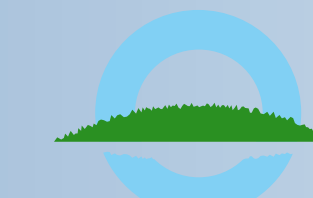


# Environmental flow – an important river restoration method in regulated rivers



SYKE

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## Environmental flow concept

- The organisms living in rivers and riparian areas have adapted to natural dynamics of river. Even small changes in natural flow can significantly undermine the river ecosystem due to sensitive balance between biota and environmental conditions in the river
- *The basic idea of the environmental flow is to maintain the quantity, quality and duration of the flow sufficient to maintain the river and riparian ecosystem in a good state*
- Environmental flow methods are used for example to protect vulnerable fish species, riparian vegetation, water quality and groundwater



- Although water in rivers is renewable, it is finite and becomes insufficient to meet all the addressed needs. In many European rivers the river flow has been altered by using dams and weirs for regulating natural rhythm of flow.
- Environmental flow is a relatively new concept in Europe. In many countries, principles behind the concept have been applied on a case by case basis, but there are no common principles of environmental flow assessment.
- *There is a pressure to develop an approach on how to assess and apply the concept of environmental flow in European countries.* For example, in fisheries there is a strong trend towards restoring the original migratory fish stocks through natural reproduction.
- Considering environmental flow, hydropower production is the most obvious hindrance. There is a need to investigate suitable methods of mitigating the negative effects of hydropower production by using the environmental flow concept as a part of river restoration. This will enable more sustainable use of hydropower, which will add to its usability as a source of clean energy while responding to the objectives of the WFD.

## Guiding principles:

### EU2020 Strategy

- » The use of renewable energy resources should be increased.
- » Hydropower is the main renewable energy resource in many European countries. At the same time it is the largest threat for vulnerable migratory fish species.
- » There are no guidelines in the EU2020 strategy on how to mitigate/compensate the negative effects of hydropower production.

### Blueprint to Safeguard Europe's Water Resources

- » The Blueprint will help in achieving the goal of WFD by identifying the obstacles and ways to overcome them.
- » The European Commission has recommended that the EU member states should determine environmental flows using the approved methods to ensure the objectives of WFD.
- » The identification of environmental flow, meaning the amount of water required for the aquatic ecosystem to continue to thrive and provide the ecosystem services.

### Water Framework Directive (WFD)

- » The most important objective is to achieve a good ecological status (GES) for all waters by 2015.
- » Heavily Modified Water Bodies (HMWBs) form an exception: regarding them the aim is to achieve Good Ecological Potential (GEP).

