

Economic analysis for Heavily Modified Water Bodies (HMWB)

Case of hydropower

French test on Adour Garonne District

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Hydromorphology



WFD requests

Point 4.3 of article 4 : HMWB if

- ◆ The changes to the water body's hydromorphological characteristics that are necessary to achieve a good ecological status would have important negative effects on:
 - Environment in a wide meaning ;
 - Specific water uses (navigation, regulation of flows, flood protection...);

- ◆ The positive targets expected by the modifications of the water body cannot be reached due to technical feasibility or disproportionate costs by other means, which constitute a better environmental option.

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Pieces of information of the european guide

Groupe HMWB 2.2 between April 2000 and November 2002
34 case studies on AWB and HMWB

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The european guide gives the possibility to perform qualitative analysis with the local stakeholders to document the concept of disproportionate costs



The work process : test on a district

 Development of a participative and progressive process according to the complexity of the cases. First results on a part of a basin.

 Further development on an specific site : dam of Hautefage

 A catalogue of economics guidance values is in progress :

Costs of restoration measures

Environmental costs of alternative means of production and environmental benefits values

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Process in 3 questions...

Systematic checking :

1. Are restoration measures technically feasible ?
2. Are the costs of these restoration measures disproportionate ?
3. Do these restoration measures offer better environmental options ?

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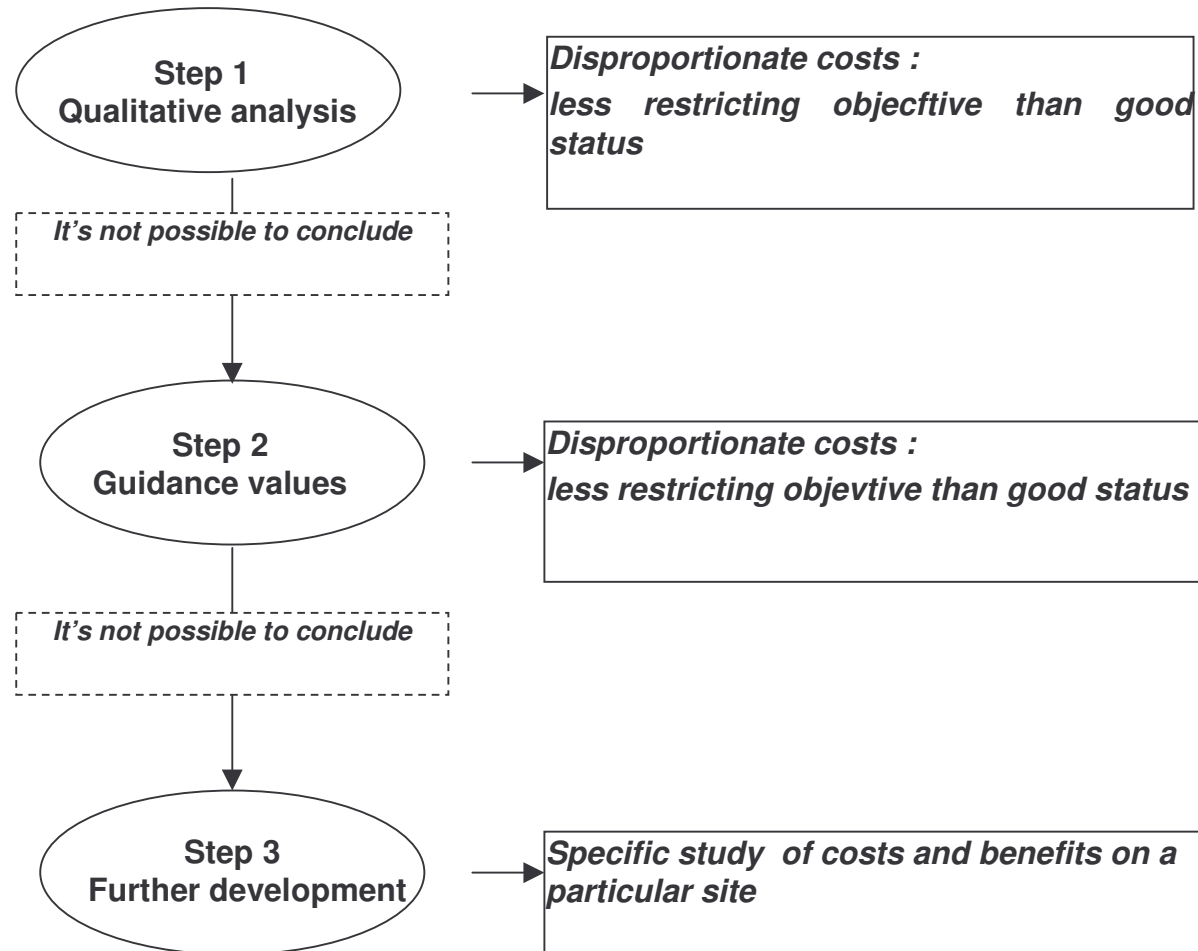
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...to deal with 3 steps



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Simplified Step 1

which indicators?

- Hydro-electric potential: lakes/ lock waters/ drift and impact of the measure

thanks to these indicators: marking

Ex : lake = 4 *, lock waters = 3*

- Weights of other concerned uses : support of lowest water level, tourism, drinking water, fishing and impact of the measure

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Simplified Step 1

- ecological potential of the water body : blue rivers/ classified rivers / reserved rivers

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Critères enjeux écologiques	Notation
1 - Les zones Natura 2000 problématique milieux aquatiques	★★★★
2 - Les milieux aquatiques remarquables	★★★★
3 - Les axes migrateurs, avec habitats sensibles	★★★★
4 - Les axes migrateurs, sans habitats sensibles	★★★
5 - Rivières classées avec décret d'espèces	★★
6 - Rivières classées sans décret d'espèces	★

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ME	Impacts for hydro-electricity	impacts for other uses	Impacts for environment	Résultats
166	****	0	*	HMWB
167	***	0	*	HMWB
170	*	***	****	Step 2
177	*	0	****	Step 2
178	***	0	****	Step 2
181	****	0	**	HMWB

Garonne River : over 40% of confirmed cases with the first step

→ Step 2 for the other cases

Step 2 guidance values

which indicators?

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- Catalogue of costs restoration measures
- Catalogue of environmental costs and benefits
 - Environmental cost of CO₂ : 27 €/t
 - Environmental benefits : see table

Step 2 guidance values

Will the good ecological status induce?	Y / N	Unit value of benefits or losses	Base of application to obtain total benefit (or loss) induce by the good ecological status	The strength for the WB	Annual value of benefits or losses €19xx
L9 Significant apparition or extension of fishing		25 €₂₀₀₁/d of fishing/year (Lignon) Ecart:15-23 € ₁₉₉₂ /j (revue biblio) ; 16-26 €/j(FWR)	Increase in fishers dires d'experts, données transférables ou à défaut 17% des pêcheurs sportifs adhérents aux AAPMA du département et en moyenne 17 visites/an		
		14 €₂₀₀₁/walker/visit (Lignon)	Increase in walkers dires d'experts, données transférables ou à défaut 30% de la population majeure du BV de la ME		
Total increase in no saleable benefits for uses					
Total de increase in no saleable benefits only for patrimonial improvment					

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Table of environmental benefits

An example on a particular case

Application of the guidance economic values

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Estimation of alternatives' costs and benefits : suppression of the work and substitution: **Work IN PROGRESS**

