change.

KEYWORDS

Implementation, restoration, climate change

1 INITIAL SITUATION AND OBJECTIVE

In 2011, the Swiss Water Protection Act was revised. The cantons are now obliged to ensure the restoration of water bodies. The restorations are to be strategically planned every 12 years. The majority of the projects are implemented under the responsibility of the cantons. In 4-year, so-called

program agreement periods, a budget for the implementation of projects is negotiated with each canton. The federal government participates with comparatively high subsidies of 35-80% per project. Financial information is reported annually by the cantons. Before 2017, however, the Confederation did not have detailed information on how many and which projects were implemented with the negotiated funds.

For this reason, implementation control was established in 2017. The cantons must provide information on implemented projects to the FOEN on an annual basis. This information is required for various reasons:

- Information of the public about the implementation of restorations.
- Information to the parliament on the implementation of restoration
- more detailed information to manage the restoration program efficiently

Data on implemented projects are queried using Excel. Information on the water body, location, length, types of measures and financial figures are collected. A total of 4 different project types are distinguished.

- Restoration of watercourses: Removal of bank and/or bed obstructions, or morphological upgrading of obstructed sections of watercourses, as well as ecological upgrading of banks and watercourse areas. Also includes the deconstruction/conversion of transverse structures (for a more detailed range of measures, see Figure 6). This type of project may be a revitalization project or a combined project.
- Lake shore restoration: Removal of bank and/or bed structures, or morphological upgrading of obstructed lake shore sections, as well as ecological upgrading on the shore of the shallow water zone and in the watercourse area (for a more detailed range of measures, see Figure 10).
- Measures for bedload remediation: remediation/removal of bedload collectors, or measures to increase bedload input or bedload mobilization in the case of non-hydroelectric power plants.
- Restoration of longitudinal connectivity: selective structural measures in watercourses to restore free fish migration by dismantling or restoring transverse structures in non-hydroelectric power plants.

2 RESULTS AND CONCLUSION

Between 2011 and 2019, a total of 160 km of impounded watercourses (rivers and lakeshores) were restored and 577 transverse structures were removed. Restoration of watercourses is mainly carried out on the Central Plateau, where the degree of obstruction is also highest. Projects are mainly implemented on small watercourses. On average, between 60-80 projects are realized per year (fig. 1).

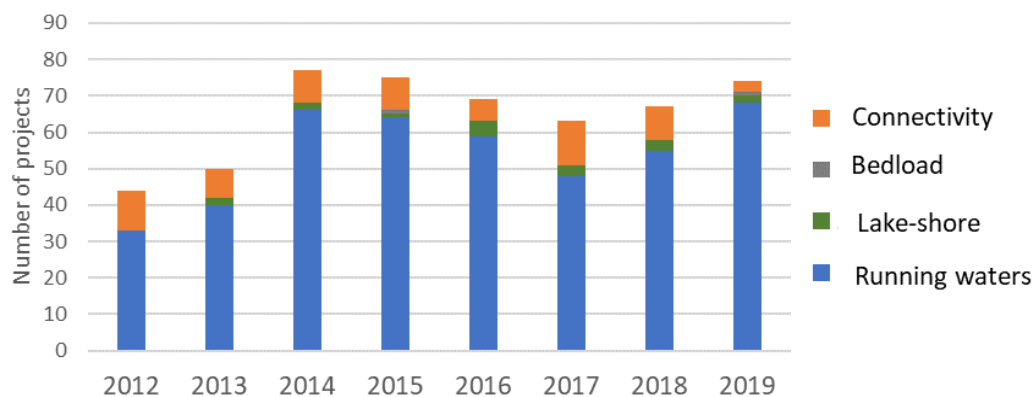


Fig. 1: Number of completed restoration projects by year in 2011-19, broken down by project type.

Restoration projects on lakeshores and bedload remediation at non-hydropower plants, on the other hand, have so far been implemented rather rarely. With the strategic restoration planning for the lake shores in 2022, this type of restoration will become more important. Longitudinal connectivity measures are already being targeted in individual cantons. With the update of the strategic restoration planning for watercourses by the cantons in 2026, aquatic longitudinal connectivity will be systematically included as a fixed planning component, based on the mapped falls from the ecomorphology survey.

The target of 50 km of restoration per year (derived from 4,000 km in 80 years) has not yet been reached. On average, just under 18 km per year have been restored to date (2012-2019; 2011 not included as a transition year after GSchG revision). The reasons for falling short of the target are manifold. First of all, it must be taken into account that a restoration project has a planning period of several years between project idea and implementation. Projects can be further delayed by possible objections or difficult land negotiations. The steadily increasing number of projects implemented between 2011 and 2014 shows that a start-up phase was needed before implementation got underway. The financial figures also show that the federal funds for restoration projects were not used up in the beginning. However, this has reversed in recent years, and the majority of federal financial resources are being utilized or even exceed the available funds at times.

Since 2014, the number of projects implemented each year has stopped increasing. Despite the greatest possible utilization of federal subsidies, the implementation target of 50 km per year will probably not be reached at the moment. Restorations are therefore more cost-intensive in the current implementation than was expected by parliament with the GSchG revision in 2010. In order to achieve the implementation target of 50 km per year, either the federal funds must be increased or the restoration must be designed more cost-effectively, e.g. by relying more on a self-dynamic development after initial removal of the bank protection.

With the impact monitoring, which started in 2020, the effect of implemented restorations on flora and fauna and habitat diversity will be evaluated. With the uniform and standardized data collection, a foundation stone has been laid to initiate a national learning process. The scientific knowledge gained will be fed back into practice in the future by means of concrete recommendations for action. The derivation of recommendations for action from the learning process will be coordinated with the timing of strategic planning.

Accelerated and efficient implementation of restoration is indicated not only for reaching the target of about 50 km per year. Recent years have shown that the consequences of climate change are already having a significant impact on Swiss water bodies, particularly through periods of drought and heat in summer. Already today, these extreme summers represent a major challenge for salmonid fish species, such as grayling and trout, which depend on cool and oxygen-rich water. With the expected further temperature increase of 2°C by 2040, this situation will become much more severe. In order for temperature-sensitive species to respond, restoration efforts need to be implemented as quickly as possible. Restorations can increase the resilience of water bodies. Interconnected water bodies shaded by riparian vegetation and rich in structure provide opportunities for species under stress to seek refugia and thus escape critical environmental conditions. Dynamic and natural habitats also help native, specialized species hold their own against immigrant, alien species. Accelerated implementation, beyond the target of 50 km per year, would therefore be an important contribution to supporting biodiversity.

LIST OF REFERENCES

(none)