



# Multikriterieanalyser i energi- og miljøforvaltningen

## CEDREN Årsmøte 2014

David N. Barton



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## Innhold

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2. Hvor brukes MKA idag?
3. Generell utfordring for KU
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5. Eksempel 2: konseksjonsrevideringer
6. Konklusjon

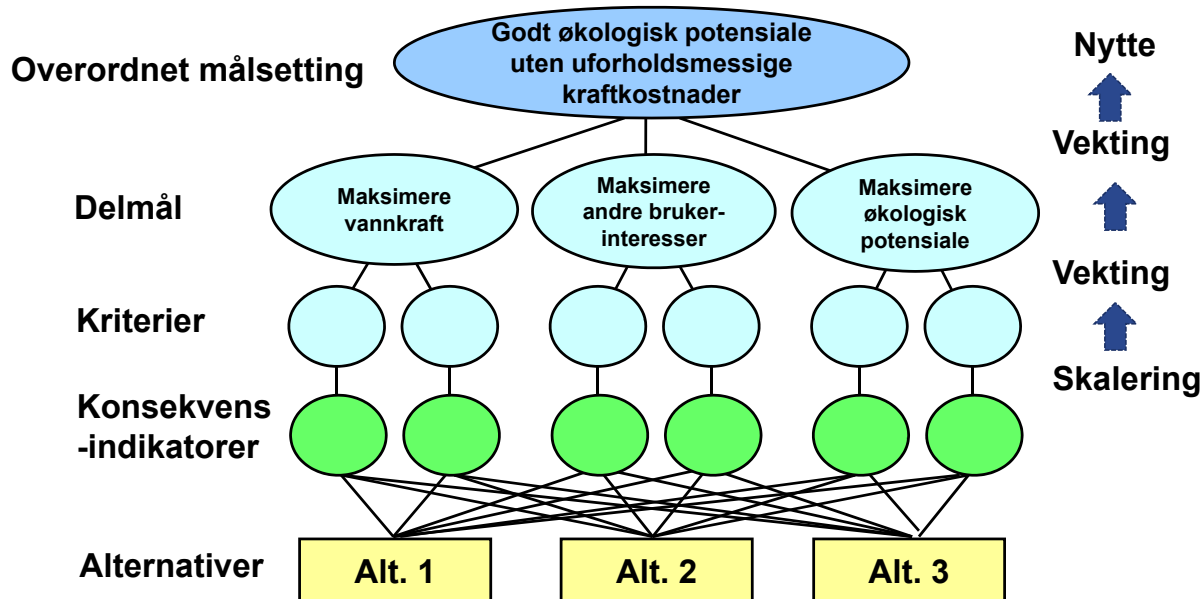
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# 1. Hva er multi-kriterie-analyse?

Systematisering av beslutningsproblem i en hierarkisk struktur med målsettinger, kriterier og alternativer.



Kilde: Tilpasset fra Jyri Mustajoki and Mika Marttunen, SYKE

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## 2. Hvor anvendes multi-kriterie-vurderinger idag?

### Veiledning

1. Konseptvalgsvurderinger (FIN 2010)
2. Samfunnsøkonomiske analyser (FIN 2005)
3. Konsekvensvurderinger (SV HB140, 2006)

### ...innen vannressurforvaltning...

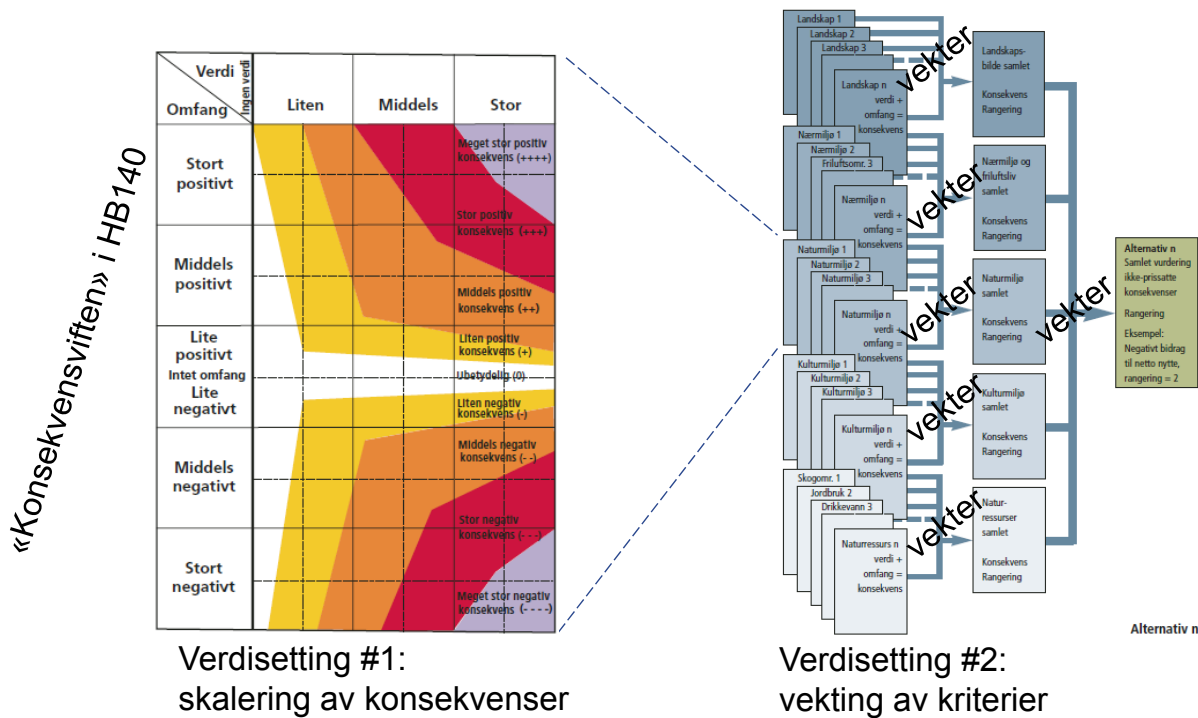
1. Sikringstiltak i vassdrag (NVE 2001)
2. (Konsesjonsrevidering (Sørensen et al. 2013))
3. (Vannforskriftens Unntaksveiledere...)

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### 3. Generell utfordring i KU - synliggjøre verdisetting



Kilde: Håndbok 140 Statens Veivesen (2006)

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### 4. Eksempel #1: Optimal lokalisering av kraftlinjer (OPTIPOL-CEDREN)

SUB THEMATIC  
COST INDEX SURFACES



CRITERIA

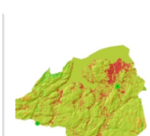
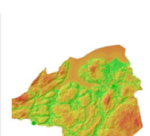
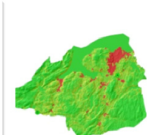
WEIGHTS

THEMATIC  
COST INDEX SURFACES

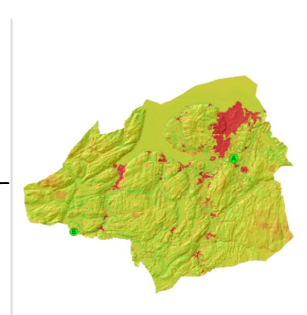


WEIGHTS

PERSPECTIVES  
COST INDEX SURFACES



TOTAL  
COST INDEX SURFACE



Kilde: Hanssen, May m.fl.(2013) og NINA Report 904

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# Eksempel 2.1: Vurdering av konsesjonsrevidering (CEDREN-EcoManage)



## Målsetting

- Vurdere eksplisitt og implisitt vekting av prioriteringskriterier
- Betydning av usikkerhet i ekspertvurderinger

Analyse-verktøy: Bayesianske nettverk

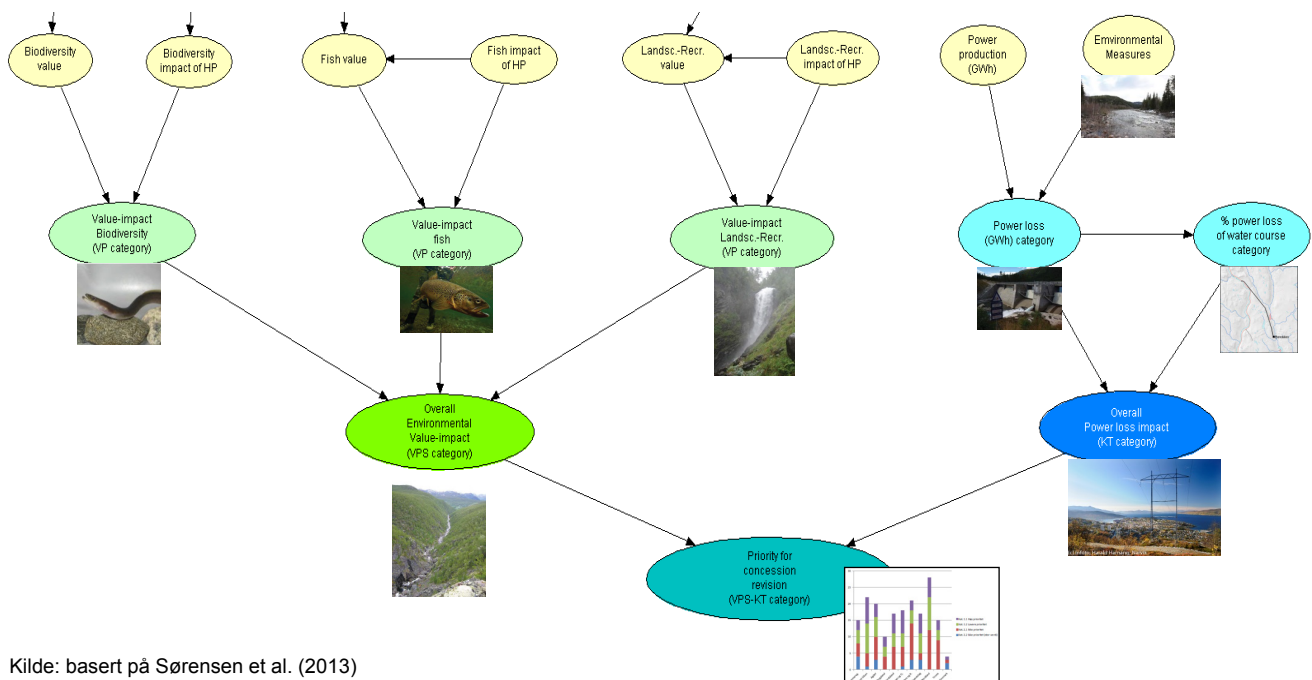
Data: NVE&MD Access-database av 187 revisjonsobjekter

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## 5.1 Eksempel #2: Multi-kriterie struktur i «Revisjonsrapporten»



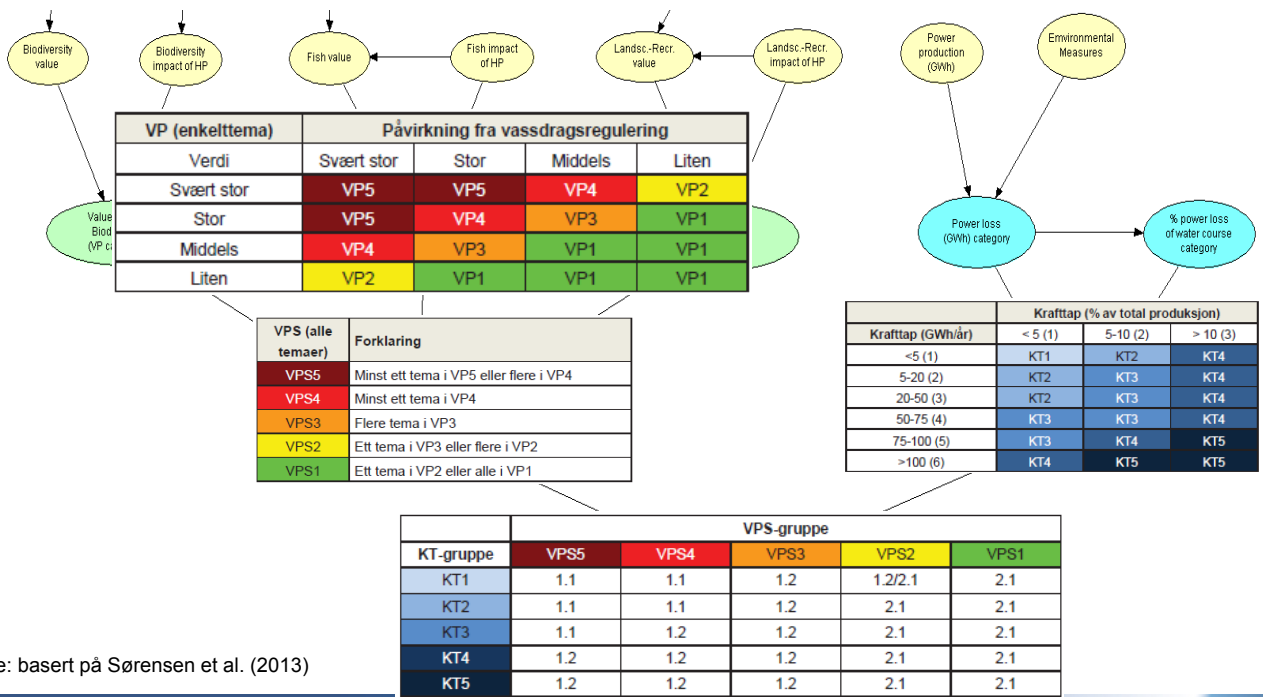
Kilde: basert på Sørensen et al. (2013)

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## 5.2. Eksempel #2: Multi-kriterie struktur i «Revisjonsrapporten»



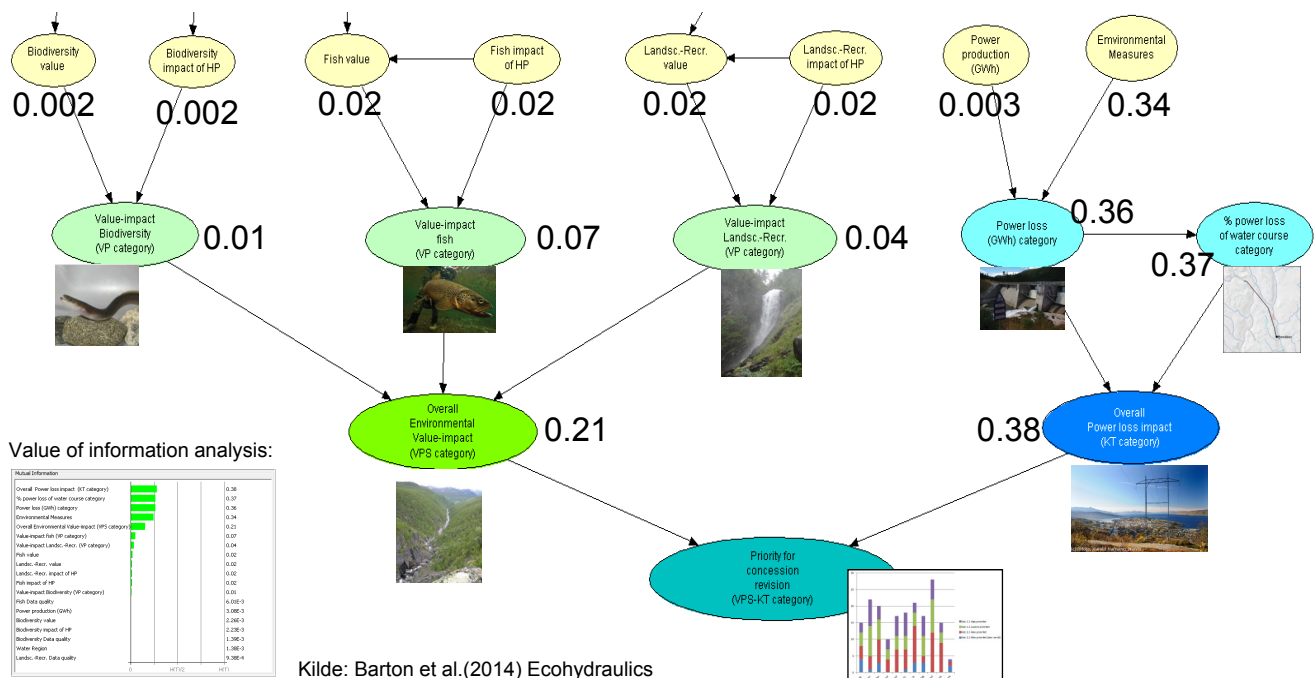
Kilde: basert på Sørensen et al. (2013)

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## 5.3 Eksempel #2: relativ informasjonsverdi i hvert kriterie ift overordnet prioritering (foreløpige resultater)



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# 6. Konklusjon

## Formell MKA kan gi mer systematisk verdi-vurdering i KU



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**TAKK!**

**Mer  
informasjon:**

[http://www.cedren.no/Projects/EcoManage/Publications.aspx?udt\\_5869\\_param\\_detail=3494](http://www.cedren.no/Projects/EcoManage/Publications.aspx?udt_5869_param_detail=3494)

**SINTEF**

TR A7339- Unrestricted

### Report

Multi-criteria analysis applied to environmental impacts of hydropower and water resources regulation projects

Author(s)

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SINTEF Energy Research  
Electric Power Systems  
2013-09-17

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