Dam Removal as Compensatory Mitigation Project: Challenges and Recommendations

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PROBLEM

- Many dams in NE are no longer serving their intended purpose, have fallen into disrepair or are now abandoned.

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- The maintenance cost of these old dams is high and usually infeasible.

- Lack of funds and incentives to remove these dams.

OPPORTUNITY

- For unavoidable impacts, **compensatory mitigation (CM)** is required to replace the loss of aquatic resource functions. CM may fund **restoration**, **establishment**, enhancement and preservation projects.
- Dam removal has a great potential for restoration and thus may be eligible as compensation project.

HOWEVER…

- No incentives for dam removal as CM project.
- Lack of guidelines applied to dam removal.

GOAL

- Explore and recommend **BEST PRINCIPLES** for promoting dam removals as CM project.

IDENTIFIED BEST PRINCIPLES

Principle 1: Promote clear and appropriate guidelines

CHALLENGES

1. Lack of guidelines to determine **CM credits** of **dam removal**.
2. Lack of **national** regulatory **standards**.

RECOMMENDATIONS

1. Define **minimal** requirements and realistic weightings for different functions[2].
   - ✓ **Examples**: greater weight for aspects that may be critical in removal of dams or higher weight based on the watershed interest. **Regulators judge the local interest.**
2. Promote **training**, courses, and **networking** across agencies and regulators would help on the **decision-making process**.

Principle 2: Promote connectivity and stream use optimization

CHALLENGES

1. River connection in NE **≈ 1 dam/7.35 km** [7]**.**
2. Dam removals is usually not based on **strategic interests** at the **watershed level**.

RECOMMENDATIONS

1. Use **prioritization tools** and an integrated watershed management (IWM) approach [9] to identify **strategic dams** for removal and increase the **watershed functionality**.
   - ✓ **Example -** Provide **more credits** to projects:
     - ✓ Addressing removal of **combination of dams** integrated to an appropriate **IWM approach**.
     - ✓ With **higher potential** to restore ecosystems, such as dams on **higher-order streams**.

Principle 3: Improve methods to track functional outcomes

CHALLENGES

1. Restoration: **low rate** of ecological success.
2. Ecological responses and **adverse effects**:?

RECOMMENDATIONS

1. **Opportunity**: Dam removal → higher potential for restoration.
2. Require **long-term monitoring plan** including actions to achieve compliance.
3. **Example**:
   - ✓ Apply **scores** based on **pre- and post-restoration** condition [6].
   - ✓ Apply a **specific metrics** for each parameter/function (e.g., connectivity, water quality, aquatic habitat, flood control, electricity generation).

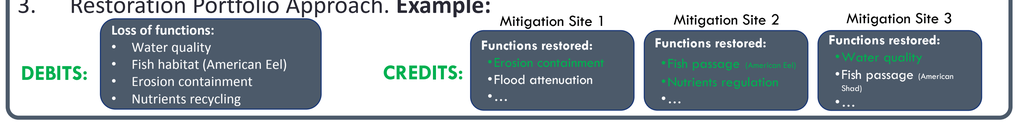
Principle 4: Improve the mitigation market

CHALLENGES

1. Mitigation banking → Economic Uncertainty

RECOMMENDATIONS

1. Price the mitigation unit based on **gains of ecosystem functions**[5].
2. Use **in-lieu fee** mechanism for larger projects.
3. Restoration Portfolio Approach. **Example:**



CONCLUSIONS

- Appropriate CM guidelines for dam removal would promote the eligibility to generate credits and encourage the removal of obsolete dams.
- The principles and recommendations proposed here would help on developing strategies and guidelines to promote dam removal as CM projects.

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