Puget Sound Partnership Human Wellbeing Framework: Integrating Ecosystem Services & Human Wellbeing in Puget Sound Recovery

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Snowcaps to Whitecaps …
with a focus on the watery bits
Water Quality
Water Quantity
Habitat
Species
Human Health
Human Wellbeing
Human Wellbeing Framework
HWB Indicator Development

Local Documents (n=120)
Local Stakeholders (n=160)

Source: Dr. Kelly Biedenweg, OSU
The scale of planning – Local Integrating Organizations
Integrating Human Wellbeing and Ecosystem Services

...how??

- Open Standards Logic Models
- Cost-benefit Analysis
- Public surveys
- Consequence Tables
- Bayesian Belief Networks
- Spatially-explicit impact overlays
- Structured Decision-Making!
Integrating Human Wellbeing and Ecosystem Services

• Open Standards Logic Models

C1. Prevent, reduce, and control the sources of contaminants entering Puget Sound

C1.1 Implement and strengthen authorities and programs to prevent toxic chemicals from entering the Puget Sound environment

C1.2 Prevent the development and use of other alternatives to toxic chemicals

C1.3 Adopt and implement plans and control strategies to reduce pollutant releases into Puget Sound from air emissions

C1.4 Provide education and technical assistance to prevent and reduce releases of pollution

C1.5 Increase compliance with and enforcement of environmental regulations, permits, and policies

C1.6 Control wastewater and other sources of pollutants such as oil and toxins from boats and vessels

Key:
- INT: Integration
- REP: Reduction
- CON: Containment
- MOD: Monitoring
- IMP: Implementation
- ENG: Engagement
- REG: Regulations
- EMU: Enforcement
- STK: Stocktaking

Toxic chemical pollution is reduced

Wetland Systems

Marine & Marshes

Species & Food webs

Human health & quality of life

Ecological & Human Dimension Targets Affected by Pollution Prevention Strategies & BMPs

By 2020, human-related contributions of nitrogen do not result in more than 0.2 mg/l reductions in dissolved oxygen levels anywhere in Puget Sound

Nitrogen levels restored

By 2020, all monitored Puget Sound beaches meet entericoccal standard

Freshwater Quality

By 2020, at least 50 percent of all monitoring stations with suitable data have Freshwater Quality Scores of 60 or higher.

Sediment Quality

By 2020, achieve a decrease in the number of impaired waters (SDB-I & II) in Puget Sound Freshwaters

Insects in Small Streams

By 2020, 100 percent of Puget Sound freshwater fish populations monitored with baseline & 18 years scores of 42-46 or better retain these "excellent" scores and mean RBR scores of 30 Puget Sound freshwater drainage areas improve from "fair" to "good"

Marine Sediment Quality

By 2020, all Puget Sound regions and basins achieve chemical measures reflecting "contamination conditions and no measurements exceed the Sediment Quality Standards chemical criteria"

Toxics in Fish

By 2020, toxics in fish are below threshold levels for bioaccumulative toxics, protecting fish health & human health, 99% of endangered species monitored; communities in wild Chum salmon abundance in two to four populations in each biogeographic region.

Southern resident killer whale population

By 2020, achieve all of our conservation targets: 95 percent of wild Chinook salmon abundance in two to four populations in each biogeographic region.
**Theory of change**

- Reduce runoff from built environment
  - Economic Vitality
- Reduce or better time use of fertilizers
  - Economic Vitality
  - Local Foods
  - Cultural Practices
- Amount of urban runoff decreases
- Agricultural runoff reduced
- Amount of fertilizer in runoff decreases
- Total amount of chemicals entering system declines
- Chemical and bacterial levels in nearshore reduced
  - Marine Water Quality
  - Shellfish Beds
  - Chinook Salmon

**Objective:** Pollution entering aquatic ecosystems decreases

**Indicator 1:** Fecal coliform concentrations
**Indicator 2:** Jobs in natural resource industries
**Indicator 3:** Opportunities to gather local foods

- Maintain viable agriculture in region
- Increase opportunities for local food harvesting in watersheds
- Encourage economic growth in urban areas
- Minimize cost to municipalities & homeowners
Integrating Human Wellbeing and Ecosystem Services

- Open Standards Logic Models
- Cost-Benefit Analysis
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- Open Standards Logic Models
- Cost-Benefit Analysis
- Public survey

28%
Integrating Human Wellbeing and Ecosystem Services

- Open Standards Logic Models
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- Public survey
- **Consequence Tables**

<table>
<thead>
<tr>
<th>Vital Sign</th>
<th>Strategy A</th>
<th>Strategy B</th>
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<tbody>
<tr>
<td>Chinook Salmon</td>
<td>200x</td>
<td>100x</td>
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<tr>
<td>Economic Vitality</td>
<td>$5.4 million</td>
<td>$8.7 million</td>
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<tr>
<td>Land Cover Change (Forests)</td>
<td>same</td>
<td>-1,000 ha</td>
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<tr>
<td>Cultural Wellbeing</td>
<td>increase</td>
<td>same</td>
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</tbody>
</table>
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- Spatially-explicit impact overlays
Structured Decision Making

Decision Support Frameworks and Tools for Conservation

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Thank you!

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