

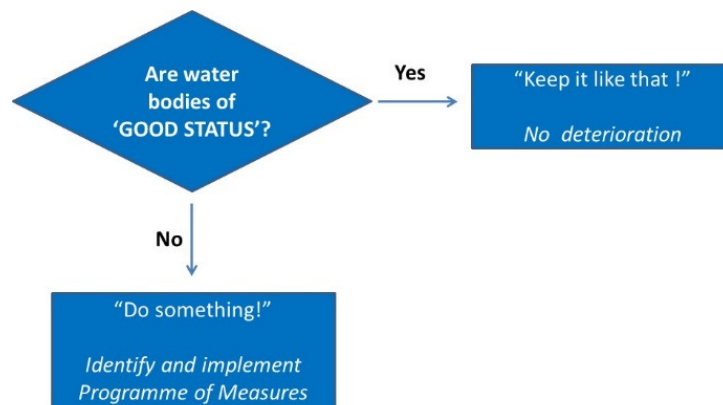
Examples of the relevance of environmental standards in the development of River Basin Management Plans

Prepared by , June 2014

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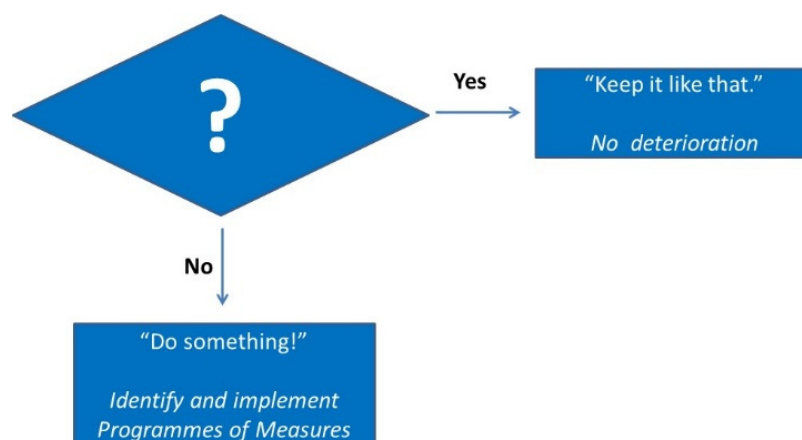
1 Introduction

The ultimate objective of the Water Framework Directive (WFD) is achieving 'good status' in all water bodies. Consequently, the key to developing a River Basin Management Plans (RBMP) under the WFD could be outlined like in the scheme below.



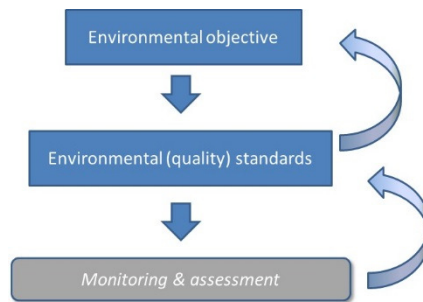
Kosovo is not yet in the position for assessing the status of water bodies in line with the criteria that have to be applied under the WFD. One of the main problems is the lack of the various monitoring data needed for assessing the status.

Alternative objectives for water bodies, together with supporting environmental standards, have not been defined and adopted yet. This could lead to a crucial void in the development of RBMPs. After all, what to refer to for deciding whether or not one should implement a Programme of Measures? This situation could be as visualised as follows.



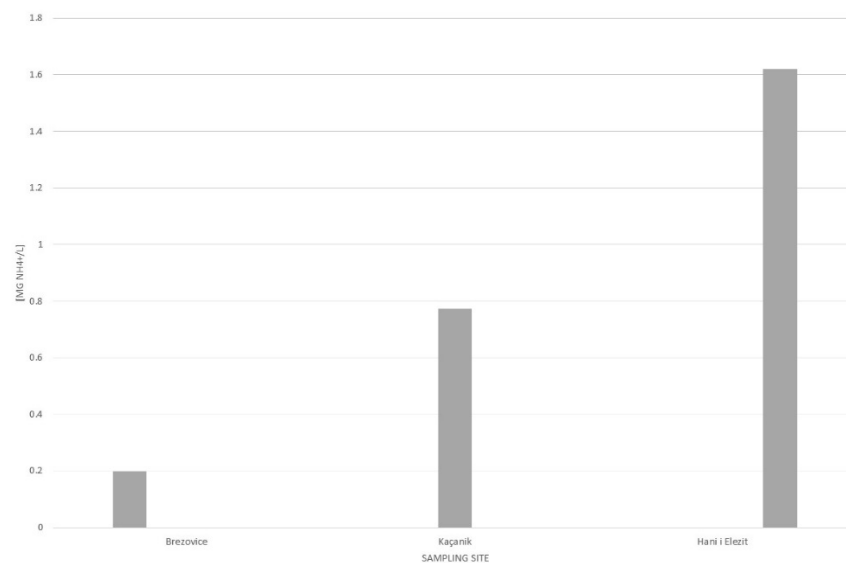
2 Environmental standards

Environmental (quality) standards can be regarded as the criteria that make ‘measuring’ the environmental objective operational.



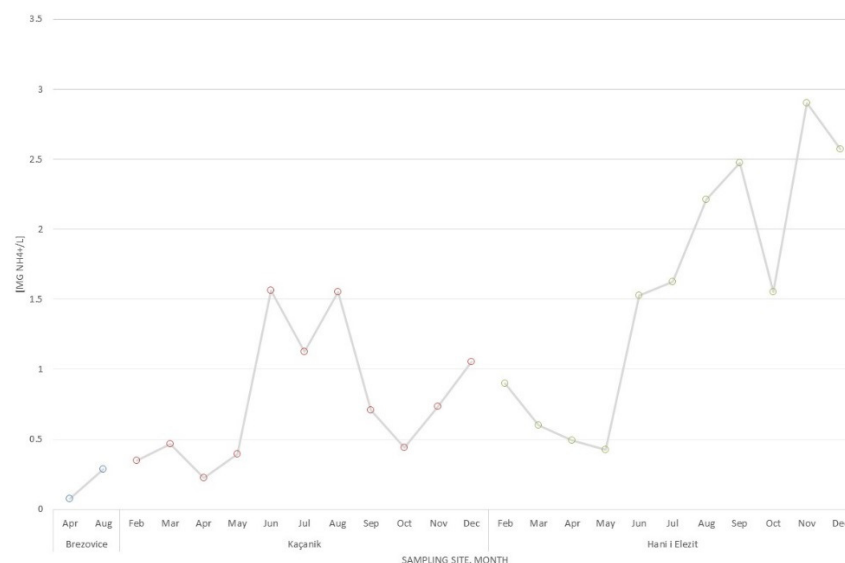
In Kosovo, the routine river water quality monitoring programme is conducted by the Hydrometeorological Institute of Kosovo (HMIK). Figure 1 shows the average total ammonium (NH_4) concentrations over the period 2009 – 2012 for the three sampling sites along the Lepenci River. The average concentrations increase from 0.2 mg NH_4/l upstream at Brezovice to 1.6 mg NH_4/l downstream at Hani i Elezit.

Figure 1 Year 2009 – 2012 average NH_4 concentrations along the Lepenci River in Kosovo



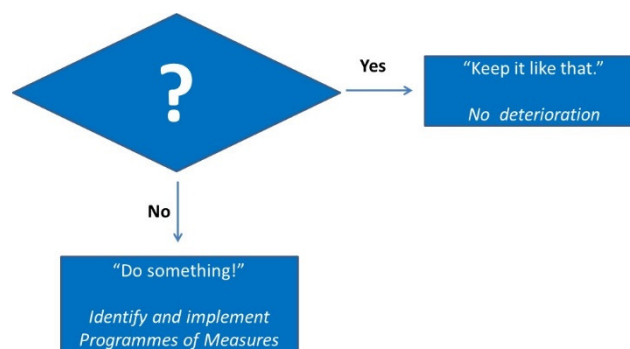
The next figure shows that furthermore the (average) monthly concentrations varied substantially, with maxima up to 1.5 mg NH_4/l at Kaçanik and nearly 3 mg NH_4/l at Hani i Elezit.

Figure 2 Monthly average (year 2009 – 2012) NH_4 concentrations along the Lepenci River in Kosovo



So far, the above two figures indicated that NH_4 concentrations along the Lepenci River increase from upstream at Brezovice to downstream at Hani i Elezit, while furthermore varying considerably throughout the months at Kaçanik and Hani i Elezit.¹

However, what does this imply for a Lepenci River Basin Management Plan? Will it be necessary to implement measures for reducing the pollution of the river with NH_4 ? What to refer to in order to assess and evaluate the water quality data for NH_4 ?



Obviously, the NH_4 concentrations in the Lepenci River remain merely descriptive, unless a certain environmental quality standard will be introduced for assessing and evaluating the significance of the concentration levels.

3 Example: the EU 'Fish Directive' 2006/44/EC

The Directive 2006/44/EC on the quality of fresh waters needing protection or improvement in order to support fish life² seeks to protect those fresh water bodies identified by Member States as fishery

¹ Brezovice is considered to be natural background/reference site, which are in principle sampled only twice per year.

² The Directive 2006/44/EC is a consolidated version of the original Directive 78/659/EEC.

waters. For those it sets water quality standards for salmonid fish waters and cyprinid fish waters. Salmonid waters must be capable of supporting fish belonging to species such as salmon, trout, grayling and whitefish, while cyprinid waters must support fish belonging to the cyprinids (Cyprinidae) or other species such as pike, perch and eel. Where the water quality in such designated waters is not in compliance with the standards, then programmes to reduce pollution have to be set up.

Annex 1 of the Directive 2006/44/EC contains environmental quality standards (EQS) for fourteen physico-chemical parameters. In the case of NH_4 , the mandatory limit concentration throughout a year is 1 mg NH_4/l , assuming that up to eleven (11) monthly samples are taken.

Applying this limit of 1 mg NH_4/l to Figure 2 adds a significant dimension, as illustrated by the next figure.

Figure 3 Monthly average (year 2009 – 2012) NH_4 concentrations along the Lepenci River in Kosovo, with mandatory limit of the Directive 2006/44/EC

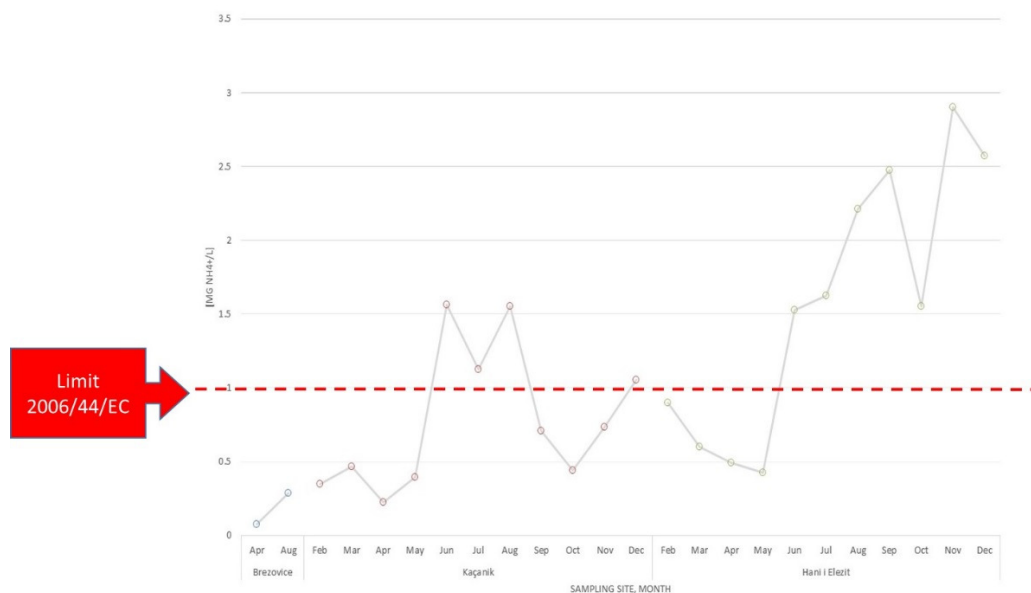
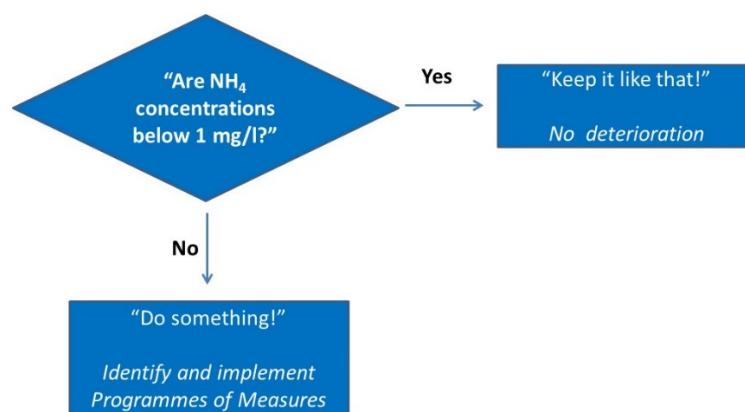


Figure 3 now ‘suddenly’ reveals that in case one would apply the EU Directive 2006/44/EC to the Lepenci River in Kosovo, a programme of measures will have to be implemented for reducing NH_4 pollution such that concentrations in the river will get below 1 mg NH_4/l !



4 Pressure – State – Impact – Response

Environmental standards are furthermore instrumental in a 'Pressure – Impact' analysis. A properly derived EQS is actually a risk indicator, since negative impacts could occur when the threshold level is exceeded. In the above example, NH₄ concentrations ("State") exceeding the EQS of 1 mg NH₄/l imply risks for salmonid and cyprinid fish ("Impact").

Extending on this example, the sources of NH₄ pollution ("Pressure") inside the Lepenci River Basin will have to be identified and located, in order to be able to formulate adequate Programmes of Measures for reducing NH₄ emissions ("Response"). The EQS can act as the benchmark for assessing the effect of measures, including their financial ramifications.

5 Closing remarks

This document envisaged illustrating the relevance of environmental (quality) standards in the preparation and implementation of RBMPs. The EU 'Fish' Directive 2006/44/EC was introduced as an example, but has definitely certain advantages. Firstly, it has been directing water management in EU Member States for many years.³ Secondly, it provides ways for relating basic physico-chemical water quality parameters like dissolved oxygen (O₂), biochemical oxygen demand (BOD₅) and total ammonium (NH₄) to an important group of aquatic species. Of course, another set of environmental quality standards for physico-chemical parameters in fresh surface waters might be selected for the development of the 1st series of RBMPs for Kosovo.

Ideally, environmental standards will be available not only for surface water quality, but also for other important areas for water management, including:

- surface water quantity,
- groundwater quality, and
- groundwater quantity.

³ For EU Member States, the Directive 2006/44/EC has been repealed by the end the year 2013, in favour of the WFD.