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# How to Improve Fish Protection and Downstream Migration in Rivers?

## Insights from the German Forum on Fish Protection and Downstream Fish Migration

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## Motivation

- ▶ High implementation pressure for the measures (WFD etc.)
- ▶ Economic concerns
- ▶ Knowledge gaps
- ▶ Conflict of interests; tense relationship between key stakeholder groups



No clear distinction between technical, political, or other interests, motivations, or arguments in the discussion

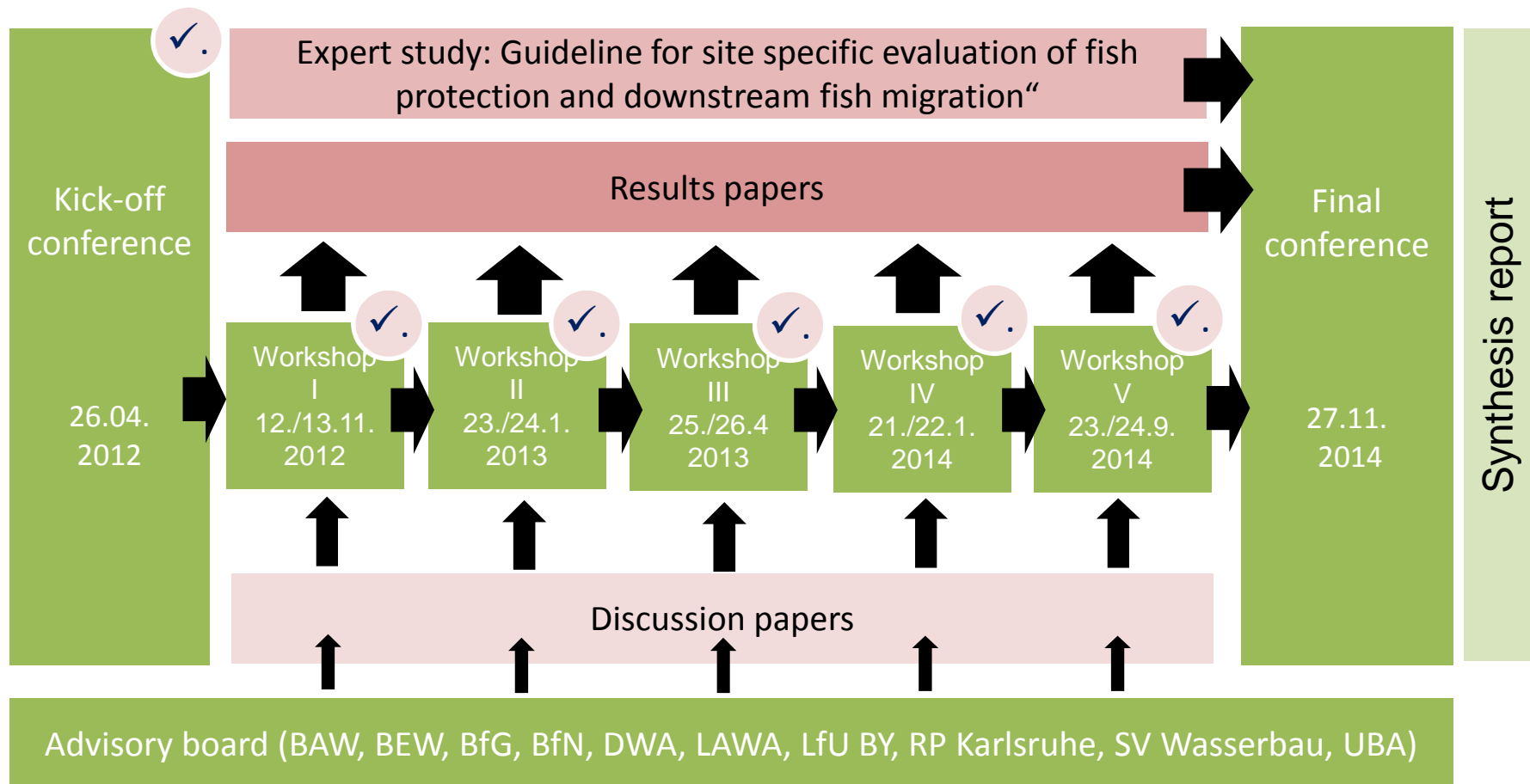


## Purpose & objectives

- ▶ Cross-cutting exchange of information and experiences throughout Germany
- ▶ Taking stock of following questions:
  - ▶ Are there different views of the topic?
  - ▶ What are the research needs?
  - ▶ What is the need for action?
  - ▶ What methods/technologies can be considered as valid and established ?



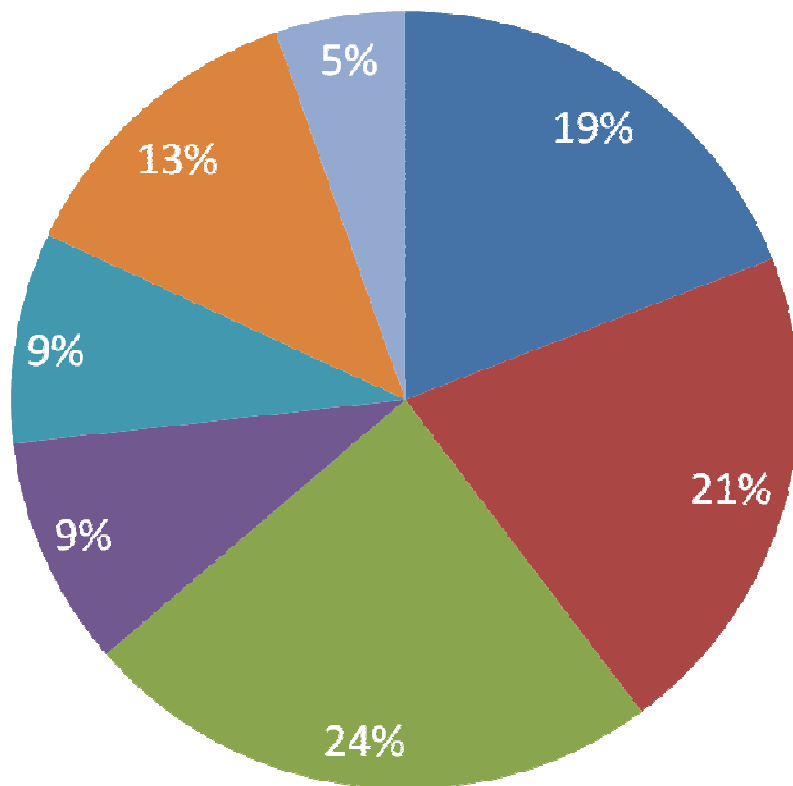
# Forum structure





## Who is the forum?

- ▶ High interest in the events of the forum
- ▶ Around 200 active participants, and in total around 500 followers across sectors



- River basin and fishery authorities of the federal states
- National river basin, nature conservation and waterway administration
- Energy sector
- Civil engineering consultancies
- Environmental consultancies
- Nature and angler NGOs
- Research institutes/ universities



## Results\*

- I. Environmental policy & legal background
- II. Goals for fish protection and downstream migration
- III. Behavioral & population biology fundamentals
- IV. Strategic planning instruments for river basins and the usage of hydropower
- V. Potential fish harm
- VI. Technical measures for fish protection and downstream fish migration
- VII. Functional evaluation of measures for fish protection & downstream migration

\*The presented results are a subjective selection of the results from the forum events and are based on the statements of participants, that are layed down in the results papers available on: <http://www.forum-fischschutz.de/>

## Results – technical measures for fish protection



Which technology provides adequate fish protection?

- ▶ Site-specific fish protection: complete protection (100%, all age classes and life stages) is currently non-achievable
- ▶ High protection rates can be achieved only with impermeable bar racks with fine bar spacing



## Results – technical measures for fish protection



Which technology provides adequate fish protection?

- ▶ Consensus: State-of-the-art knowledge and technology exist for vertical bar racks up to ca. 30 m<sup>3</sup>/s and for horizontal bar racks up to ca. 50 m<sup>3</sup>/s per unit incl. cleaning/maintenance
- ▶ Technical feasibility of bar rack arrays at higher discharges controversial

## Results – technical measures for fish protection



Which technology provides adequate fish protection?

- ▶ Possibilities for installations where mechanical fish protection cannot currently be installed
  - Fish-friendly turbine management with early warning systems (sufficient evidence of this measure's efficacy is still needed)
  - Fish friendly turbines (technically possible- the demand and investment readiness are missing)
  - By passes
  - Catch and carry measures as intermediate solution and in some cases as complimentary measures

## Summary



- ▶ The knowledge and the technology for the assessment of upstream fish migration facilities are considerably better than for fish protection measures and downstream fish migration facilities
- ▶ Knowledge gaps and research needs regarding:
  - Effective implementation of fish protection and downstream fish migration in large rivers for all still existing target species
  - Behavioural and population biology especially for potadromous species

## Summary



- ▶ How to deal with knowledge gaps?

Moratorium



For the construction of new  
plants and barriers

For environmental regulations

## Summary

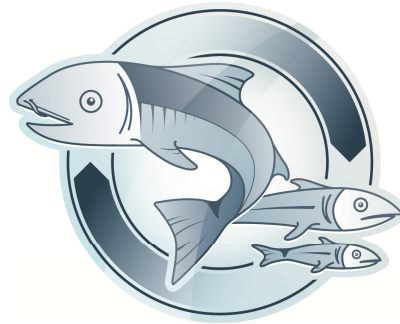


- ▶ Implementation of measures: action is recommended!
  - Use existing knowledge and available technologies, even if no final certainties of their sufficient performance exist!
  - Realise clear contractual rules and procedures for administration and measure contractors
  - Adhere to the proportionality principle for measure contractors
- ▶ Parallel to measure implementation, improve & collect knowledge
  - Performance evaluations– evaluate existing plants (Methods? Expert study from this forum!)
  - Research needs! Monitoring, pilot facilities, laboratory experiments, models

## Outlook

- ▶ Final conference at the Federal Ministry for the Environment (BMUB) in Bonn (DE) on 27.11.2014
- ▶ Website: [www.forum-fischschutz.de](http://www.forum-fischschutz.de)

# Thank you for listening.



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