SUMMARY
Future Forest Ecosystems Scientific Council of BC (FFESC)
Collaborative Planning Workshop
April 29, 2009

MORNING SESSION

1) Purpose of the day and review of agenda (Alison Nicholson, Facilitator)
   - Presentation (*posted to web site*)
   - Introductions (*see attendee list*)

2) Welcome and workshop context (Tom Niemann, Manager, Climate Change and Forest Carbon Section, Forest Practices Branch, MFR)
   - *Key points:*
     - Review of origin of FFEI and FFESC
     - Goal: integrate science into policy → evidence-based policy
     - Climate change: need agreement on what 'dangerous levels' means in order to develop desired policy response
     - Left foot – research influences policy options
     - Right foot – government/industry sectors implement adaptation actions
     - Role of FFESC is to coordinate science with operational decision-making, and to address inherent challenges
     - We hope to move forward in a constructive manner

3) Presentation – Future Forest Ecosystems Scientific Council: Climate Change Adaptation Research Program (Evelyn Hamilton, Manager, Earth Sciences, Research Branch, MFR)
   - Presentation (*posted to web site*)
   - Questions and answers:
     Question – who in the room is in higher level disciplines (socio-economic)? (four people stood up); need to build time in agenda to get sense of who rare social scientists are; not many social scientists here and dearth of EOI applicants in social/economic fields
     Answer – proponents should collaborate, network, think through links with social and economic disciplines, and work with people outside this room

4) Presentation – Research Gap Analysis and Results of the EOI (Sybille Haeussler, FFESC Research Coordinator, UNBC)
   - Presentation (*posted to web site*)

5) Challenge wall exercise - benefits and challenges of interdisciplinary research/teamwork and client-based research

	Inter-disciplinary research/teamwork	Client-based research
Benefits	Diverse perspectives and points of view leading to broader community of thought	Grounding in reality enables assessment of all needs, focus on key questions, problem solving/applicability, identification of operational barriers and appropriate scale for research, use of local knowledge, and provides reality check to scientists
	Integration and holistic approach enabling complex system issues to be addressed	Early buy-in/support for findings, mutual skill transfer/learning
	Synergy enabling depth, innovation, ability to build expertise, expanded/faster learning, collective learning	Tangible relevant, practical outcomes – results used on the ground, change is faster and emerging solutions stimulate questions and actions at the same time
	Efficiency, i.e., uses shared resources, capitalizes on diverse skill sets, broader team expertise	Scientists get to see results (rewarding) of better (science-based) management
	Increased scientific power through expanded number of analysis tools and techniques, problem-solving strategies etc.	Value for money (efficient/effective use of research funding)
	Meet interesting people, more fun	Builds relationships, clients become research supporters/allies
	Better projects, more innovative approaches, resulting in problem solving and diverse end products	

	Inter-disciplinary research/teamwork	Client-based research
Challenges	Increased cost and resources needed for teams	Tendency to limit or narrow the focus to immediate needs
	Increased time and effort needed (coordination)	Diverging requirements/priorities
	Communicating as a team (sharing info, silos, different languages, different paradigms)	Client needs difficult to define (clients don't necessarily know what research is needed)
	Finding interdisciplinary experts (dearth)	Speak different languages (potential to misunderstand client needs)
	Finding common methodology (different mental models/analytical frameworks, overcoming tradition)	Clients have limited time to interact with scientists
	Working as a team (egos, control issues, cultural differences, conflicts vs. consensus, interpersonal skills, balance team vs. individual needs)	Potential compromise to scientific quality (objectivity compromised by special interests)
	Finding shared vision/priorities	
	Systemic barriers (institutional barriers and reward systems)	

6) Discussion groups – causes/barriers and practices/techniques to overcome challenges of interdisciplinary research/teamwork

Challenge	Why/Causes/Barriers	Practices/Techniques to Overcome
Cost/resources	o More coordination and complex integration = more time needed and increased cost o Long term monitoring has costs and uncertainty	o Clear objectives o Clear upfront strategy for integration & knowledge transfer o Recognize long term benefit (e.g., grad students) o Clear rules of engagement o Leverage interdisciplinary = cost/ benefit o Make data accessible o Short term deliverables help long-term strategies o Build confidence
Time/effort	o Perception of discipline-focussed scientist is a barrier o Once networks are built, much less time & effort is required o Some university merit committees discount interdisciplinary work & publications	o Networking opportunities o Recognition/funding for project coordinators o Focussed and clear objectives o Identify and share commonly needed data sets/models
Communication	o Discomfort working outside area of expertise o Different vocabularies, terminologies o Need effort to expand expertise o Educational system leads to silos o Journals specialize (they aren't inter-disciplinary) o Hard vs. soft science biases	o Strong leadership and facilitation o Allow time for dialogue o Established a shared vision o Share definitions o Build communication into proposal process o Recognize that integration takes time
Inter-disciplinary expertise	o Institutional structures do not promote pursuit of interdisciplinary career o System is not designed to reward inter-disciplinary specialists	o Identify groups that have overcome this challenge (follow successful models/precedents) o Establish task force to bring ID experts together (find ID 'hideouts') o If can't find them, bring together individual experts o Use ID experts to facilitate bridging of ideas and knowledge between disciplines
Methodology	o Difference of scale (minute to landscape) o Different data, analysis methods (experimental vs. descriptive) o Different applications of science to policy (evaluation, knowledge transfer, integration of results) o Multi-disciplinary teams – classical approach is controlled o Evaluation of results is different by scientists and policy makers	o Communication early in study design o Scientists and policy makers should work together o Find bridges; network o Integrate into research method the transfer of knowledge to policy

Challenge	Why/Causes/Barriers	Practices/Techniques to Overcome

Teamwork	o Prejudice between disciplines
	o Social science and physical science do not communicate
	o Geographic barriers:
	  o hard to be inter-disciplinary within a geographic area
	  o management decisions don't fit all communities
		o Respect different disciplines
		o Address misunderstandings through common definitions
		o Bridge communication gap
		o Participants must agree to endure long, messy process
		o System should allow for 'failure' and lead to adaptation (ability to make decisions without fearing consequences)

Shared vision & priorities	o Different timeframes to fulfil responsibilities o Lack of common language (non-economic) o Disciplinary focus = linear focus o Lack of systems approach o Entrenched status quo	o Understand issue o Seek common vision o Use vision to motivate o Willingness to let go of own vision o Build relationships and trust
Systemic barriers	o Reward systems different o Short term funding for long term projects o Inter/intra-ministry barriers o Access to information difficult o Grad student based economy o Administrative barriers: capital costs high o Jurisdictional/professional barriers: limited what can do within professions o Large province with limited experts	o Ongoing communication with clients o Base/core funding (PCIC, IP3, WCZN, NSR, ERC, SSHRS, CFS, industry) o Meetings to discuss expectations of clients/policy makers o Train scientists to be inter-disciplinary o Long term vision

7) <u>Discussion groups – causes/barriers and practices/techniques to overcome challenges of client-based research</u>

Challenge	Why/Causes/Barriers	Practices/Techniques to Overcome
Limited focus	o Client wants limited scope and time scale	o Nest objectives – short term deliverables, long term 'broader' focus o Encourage client participation (engaged clients will see value of research/process)
Diverging priorities	o Diversity of clients and priorities o Multiple levels of clients (science to government to industry to public)	o Clarify who clients are o Agree on fundamental priorities (e.g., multiple use of water) o Adapt a phased approach (i.e., short term products and reassessment in phases) o Scientists need to be advocates, arbitrators among clients and suppliers of information

Challenge	Why/Causes/Barriers	Practices/Techniques to Overcome
Defining client needs	o Clients focussed on short term demands, don't see long-term benefits of research o Needs are conflicting and inter-connected (government has silos) o Not all problems are interest-based (e.g., climate change requires compromise) o Hard to distinguish human and climate impacts o Unwillingness to accept accountability	o Determine what the problem is that requires research o Survey client needs (facilitated discussion) o Craft future histories o Use structured risk-based decision-making o Determine needs of each client group (e.g., Chief Forester = sustainable forestry; communities = jobs, water supply)
Different languages	o Clients and scientists don't have same mindset or speak the same language o Clients lack science background o Clients have values at odds with physical science (e.g., short timeframes) o Acronyms, semantics, unclear or impenetrable language o Clients have pre-conceived beliefs that are supported by anecdotal findings o Clients have tendency to qualify conclusions or make them uncertain o Clients want black and white answers o Science provides uncertain conclusions (quantify risks) o Trade-offs have a negative connotation	o Restate using different language o Simplify scientific language for clients o Don't patronize o Use active listening skills to clarify what client is saying o Use acronym free language o Take time to clarify concepts, context, semantics (e.g., what is monitoring?) o Cultivate relationships with peers who are good at bridging & translating
Time constraints	o Clients have limited time to spend with research teams	o Clarify communication expectations upfront (plan time for this) o Establish communication plan with clients to address their time limits o Make efficient use of time with clients (avoid excessive calls & emails) o Have communication checkpoints (midway, analysis, wrap-up) o Identify champions to provide support/continuity throughout process

Challenge	Why/Causes/Barriers	Practices/Techniques to Overcome
Compromise to scientific quality	o Takes longer, more complex o Outcomes not well controlled o May not advance knowledge but participatory research is advanced o Can advance science and address real questions o Complicates research but adds value o Client may desire particular answer o Perception of bias (may not be real but assumed to compromise science) o Confidentiality if client pays/owns so scientists can't publish research o University/government links are weak in social sciences o Intellectual property rights agreements are needed	o Ongoing communication, flexibility, understanding

Discussion groups also took the time to clarify who the clients are:

- General public
- Government agencies (laws, policy, guidelines, plans, management activities)
- Industries (plans, management activities)
- Communities and First Nations (plans, management activities)
- Non government organizations
- Interest groups (e.g., cattlemen)

AFTERNOON SESSION

8) Discussion groups – exploring climate change adaptation issues by theme

Discussion groups for 12 theme topics addressed:

a) View of practitioner (resource person) on:

- type of work
- how decisions are made (tools/frameworks)
- climate change initiatives underway
- specific challenges or questions about climate change adaptation researchers might help address
- how resource person envisages integrating uncertainty and risk analysis into future decision-making

b) Group discussion:

- Frame the specific management issue
- How can research help address issue?
- What should the research scope be?
- How would research results be applied/be effective?

#	Theme & resource person	Discussion Highlights
1	Range management* (Doug Fraser, MFR)	• Manipulating systems - interactions disturbance, timing intensity etc. • Valuing range for more than cow fodder • Changes in ecotones - focus on Cariboo Chilcotin plateau • Threats are invasive species – need to determine how communities distribution might change
2	Forest health* (Jennifer Burleigh, MFR)	• Three very different perspectives: o Effects of insects on mitigation of carbon sequestration o Effects on ability of tree species to migrate (AM) o Impact of climate change on insects abilities • Not a stand alone topic – i.e., forest health issues affect other values like wildlife habitat; therefore need to be clear on value /objective
3	Fire (Richard McKay, MFR)	• Hydrology tool for stream flow etc. would be helpful • Grassland/forest edge effect – past changes could help predict future • Looking at existing weather data and indices may be valuable – i.e., is there a station south of us that resembles BC locales?
4	Silviculture/tree species* (Kevin Astridge, MFR)	• Conveyor belt of climate o What is there now that was established in past climate? • Interest in using old plots to go back and assess • Use long-term trials to inform decisions • Proactive policy making needed to predict problems • Flying BEC version 2 coming soon!
5	Forest estate planning – Williams Lake TSA* (Mike Pedersen, MFR)	• WL TSA west part has 90% dead/dying lodgepole pine; east part productive • Need decision model to determine where to invest silviculture dollars • Need science/research to inform decisions on TSA land base; in meantime, rely on existing knowledge • BEC and climate models will be helpful for managing in the future • There is a dearth of information around stand growth models for west part
6	Timber supply analysis (Albert Nussbaum, MFR)	• Scope of what climate change will affect is huge • Need tools • Need to put teams together that have expertise on inputs in "case study" to help prioritize research and identify sensitivities • Need to know o disturbance frequency and intensity input o hydrology changes o 'risk" areas
7	Watershed stewardship* (Martin Carver, MoE)	• Hydrologic, runoff and forest conversions focus discussion • Effective proposal needs to consider spectrum clients • One research project can't address all scales • Need complementary studies • Inputs from one scale to the next are needed i.e., multi-dimensional space • Clients need to identify what is needed at what scale • Data and science need to be made more available (for scientists and clients) • Packaging info for client challenges scientists

#	Theme & resource person	Discussion Highlights
8	Community forests* (Danielle Backman, Revelstoke Community Forest)	Specific Management Issues: • Carbon Sequestration as a revenue source • Economic Sustainability - jobs in the community • Future Harvest Success - species selection • Harvest Methods in a changing climate How research can help: • Forecasting thru modelling, Revenue changes • Understanding and finding existing research, determining what research is needed Research scope: • Need for collaboration? Focus on hard data needed to change harvest standards How would the research be applied: • Changing management objectives/guidelines and acknowledging the trade-offs for this (i.e. selective harvest method - less employment initially but creates long-term opportunities by managing a stand for multiple harvests)
9	"P"olicy* (Tom Niemann, MFR)	• Goal of policy is to avoid risks to societal stability • Politicians are resisters or champions of policy change • Scientists produce data → interpretation of data in context of societal values → policy change • Question: can/should scientists interpret their data/recommend how it should be applied to policy? • Climate change = SFM^2
10	Socio-economics* (Sinclair Tedder, MFR)	• Social science leads to understanding trade-offs • Institutional analysis of policies and standards needed to understand constraints to adaptation • Risk analysis • Networking and building capacity is good safe start that will lead to framing questions jointly to understand view points – use scenarios, constituents • Inform thinking through surveys (public values); how are people affected by science?
11	Vulnerability assessment* (Don Morgan, MFR; Ken Zielke, Symmtree Consultants)	• Vulnerability is a function of exposure, sensitivity and adaptive capacity of human and ecological systems • Need to reframe projects underway within vulnerability assessment context (larger human, multi-dimensional context) • Question is - What can be done in 2 years?
12	Inventory & monitoring* (Graham Hawkins, MFR)	• Need to mine information in government (NFI) to look at trends • If use with more local information, can develop early warning systems - flags • Lack of awareness that this information is available for use – attribute info • Learning, value, scope for projects

**See appendix for additional notes on these discussions*

9) Presentation – Application and Proposal Review Processes (Cindy Prescott, UBC)

- Presentation (*posted*)

#	Question	Answer
1	Will there be administrative burdens on capital expenditures?	For capital expenditures – explain what is essential and why
2	What are you looking for in terms of the size of projects?	We have no set objectives in this regard – some small and large projects will be considered; the key is whether the project contributes to the FFESC program; we are wide open to considering different project sizes
3	Are there constraints on lead entity (organization) of projects?	There are no constraints on project leads
4	How will you evaluate 'integration'?	You will tell us how well you have achieved integration, and we will consider that
5	What are the reporting requirements?	Annual reporting
6	How do we avoid redundancy with other LOIs?	We cannot circulate the LOIs of others; Sybille Haeussler will prepare a database of EOI project title 'key words' that will be posted on the FFESC web site; proponents should consider this as they develop their proposals
7	How will funds be disbursed among team members?	As a default, UBC will send the funds to the Principal Investigator, who may distribute the funds further; however, UBC will consider & accommodate reasonable alternative disbursement requests
8	What are the overhead restrictions under the FFESC process?	5% (3% for UBC proponents)
9	Who will judge the proposals?	Proposals will be evaluated by the FFESC
10	How do we get clients integrated into our proposals if they don't necessarily want the research we're proposing?	Clients can be policy makers, stakeholders, communities – make efforts to seek out clients and integrate them into your proposal; we will consider this in our evaluation
11	Are the salary costs for team members recoverable?	We will not cover salaries for government staff or full or part-time faculty members
12	Are expenses for government staff eligible?	Yes
13	Does the overhead constraint apply higher if the lead is a consultant vs. government? Should we use govt as the lead?	Our evaluation will consider the proposal's 'value for money' rather than the overall cost of the project
14	Could we extend the funding for a 'great' project into the third year?	No; the terms of the transfer agreement (for the total FFESC grant) require that all funds are allocated by March 31, 2012
15	There is a need for local repeated sets of climate modelling data that is useable for all of us – how much can be accomplished by December 2009?	Dave Spittlehouse, MFR, can help; Quote from Dave: 'let us know what you need'
16	Will the FFESC help us improve our project if it makes it to the full proposal stage?	We will work with the best LOIs to ensure we get the best projects
17	If your evaluation reveals strong linkages between certain LOIs, will you encourage nesting or blending of proposals?	Yes, we will consider this; however, the review timeframe and intellectual property rights may constrain us in this regard

Appendix – Additional notes from afternoon discussion groups: 'Exploring Adaptation Issues'

Appendix
Additional Notes from Afternoon Discussion Groups
Exploring Adaptation Issues

Range Management (Doug Fraser, MFR)

Issues:

- Changing societal values and demographics (aging population, increasing urbanization, aging rancher sector)
- How will plant communities respond to climate change and disturbance
- Water and riparian values
- How long does it take grass plants to recover from grazing/defoliation? What are appropriate levels and times of use? How can the ranching sector make better use of pinegrass?
- Can plant species migrate fast enough to colonize new areas**?**
- Why are BC rangelands nitrogen deficient?
- How do grasslands and forests compare in their abilities to sequester carbon?
- Invasive plants: some species may be well positioned to take advantage of temperature and precipitation changes; these are likely the species that are fall germinators (winter annuals)

Priorities:

- Manipulations of systems to measure and observe the interactions of disturbance, temperature, and precipitation
- Research in ecotones; these are the areas where rapid plant community changes will occur; Ecosystem Restoration is part of this
- Valuing range – it's more than just grass for cows to eat (Carbon storage, forage and habitat values, water, wildlife, recreation, botanical forest products, biological soil crusts)
- Invasive plants species

Forest Health (Jennifer Burleigh, MFR)

- Two big challenges:
  - Limited budget
  - Prioritization – multiple needs, hard to prioritize because difficult to quantify tradeoffs ($$) (plays into social side)
- Practical decision-making frameworks – a need for
- Example of a trade-off: should we put # into Douglas fir beetle in areas in Caribou that have lost all their pine to MPB, or do we put $ into MPB control in the Kootenays? Need to be able to quantify this so can make decisions on what to do
- Decision-making framework – socio-political considerations; not just biology
- New stresses on landbase +/- multiple stressors
- Now, do we change how we historically managed stands because different stressors on landscape now?
- Big challenge – how interaction between insect and host tree will change; e.g., effect of drought stress on Douglas fir in Cariboo/Chilcotin (have had for years) on tree defences and Douglas-fir beetle (who likes stressed trees)

- Also, e.g., of severe defoliation stress from budworm predisposing trees to Douglas fir beetle; currently seeing this in Chilcotin
- Interactions between species is important – tree-insect
- Interactions between biotic disturbances (e.g., multiple insect disturbances) are important
- Interactions between abiotic and biotic disturbances (e.g., drought stress and bark beetles)
- Forest health – moving away from strict 'pest man' (spraying trees and fall/burn) to managing 'forest health': e.g., resiliency, stand structure, silvicultural systems
- Research needs to get ahead of policy makers
- How do you 'build a forest' that is resilient?
    - Forget predictions and look at a range of scenarios of what might happen and plan for that
    - Unforeseen threats to forest in future – how do you ensure you still have a productive forest in 10 years, 50 years
- Management objectives around insects:
    - May not be direct control of insect (which often are not effective), but may be for maintaining certain values (e.g., wildlife habitat) in infected area
- How can science help? Determine if trees are going to be more resilient or susceptible to infestations

Silviculture-tree species (Kevin Astridge, MFR)

- Policy drives species selection
- Approval system vs. tenure system is the problem
- Do we need to incorporate new test to address resiliency?
- Need solid information to change policy
    - chasing vs. anticipating problems
    - feedback loops take too long
    - example mountain pine beetle
- need to shift focus from stand to landscape – i.e., what are the range of possibilities in a shifting mosaic
- what species and genetic mixes do we need to be planting and where?
- How helpful is information garnered from species planting trials?
- What will be the cumulative effect of individual decisions?
- Assisted migration - curves for wild and orchard seeds are the same
- How can we incorporate short term studies
    - Identify conditions that cause stress to specific seed lots
- How are root diseases going to be effected by climate change?
- Landscape level stalking standards re-visited
- Just finished climate envelopes for BEC zones
- Need monitoring RE: ex. ponderosa pine range shifts
- "Value" is related to management objectives - how can we develop landscape level species stocking density/species strategies – draft in progress
- Are any other variable taken into consideration during species strategies – yes for wildlife but no to other NTFPs – i.e., are there tree species that will better promote NTFPs?
- Can we use established plots in BEC in a useful way over the next 2 years?
- How can growth and yield plots be utilized?

- When we see young stands that do not appear to be growing well, what do we compare them with since there is .no baseline information on what natural young growth is in cc context
- Big Question: How do we avoid repeating the lodge pole pine problem...Are we headed down the same road with larch?

Forest estate planning (Mike Pedersen, MFR)

Climate change research to support forest estate planning:

- Large portion of the Williams TSA Landbase with a cool dry climate -climate change models show that this will get drier and warmer.
- We have excellent and accurate descriptions of our BEC zones within the Williams Lake TSA - begin to model these BECs out to their outer edge through the climate change models and determine what changes in moisture, temperature, stand structure and species may or may not occur.
- Utilize existing information from Silviculture Type II analysis, stand structure classification work, soils information to build models that will grow our silviculture decisions and investment. Begin to understand the impact of our decisions over the land base and through time as a result of climate change. Utilize this as a tool for adaptive management.
- The science around climate change has to ground the management decisions we make going into the future and the modeling tool that is built with that science will help us adapt to our changing environment.

Watershed stewardship (Martin Carver, MHLS)

Links to environmental factors
Health stewardship:

- Client – Ministry of Healthy Living and Sport (MHLS)
- Manage landscape
- Quality of water
- Quantity of water

Tools:

- Turbidity decision tree

What should we do today to respond to climate change?

- E.g spikes in turbidity
- Source area protection
- Where water shortage will likely be?
- Focus on forest issues
- Some spatial data already available?
- Need to predict population growth water conservation

Data:

- Gather more or assemble (make sure we do this!)
- Where to start? Known hot spots?
- E.g. Okanagan
- Choose a few vulnerable areas?
- Other clients
- Flood people – culverts / land use

- Regional districts
- Ecosystems
- Fish protection
- Synergies
- Common data monitoring needs
- Similarities in geographic focus i.e case / regional studies
- Conflicts birds to bacteria

Community forests (Danielle Backman, Revelstoke Community Forest)

Specific Management issues:
- Carbon cycling / harvest method
- Species selection
- Get research that is specific to the area
- Long term water issues
- Wildlife habitat connectivity
- Tree species selection (e.g. cedar)
- Jobs for community
- Sustainability (jobs & environment)
- How is harvesting interacting with changing climate (ie site type) – leading to question of which harvest method?
- Need to clarify multiple objectives

How can research help?
- Get the research that exists and tailor to the area
- Setting up long term monitoring (e.g. community forest with controls in parks)
- Specific vulnerabilities of tree species
- Modeling from stand to landscape
- Carbon credit potential vs. harvesting benefits

How would results be applied?
- Applying hydrologic models to the area
- Invite people to come and give talks
- Make a list of topics and have a meeting
- Get the right information but also need an internal governance system to use it
- Could use some forecasting resources
- Research would inform silvicultural practices, e.g. modelling would lead to assessment of implications at stand and landscape level.
- Identifying the trade-offs for whoever it is that is making the decisions (ie community)

What is the scope of the research?
- Need to stay within the standards maybe be a pilot project
- Maybe need to get a bit wider than Revelstoke?
- ICH
- Collaborate with other existing projects to model from

"P" Policy (Tom Niemann, MFR)

- Capacity building
  - Science (including data, tools)
  - Scenarios
  - Policies
- Mainstreaming
  - Government facilitates adaptation
  - Industry and communities implement adaptive actions
  - Effectiveness is evaluated (FRPA Resource Evaluation Program [FREP] is example of effectiveness evaluation)
- Willingness to act on knowledge?
  - How do we get the conversation between government, industry and public to happen?
  - How to accelerate policy change?
  - Scepticism that policy change is based on scientific evidence (e.g., we know now how to manage for ecological resilience, but policy changes to that end are not entertained if they call for conservation)
- Barriers to policy change:
  - Personal views of administrators
  - Ideological mindsets
  - Risks to social stability
    - Access to resources
  - High-level politicians need to be champions of climate change adaptation
  - Public inertia:
    - Comfort zone
    - Head in sand
    - Don't see the threat
  - Scientists peer review process
  - Expect too much from science - science cannot decide the goal
- Scientists should interpret data wrt the clients' values that can be achieved

Socio-economics (Sinclair Tedder, MFR)

VIEW OF THE PRACTITIONER

Three perspectives:

1. What we do.
2. What we don't do.
3. What we should do.

Definition: "socio-economic issues" is the catch all category for things other than "natural science" based.

Socio-economic analyses generally focus on impact or distributional analysis. For example, socio-economic assessments are completed for the timber supply review process. In the Prince George, Lakes and Quesnel TSAs we are currently doing this kind of work.

Economic evaluation: trade off analysis to assist decision makers understand the implications of various policy options. This is something we don't do much of.

Institutional analysis: what are the formal and informal mechanisms that guide and direct the way we interact with forest and range resources? This is something we don't do much of.

Climate change related work could entail:

- Assessing the impacts of climate change related policies (existing and proposed) on the expected flows of rent and economic wealth generated from BC forests and range.
- Assessing the impacts of climate change related policies (existing and proposed) on forest sector competitiveness and forest sector dependent communities.

Dealing with uncertainty:

- Ensuring all relevant sources of information are understood and accounted for in decision making.
- Advocating for the requisite investments in time and resources to collect and analyze data in a comprehensive and objective manner.
- Ensuring all relevant sources of information are communicated in an effective and timely manner to decision makers and executive.

We need social science research that uses biophysical research results to inform policy responses to climate change. Forming these policy responses reflects institutional change – a change in the constraints and opportunities coordinating our use of forest and range resources.

A significant contribution to this evolution in policy would be to move beyond the "socio-economic assessment" framework and enhance the way in which we understand our institutional context and evaluate the benefits that flow from our forests and range.

The academic research community may be best positioned to address this social science analytical challenge.

DISCUSSION GROUP

Discussion and conclusions based on above:

- The intent of the presentation was to clarify that social science research was not just "socio-economic" in nature. Some definitions were presented to allow a broader discussion of what social science research could contribute.
- There were three social scientists (2 economists including myself and one sociologist) and 2-3 natural scientists (one came late) attending this session.
- The central issue facing natural scientists in incorporating social science was who to contact and how to incorporate this perspective into the work. Discussion focused on the research question – what questions are the natural scientist asking; how would an economist consider the question and what indicators would contribute to answering that question.
- There are different approaches as well: quantitative and qualitative. Each can bring a certain perspective to the research.

- The discussion also turned to who is asking the question, i.e. defining what the research objective is and its relevance to the local community. Public perception could provide input to the scenario development that is being considered.

Summary presented at workshop:

A. Social science research perspective (focusing on economics) has three approaches: 1) socio-economic analysis or impact/distributional analysis of changes, alternative etc. 2) evaluation or trade-off analysis which looks to determine the net social benefits associated with a particular course of action, or to assess differences among alternative courses of action; and 3) institutional analysis, an assessment of the underlying institutions such as property rights, regulatory regimes or in general the way in which we structure and coordinate our interaction with a resource.

B. The start of expanding a research effort to include a social-science component is to network with social-scientists, either through government of university contacts. Unfortunately, there are few people in government doing social science research. Discussion with these folks can at first centre on the research question and how social science may approach the question. The researchers may find that there is no real compatibility between the two perspectives – this is okay, not all projects will have both components neatly fitting into one. Social science research does not have to be worked into the project, it may follow the output of a project and thus link it to policy alternatives.

C. The use of surveys is a method to elicit local community perspectives on values (not necessarily monetary) that locals may have concerning specific used of the forest or research needs. Community values can help structure alternatives that can feed into policy choices.

D. Natural scientists can ask at the beginning of a project how will people be affected by the research I'm doing? How does it link to resource use and those who rely on that resource for employment, sustenance or traditional uses? How can you frame your project with that perspective in mind. The human research interacts with biophysical research to inform policy and public choice. Acknowledging these links in research may be the first step in producing an inter-disciplinary focus.

E. There is also an issue of scale of values. Community values may be at odds with provincial values. For example, research that leads to a choice to do x may follow local values, but may also negatively affect someone at a regional or provincial scale. Researchers should be aware of this potential.

Vulnerability Assessment (Don Morgan, MFR; Ken Zelkie, Symetree Consultants)

Steps:

- Identify key processes /structure i.e., indicators of change (single or suite) over a short period
- Vulnerability of what?
  - Key species
  - Ecosystems
  - Processes
  - Values / goods and services
  - Carbon

- Example, wetlands - drying/replenishment
    - What is happening? What management is needed

Vulnerability is a function of: Exposure, Sensitivity, and Adaptive capacity
    - Adaptive action – managing risk
    - E= Exposure (ClimateBC database with bookends of 2050 & 2080)
    - S= Sensitivity - Ecosystem sensitivity, management sensitivity
    - A= Adaptive capacity - management action, implementation barriers
    - Leads to potential vulnerability and projected vulnerability

Summary:
- What can be done?
    - Re-frame/re-work within VA context
    - Indicator projects
    - Integrative projects
    - Community values (services)
    - Develop scenarios – actions/outcomes
    - How people/policy matters think
    - Linked to action plan

Monitoring and Inventory (Graham Hawkins, MFR)

VIEW OF THE PRACTITIONER

Overview of the work (as a practitioner):
- Provide data, analyses and reporting tools in support of research on indicators 1, 2, 3 and 6 as part of Phase 3 of the Future Forest Ecosystem Initiative (FFEI) Monitoring Strategy;
- Sample National Forest Inventory (NFI) ground and air photo data;
- With researchers, perform analyses of NFI attribute and spatial data, develop reporting tools, and statistically assess suitability of all of the above to directly support indicators 1, 2 and 3*; and
- Provide summary report, recommendations, and data "mining" and reporting tools.

Description of the practical decision making analytical framework:
- NFI 20 km grid is Province-wide and irrespective of land use.
- 268 ground plots have been established.
- Forest Analysis and Inventory Branch (FAIB) proposes to double this number of ground samples in order to obtain enhanced climate change and biomass related information that could be reported to the BEC Zone level.
- Enhancing the NFI for BC is the best way for us to adapt the inventory for climate change and biomass monitoring at the provincial level – this work can always be augmented by other sampling where statistically and monetarily feasible.

Climate Change Related Initiatives Currently Underway:
- First phase of NFI ground and air samples has been established (since mid-1990's) with some preliminary analysis and reporting on the air photo samples.
- Seeking funding to start ground sample remeasurements this year with CFS.

- There is a database of all NFI information with the CFS that FAIB plans to use for analyses and reporting purposes in concert with establishing new ground samples and acquiring new air photos for the 2 panels over the next 8-10 year period.
- Completing a Work Plan that defines the tasks to be completed and a sampling schedule by panel for all ground and air samples.
- Seek letters of support from key stakeholders.
- Looking at all funding options including FIA, CFS, use of in-house resources, etc.

Integrating uncertainty and risk analysis into future decision making:
- Any trends shown through NFI based monitoring could act as a "flag" to trigger further area of interest specific sampling (greater resolution).
- Level of risk and uncertainty should drive sampling intensity and remeasurements and reporting schedule.
- Current reporting could be annual to summarize general trend and report out on program achievements, with five-year full analyses and statistical reporting.
- Accuracy of attributes is part of the published NFI and VRI standards.
- If greater accuracy is required then this will affect costs and timelines which are already significant.
- Reduced re-measurement and statistical reporting cycle could be reduced if there is significant new disturbance such as catastrophic fire or pest damage.

*One or two specific challenges or questions we have about climate change and adaptation we think that our initiative could help address:
Adapting the inventory for climate change and biomass monitoring primarily serves three broad criteria:
- Changes to the forest cover and other flora based on monitoring the vegetation resources inventory (VRI) which feeds into Indicator 1 - Ecosystem Distribution and Composition and Indicator 3 - Species Diversity;
- Changes in site productivity (and biomass) based on measurements of species ages, heights, basal area/density, measurement of biomass of associated vegetation, which feeds into Indicator 2 - Ecosystem Productivity; and
- Changes to forest health through capture of information on biotic and abiotic (die-back, fire) factors, which feeds into Indicator 6 – Insects and Diseases.

There are two issues to consider with the above three criteria in mind:
Issue 1: *Are we collecting all of the right information at the optimal level of resolution (scale)?*
Issue 2: *Are we able to manage this information, roll it up and analyse to look for trends and report out at the appropriate frequency and at the appropriate level for all stakeholders?*
- How can research help address these issues?
- What should the scope of the research be to address these issues?
- How would the research results be applied to make a difference?
- Can we identify the next steps necessary to adequately resolve these issues in a collaborative manner?

Supporting Documents/Other Information Available:
British Columbia's Forest Inventory Monitoring Program – Draft Work Plan, March 31, 2009, Forest Analysis and Inventory Branch
Example NFI Reports, 2008, Forest Analysis and Inventory Branch

National Forest Inventory Photo and Ground Sample Plots - Overview Map of NFI Sample Grid, 2009, Forest Analysis and Inventory Branch
Monitoring Forest and Rangeland Species and Ecological Processes in British Columbia in Light of Climate Change – Phases 1 and 2 Final Report, April 2009, John Innes and Associates
Opportunities for Inventory Based Forest Monitoring in BC: A Discussion Paper, May, 2008, Steve Stearns-Smith and Eleanor McWilliams

Websites with NFI and VRI standards and procedures:
http://www.for.gov.bc.ca/hts/nfi/standards.html
http://www.for.gov.bc.ca/hts/vri/

DISCUSSION GROUP

- Stratify by BGC?
- LIDAR – piggyback on flight for photos?
- Phenology – ability to monitor changes
    - low frequency of sampling may be problematic
    - also consistency of timing of sampling may be a problem
- Need to be clear about scale of sampling, i.e., coarse
- Need to educate people about this data set
    - scale
    - how to access
    - data is available!
- This data is available but looking to researchers to analyse for trends - FAIB may summarize
- Purist sampling approach – entirely random and re-measured along a set schedule.
- How could information be liked with traditional ecological knowledge?
- Collaboration is needed to bring together existing data i.e. NFI, VRI plots, Research plots, TEK, cruise info, BEC data
    - Need to determine what data is needed / useful from these datasets to inform mgmt/research under climate change or provide baseline data

End