

Kaslo & District Community Forest *Long Term STRATEGY* *Final Report*



Prepared for
Kaslo & District Community Forest Society
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Introduction

The Kaslo and District Community Forest Society is a British Columbia pioneer in community forestry. It is a not-for-profit organization with evolving activities to advance the sustainable development of its community. The Society manages an area of some 35,000 ha of mountainous forestland adjacent to northern Kootenay Lake, including six community watersheds and bordering the Kokanee Glacier Provincial Park and two Provincial Park Camp sites (Figure 1). Its license area surrounds the Village of Kaslo and smaller human settlements that have about 2,600 permanent residents and a growing number of second homeowners. The culture and economy of the area is transitioning from one associated mainly with the timber industry to that of a more mixed economy with a larger service sector. This change is based on the area's outstanding natural beauty, all-season recreation and rural lifestyle attracting amenity migrants and tourists.

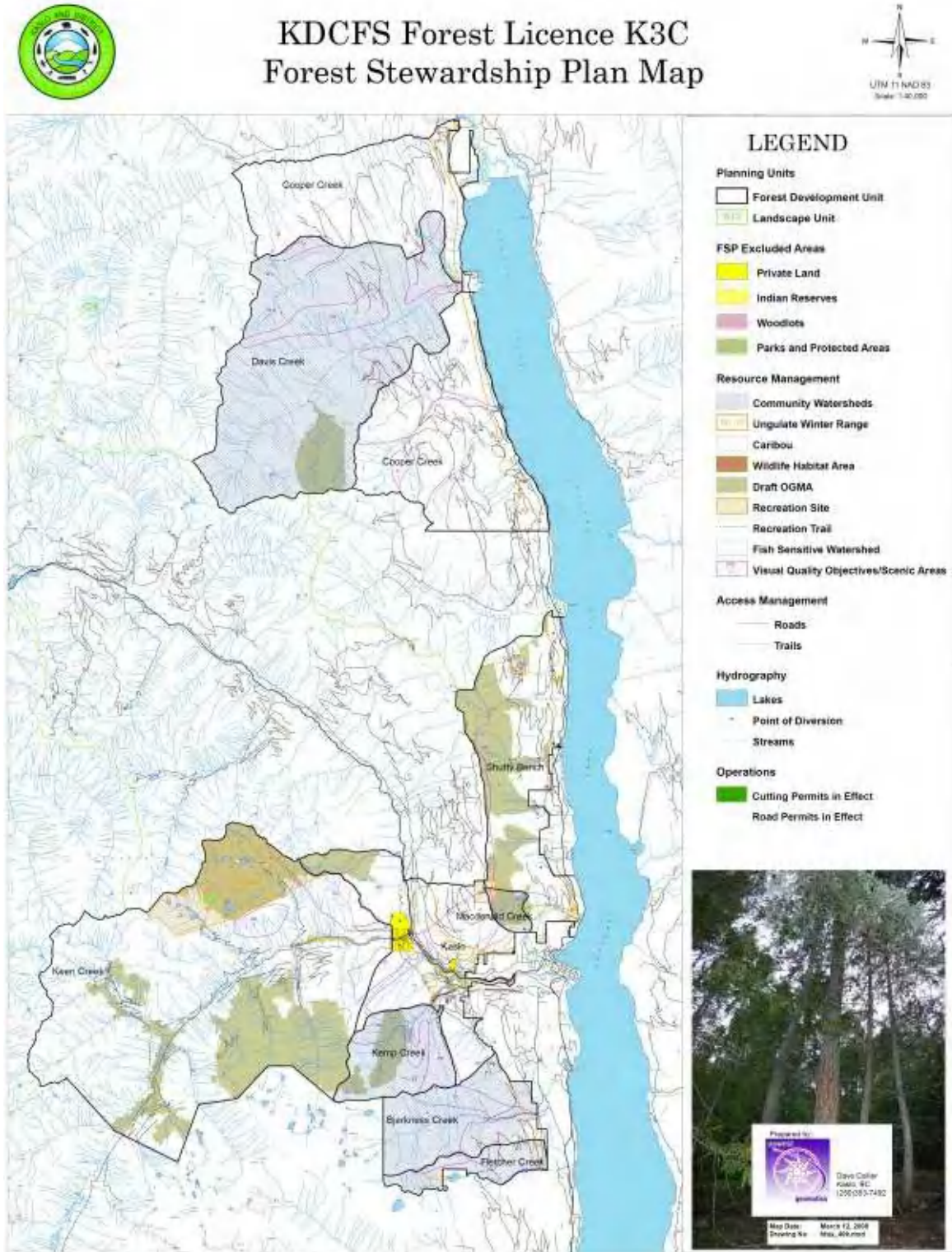
The community forest has a rich biodiversity. Among its wildlife are the Mountain Caribou, Grizzly and Black bear, Western Screech Owl, wolverine and several species of deer. Western Hemlock, Douglas Fir, Western Larch and Western Cedar dominate its tree species. In 2009, the Society shifted its forest tenure from volume-based to area-based, with an annual allowable cut of 25,000 cubic meters. This change in tenure is expected to give the Society greater opportunities for assisting its community in socio-economic stability and ecological sustainability.

Since its establishment in 1996 the Society has been generally successful in achieving its aims. But along with other community forests it faces an increasingly difficult strategic environment of uncertainty and socio-economic complexity. Paramount in this change are 1) significant swings in the market for the Society's present forest products and knock-on effects this has on revenue, business planning, employment and returning benefits

to its community; 2) shifting social values for living more sustainably, which appears critical for future products and services of forestlands; 3) growth and development of human settlements and recreational activity generally in the Kootenay and more specifically on the periphery of the Society's tenured land; 4) divergent expectations within the broader community demanding more complex harmonizing of economic, environmental and social priorities; and 5) the changing conditions of the forest itself, particularly due to the unfolding effects of climate change.

In 2009, the Society competed for and was awarded funding from the Columbia Basin Trust to develop a long-term strategy for it to significantly improve its decision-making and analytical activities and guide its planning and operations. The planning process used in the project, *multiple scenario strategic planning* (MSSP) (see Appendix A), is especially appropriate and successful for dealing with conditions of considerable uncertainty and complexity, and where external factors play a very significant role. Over an 11-month period a volunteer team of 13 community residents, some Society board members and managers, formulated a 10-year strategy, facilitated by the strategic planning firm Glorioso, Moss and Associates and a project steering committee. The team brought together superior depth and breadth in relevant skill and experience, along with the full spectrum of Kaslo area residents' points of view. In addition to the work of the strategic planning team, two public community meetings, a Society special membership meeting and internet postings and responses, along with consultation with three external forestry economics and climate change experts, significantly influenced milestones in the planning process.

Figure 1: Kaslo & District Community Forest Licence Map



Source: Kaslo & District Community Forest Society (2008, 2010)

Mission

The team first detailed the *mission* of their task to formulate a long term strategy and its subsequent implementation. Its *mission objectives* also constitute the updating and detailing of the Society's purpose. The result of this task is set out in the box below.

Mission Statement

Based on 50-year future alternative scenarios, formulate a Kaslo & District Community Forest Society 10-year strategy to guide 5-year management plans, along with a system to monitor and evaluate implementation of the strategy and plans and their adaptation as needed.

Mission Objectives

- 1) *Assist the economic, ecological and social sustainability¹ of the community².*
- 2) *Provide economic opportunities for the community, including but not limited to innovative and value added activities³.*
- 3) *Provide opportunities for the community to be involved in balancing the full-range of forest values⁴.*
- 4) *Provide for community outreach, including information, education, research, scholarships, fire fighting programme, etc.*
- 5) *Provide spatial and temporal guidance to forest management, including provision of sustainable management of sensitive areas (ecosystems, habitats, watersheds, historic trails, fire interface, etc.) and the use of management zones.*
- 6) *Comply with legal obligations⁵.*

Mission Notes

- 1 "Sustainability" refers to using natural resources to meet the needs of the present generation without compromising the ability of future generations to meet their needs (adapted from United Nation Agenda 21, 1992).
- 2 "Community" refers particularly to the permanent residents of the Village of Kaslo and RDCK Area D.
- 3 "Economic opportunities" should be local and stable, and youth focused. The following are examples of "innovative and value added activities": research and education, new products and services, recreational opportunities, bio-fuels, and planting higher value trees with promise of employment creation.
- 4 "Full range of forest values" includes, but is not limited to:

Forest Value	Owner	Secured by	Bears Cost / Responsibility	Beneficiary
biodiversity stand level	Crown	site plan	KDCFS	Public, future generations
biodiversity landscape level	Crown	land use plan	KDCFS	Public, future generations
biofuels	Crown	new license	KDCFS	licensee, end user
carbon credits	community forest	verification	KDCFS (& partners)	Public, future generations
ecosystem services other than carbon credits	community	verification covenants	KDCFS (& partners)	Public, future generations
education	community	verification covenants	KDCFS (& partners)	Public, end user

Forest Value	Owner	Secured by	Bears Cost / Responsibility	Beneficiary
non- timber forest products	Crown	license	KDCFS	end user
recreation – commercial access	Crown	regulation & customary use	enterprise	entrepreneur & end user
recreation - Public access	Crown	regulation	KDCFS, individual	end user
timber	Crown	license	KDCFS	community
forest health	Crown	license	KDCFS	community

⁵ “Legal obligations” compliance does not imply the Society accepts all legal obligations without question. Should the Society encounter legal obligation that impose unacceptable constraints on its purpose the intention would be to object and actively lobby for revision of that obligation.

Key Factors for Strategy Formulation

The strategic planning team next sought to identify what main factors probably needed to be taken into account over the next decade to achieve the mission. This activity had two parts: 1) *Key External Factors Analysis* -- what key factors and forces external to the Society in the province, Canada and the world beyond would likely help or hinder KDCFS in achieving the mission; and 2) *Key Internal Factors Analysis* -- what are the Society’s own resources and their strengths and weaknesses for realizing its mission.

Key External Factors & Alternative Future Scenarios

The external factor analysis was the more unfamiliar aspect of the planning process for the Society's strategic planning team. The team, assisted by its consultants, first identified the most significant factors external to the Society that would likely influence achieving the mission. Through an iterative process, beginning with identifying 78 factors the team honed them down to a set of 34 key external factors, and also ranked the probable 10 most important. Appendix B. lists these factors, their main characteristics (social-cultural, economic political, technological and environmental) and how they will probably be an opportunity and/or a threat to the Society achieving its mission.

Four, alternative, internally consistent and plausible future scenarios were then crafted of how the world of the Society's mission would likely unfold over approximately the next 50 years. All four scenarios used the same *key external factors* that the team identified. However, they come together in different ways, coalescing into two societal driving forces that made-up the logics of the scenarios: 1) *increasing climate change impacts on the productivity of forest ecosystems*; and 2) *increasing value of sustainability changing demand for forest products & services*. Appendix C. includes the 4 alternative futures in narrative form and Figure 2. below summarizes comparatively their key characteristics.

**Figure 2: Key Characteristics of Alternative Future Scenarios
(2011-2060)**

Scenario Key Characteristics	Scenario A "Slowly Forward"	Scenario B "Getting On With It"	Scenario C "Growing Without Guilt"	Scenario D "Winners & Losers"
Societal values change (increasing sustainability behaviour)	medium high	high	medium low	low
Climate change (increasing impacts)	medium	low	medium low	high
Public policy (to promoting sustainability)	medium	high	medium low	low
Economic activity/ performance	medium	medium high	high	medium low
Human migration	high AM, medium EM & CCM	high AM & EM, low CCM	low AM, medium EM & CCM	low AM, high EM & CCM
Technology change (to clean/ green technology)	medium	medium high	high	medium low

Scenario Notes

- 1) Human migration: in-migration of AM (amenity migrants), EM (economic migrants), and CCM (climate change migrants); and out-migration, especially youth.
- 2) Technology change entails shift to alternative energy sources (wood, wind, solar, algae, etc.; alternatives to wood, including alternative fibres); alternative building materials and products (bamboo/cane, rice husks, wastes, etc.); "engineered" wood products (laminated beams, etc.); wood fibre replacing plastics, etc.

- 3) Economic activity/performance includes all sectors, traditional along with green products and services.
- 4) Societal values change entails shift to using Earth's resources to meet the needs of the present generation without compromising the ability of future generations to meet their needs.

Scenario A, called *Slowly Forward*, was selected as the most likely global scenario of the four to unfold over about the next 50 years. Its main characteristics are outlined in the box below.

“Slowly Forward” (approximately 2011 - 2060)

The period is characterised by gradual change, with social and economic conditions improving especially from about 2040, but a global economy not exceeding medium performance. It is not a smooth passage, but one of increasing unpredictable and disruptive weather, along with slow and disjointed cooperation internationally and within countries, especially related to climate change and cleaner/ greener economies and lifestyle. In the developed countries, including Canada, both government and private enterprise shift slowly, trailing their *citizens' increasingly sustainable values and behaviour, but become more supportive after a 2019 stock market crash*. From the 1900 base year to 2060 the average global temperature increases 2.2°C. This may not seem significant but with this increase the USA is no longer a net exporter of food.

In a northern temperate zone of the world, away from sea coasts, Kaslo and Area D fair better. Their average temperature increases 2.0°C, with much less environmental and economic negative climate change impacts. Yet, weather is unpredictable and warmer, characterized by erratic precipitation and violent storms, less snow and earlier and shorter run-offs with increased risk of flooding. Forest fire risk becomes greater. The value of wood goes up and down, but generally improves. Greener niche wood products, such as bio-fuels and speciality woods, along with new services like carbon sequestering and intensive water management increase the most, especially from about 2030.

Key Internal Factors

While half of the strategic planning team and the planning consultants focused on developing the alternative future scenarios, the other team members undertook the internal analysis, identifying and assessing the key strengths and weaknesses of the Society for achieving its mission (see Appendix D.).

SWOT Analysis & Key Issues for Strategy Formulation

Subsequently, the external and internal factors were brought together in a SWOT analysis, in which strengths, weaknesses, threats and opportunities were compared and the most likely issues identified that the strategy needs to address to achieve the Society's mission. These key issues are set-out in the box below.

Five Key Issues the Strategy Must Address

- ***How to change forest management to adapt to and mitigate climate change impacts on forest and hydrology?***
- ***How to take advantage of existing, and especially new and emerging demand for greener forest products and ecological services?***
- ***How to adapt the culture and governance of the Society to take better advantage of changing global and local conditions and maintain its multi-faceted purpose and citizen's volunteer base?***
- ***How to significantly increase K&D community participation in KDCFS, including greater understanding of the Society's capacity to increase the community's well being (especially economic and environmental)?***
- ***How to significantly increase intra-organization collaboration and partnerships, especially with organizations strategic to KDCFS achieving its mission.***

KDCFS Strategy (2011-2020)

The strategy is at the heart of the strategic planning exercise we have been undertaking, where all the previous deliberations and findings are synthesized. It will be the foundation and guide for the more tactical planning of the Society -- its 5-year management plans and their implementation.

The strategy set out below was crafted specifically for the *Slowly Forward* scenario, the one selected at this time as most likely to be the global context for the Society's sustainable management of the community forest over about the next 50 years.

Kaslo & District Community Forest Society Strategy (2011-2020)

The Society's long term strategy to guide its operations focuses on sustaining forest productivity through adapting forest management to climate change, while striving to mitigate the negative impacts of climate change and maintain and protect ecosystems. Proactively, the Society will also take advantage of the increasing demand for greener forest products and ecological services. These include sustainable timber management for supplying building materials along with new and emerging niches, such as bio-fuels, carbon off-set services and speciality architectural components. To this end the Society will advance its organizational skills to benefit from changing opportunities, especially through the use of strategic planning. Further, it will expand collaboration and partnering with its community and other key organizations that can assist with achieving its mission.

Using a common alternative future scenario strategic planning process, the strategy is translated into strategic "thrusts" and "means" to guide and inform more specifically the Society's shorter-

term, tactical action planning -- KDCFS management plans and their implementation. These components of the strategy are mutually strengthening, and so their interrelationships need careful consideration in action planning. Strategic planning also means factoring strategic elements of the entire scenario period (2011-2060) into the Society's shorter term action planning, beginning with its next 5-year management plan (2011-2015).

The 10-year strategy that was crafted has 3 strategic thrusts and 8 means to address the key issues (see above) the Society will likely face in achieving its mission. Distinguishing between strategic means and more detailed tactical planning (5-year management plans) is imprecise and depends on differing perspectives and available resources. Some of the details found in the means here may be considered to cross into action planning, but are included here to give Society's members examples of more specific management details.

<p><i>Strategic Thrust 1</i></p> <p><i>Adapt Forest Management to Climate Change</i></p>	
<p><i>Strategic Means</i></p>	
<p>1. Focus on sustainable forest productivity while maintaining integrity of the license area's ecosystems</p>	<p>1.1. Integrate information developed for this project about likely climate change impacts on the license area into its management, especially mortality of trees by species and location (such as the particular vulnerability of high elevation species, Hemlock and young plantations of Lodge Pole Pine);</p> <p>1.2. Change seed lot (genetics) selection and forest to address climate change effects;</p> <p>1.3. Funds for mitigation and</p>

	<p>adaptation will likely be tight, but needed for species change (<i>assisted migration</i>), fires and fuel management and water management (see especially means # 2 and # 8);</p> <p>1.4 As part of the Society's 5-year management plans the annual allowable cut will be calculated in accordance with KDCFS's mission, and adjusted to incorporate new/improved information and regular opportunities for community input (see especially means # 8).</p>
<p>2. Give greater priority to water and watershed management (see Fig.1 for related mapping to date)</p>	<p>2.1 More specifically, manage for water quality and quantity associated with a) direct impacts of climate change on forest ecology (such as high velocity summer run-offs from high elevations), b) lower elevation flooding and c) increasing human water use;</p> <p>2.2 Although vegetation management in high elevations for maintaining watersheds has been beyond the responsibility & opportunity of KDCFS, increasing climate change pressure in this zone, and potential consequences at lower elevations, demands greater management and therefore more Society collaboration with other organizations is needed (see especially means # 8).</p>
<p>3. Give greater priority to forest –urban (<i>wildlands-human settlement</i>) interface management (focusing on water</p>	<p>3.1. Address where human settlement development meets forest will likely impact the Society's mission over time, including where, when and how the interface will occur, and ways to buffer impacts and</p>

<p>systems, wild fire, aesthetics, wild life, recreation, sensitive areas: see Fig.1 for related mapping to date)</p>	<p>maintain and protect ecosystems, sensitive areas, wildlife habitat, such as: a) establishing <i>agricultural-forestry zones</i> between urban and forest uses, b) developing appropriate self-management in interface neighbourhoods, c) collaborating w/ local government, d) expanding the license area to compensate for productive forest that is lost because of interface pressures (see especially means # 8).</p>
<p>4. Apply carbon accounting/ sequestering to licence area, which can increase KDCFS and K&D contributions to climate change mitigation</p>	<p>4.1 The license area has a great potential for carbon sequestering services; e.g. initial calculation indicates that carbon absorption of 9% of the license area could off-set or additionally reduce K&D's carbon emissions of its present permanent population on an annual basis. To realize the potential additional management services and its analysis are necessary</p>

Strategic Thrust 2

Focus on Greening Demand for Forest Products & Services

Strategic Means

<p>5. Undertake sustainable timber management for building materials while increasing attention to demand for more finished products (with especially means #6 this promises increasing sustainable economic activity, including jobs)</p>	<p>5.1. Focus on marketing through time the comparatively most climate change vulnerable tree species (see Thrust 1 above);</p> <p>5.2 Pursue certification for sustainability and response to greening demand;</p> <p>5.3. Focus on expanding and refining markets, especially through more direct sale to end markets, such as Japan, Korea and China (see especially means #8);</p> <p>5.4 develop niche markets and supply chains for valuable portions of the timber profile (see especially means #8).</p>
<p>6. Develop sustainable ecosystem services for increasingly green market demand (with especially means#5 this promises increasing sustainable economic activity, including jobs)</p>	<p>6.1. Immediately assess benefits and risks to mission of carbon credits to maximise possible benefits, focusing on high elevation license area (benefit is mainly in 1st scenario period and for early entrants into trading);</p> <p>6.2 Help create bio-fuel market and develop KDCFS's production for Kaslo, the Kootenay bioregion and then a larger market (study and experiment in 1st scenario period, and then implement with a) production through 2nd and 3rd periods, and b) the progression</p>

	<p>from 1st to 2nd generations of bio-fuel);</p> <p>6.3 Pursue feasibility of piggy-backing KDCFS's bio-fuel production on local community heating fuel needs, such as Kaslo school and Kaslo business core;</p> <p>6.4 Pursue jurisdiction over new services, especially recreation, including sole and partnership opportunities, such as eco-tourism hiking, x-country skiing, wildlife observation, etc. (see especially means # 8);</p> <p>6.5 Assess the Society's opportunities for involvement in safer residential developments (LEED/ fire-resistant) in peripheral license areas, including use of KDCFS new timber products in these developments (see especially means # 8);</p> <p>6.6 Increase license area for producing forest products and ecological services (especially carbon sequestering), and as off-sets for possible losses of productive area due to forest-urban interface (see means # 3.1);</p> <p>6.7 Early in strategy implementation further assess K&D economic and employment resulting from means # 5 and # 6. Also assess their effects on boom/bust cycle of K&D forestry sector.</p>
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Strategic Thrust 3

Advance KDCFS Skills

Strategic Means

<p>7. Strengthen skills to adapt to and take advantage of changing opportunities by institutionalizing strategic planning for guiding the Society's operations</p>	<p>7.1 Establish KDCFS's strategic planning system to advance its decision-making and management, including a set of scanning, monitoring and assessment indicators for evaluating the Society's operations;</p> <p>7.2 KDCFS Board of Directors focus more on strategic and policy level activities and expand the Society's tactical level professional skills (business management, community and shoulder organizations engagement programs, etc.);</p> <p>7.3 Maintain the Society's existing organizational culture of volunteer citizen's board and membership;</p> <p>7.4 Further develop KDCFS's economic risk/benefit analysis skill, including experimenting with <i>Triple Bottom Line</i> accounting (financial, environmental, social).</p>
<p>8. Establish as a key management objective support of community & <i>shoulder organizations</i> for and involvement in KDCFS (<i>shoulder organizations</i> are</p>	<p>8.1. increase and extend direct community involvement with a specific public program of information, education and regular opportunities for community input and participation, especially for community involvement in balancing the full-range of forest values in the Society's operations;</p> <p>8.2 Establish similar program for local</p>

<p>those that can assist the Society with achieving its mission)</p>	<p>forestry contractors and workers; 8.3 Increase collaboration with Village of Kaslo and Regional District of Central Kootenay; 8.4 Develop collaboration and partnerships with key shoulder organizations for expertise on and funding of Thrusts 1 and 2, such as Kootenay Forest & Woodlots Association, CBT, UBC, Rocky Mountain Institute, research branches of BC and federal governments (e.g. Canadian Forest Service's interest in White Bark Pine research corresponds w/ license area high elevation tree species mortality).</p>
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Strategy Implementation (2011-2020)

Implementing the Society's 10-year strategy will be done through two activities: 1) action planning and 2) evaluating the strategy and its scenario for their continuing appropriateness and progress in achieving the KDCFS' mission (see *Mission* section above), and changing them if and when needed.

Action Planning

Action planning is the tactical level of the Society's strategic planning. It sets out specifically: 1) actions to implement the strategy; 2) prioritizing of actions; 3) financing of actions; 4) designating responsibility for actions (board, management, business office, partners); and 5) spatial aspects of actions (particularly location in the license area). This will be done mainly through

designing and executing the Society's 5-year management plans, along with their periodic assessment.

The strategy has 3 thrusts and 8 means for attaining KDCFS' mission. From these the following are recommended high priority in crafting the Society's 2011-2015-management plan.

1. **Secure support for the strategy** from the Ministry of Forests & Range, the Ministry of Environment, the Columbia Basin Trust and other key "shoulder organisations" for assisting the Society with successfully achieving its mission. This will include examining funding sources, cost sharing and efficiency of potential partnerships.
2. **Design and establish a strategic evaluation system** for the Society's planning and operations (see ***Evaluation*** below).
3. **Further assess the economic impacts of** a) the KDCFS on Kaslo & Area D residents well being to date; and b) the of the likely impacts from implementing the strategy. This analysis will in particular inform formulation of the Society's sustainable forest management plan (2011-2015), and specific development of the forest-urban interface, watershed management and recreation programs.
4. **Further assess the new Vegetation Resource Inventory** for the Society's license area **and integrate the new information** into the forest management plan (2011-2015).
5. **Secure mandates and funding for Society watershed management and recreation management programs**, to be sought from KDCFS membership, the community and governmental bodies.
6. **Establish a program to improve the Society's governance** that advances leadership, decision-making, and evaluation skill. It should include public outreach and

business management, particularly through the means of education and professional staffing. Giving evaluation of the Society operations to the Society's Long Term Planning Committee and Residents' Advisory Group should also be assessed.

7. **Make decision on certification** before the end of 2010.
8. **Develop a carbon baseline** and identify carbon credit services of KDCFS early in the 2011-2015 action planning period.
9. **Design and implement a Sustainable Forest Management Plan (SFMP)** in the framework of the strategy. Actions 2., 4. and 7. above should be completed prior to implementing the management plan. The plan should include an AAC revision, a 5-year harvest plan, a harvest schedule, silviculture plans for the existing plantations and young stands. All should take into account necessary action for climate change adaptation and mitigation, including the development of a forest-urban fire interface program.

In addition, the project's Strategic Planning Team is a particularly valuable asset to the Society for its new strategic planning and management. Therefore, members of the team (not presently board or management members) should be invited to join the Society's *Residents Advisory Committee*.

Evaluation: Scanning, Monitoring & Assessment (SM&A)

The planning method we are using (multiple scenario strategic planning) has a powerful evaluation system to scan, monitor and assess the Society's operations for achieving its mission. At intervals to be decided by the Society, evaluation must

be undertaken of the continuing appropriateness of both 1) the strategy being implemented (along with its action plans) and 2) its external environment, particularly the validity of the chosen most likely scenario as the actual societal context of the KDCFS's mission and strategy. This activity is called scanning and monitoring. (See Appendix A. for further detail).

Early in the strategic planning process the project's Strategic Planning Team decided that such an evaluation capability was essential for the Society, and so included it as a mission objective (see *Mission* above). This decision was reaffirmed by the Society's membership at its meeting on 07 July 2010, when it adopted the strategy. During this project funding and time only allowed for the first step to be undertaken in designing this capability -- the identification of key external and internal decision factors (see *Appendix B & D*). These factors will now be used to formulate a set of strategic indicators/ measures, and a process for their use in evaluating the Society's achievement of its mission. The indicators and the evaluation process must be "user friendly" -- readily understood and used by the Society's management, board of directors and general membership.

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APPENDICES

Appendix A

NOTES ON MULTIPLE-SCENARIO STRATEGIC PLANNING ©

What is Multiple Scenario Strategic Planning (MSSP)?

Strategic planning determines where you should be going, so that your core effort can be focused on that path. Strategic planning was most likely first codified in the 5th century B.C. by Sun Tzu in his *Art of War*. The intuitive-logic method described here was developed initially for private sector use at the Harvard Business School in the 1970's and refined at Stanford Research Institute International (SRI). While a Senior Planner at SRI, and subsequently, Laurence Moss further adapted the method for use especially in the public, quasi-public and not-for-profit sectors as a decision-making, planning and research tool.

Why Use It?

MSSP is especially useful for understanding and managing complex and uncertain conditions and phenomena. This method takes advantage of our "whole brain" capability, using logic and intuition together to identify, analyze and solve problems and take advantage of opportunities. With organizations it better uses their human resources, through reliance on group participation in the entire process (outlined below). This results in a clear and common understanding within an entity (organization, community, watershed, park, etc.). of the external forces affecting a *mission* or decision and the *strategy* to accomplish the mission or make a decision. Therefore, involving key stakeholders is essential.

Typically less resource consuming and faster than other planning methods, it uses only the information most relevant to the *mission* to be achieved, decision to be made or phenomenon to be understood.

Key Characteristics

- 1) use of alternative, multiple scenarios, not a single forecast of the future
- 2) clear and agreed upon mission, objective or strategic concern
- 3) long-range time horizon
- 4) pattern recognition to understand complexity & change

- 5) iterative & participatory
- 6) focus on understanding of the strategic environment (external analysis)
- 7) bounded uncertainty, complexity & issues
- 8) strategy viability in a changing environment
- 9) continuous scanning & monitoring (surveillance)

The Process

Vision

A *vision* is a positive image of the future characterized by imaginative insights. A strategic analysis or planning process may or may not begin with visioning of the future of an entity. It is particularly useful in bringing together a new group or refocusing an existing one.

Mission or Strategic Objective

Formulation of an entity's *mission*, or objectives, is a critical element in the strategic planning process. The *mission* is the clearly stated and understood reason for a planning or analysis, and needs to be specific enough to use as a tool for monitoring and evaluating the effectiveness of the *strategy* or *action plan* that is formulated to achieve the *mission* (see below). All stakeholders involved must agree upon the *mission*, and their commitment to it for a set period of time is crucial for its achievement. *Mission* and *vision* can be confused when their different functions are not clearly understood.

External Analysis

Step 1: This analysis begins with identifying the *key factors*, or *key decision factors (KDF)* that impact the mission. *KDFs* are positive and negative salient factors in the external or strategic environment of an entity ("the world of the *mission*"), which will likely have the greatest influence on the achievement or failure of the *mission*. Positive *key decision factors* are opportunities for *mission* achievement, while negative *key decision factors* are threats or constraints to achievement.

Step 2: Identify the pattern among *key decision factors* synthesizing or coalescing them into *societal driving forces*

(*SDF*). The *SDFs* are the environmental forces that will likely drive the unfolding futures of the *mission*. This step uses intuitive capabilities as well as the analytical methods typical of Western formal analysis and planning.

Step 3: Formulate alternative future *scenarios*. This is done by 1st making the *societal driving forces* neutral, or non-directional and positioning them in axial relationship, or what is called *scenario logics or formats*. Their number of will depend on the number of *societal driving forces*. For example, 2 societal driving forces generate 4 *scenario logics*. These are then elaborated into alternative future scenarios (for more detailed description of the process see "Multiple Scenarios in Strategic Analysis & Planning", Moss1994/2005).

Future *scenarios* are a tool strategic planners use to make greater sense of our fluid, turbulent environment and uncertain future. They are descriptions of conditions occurring in a particular period of time; plausible, internally consistent stories of main events and key stakeholders reflecting the *key decision factors*. Typically, they inform the investigation about systemic relationships among conditions that are typically not perceived and anticipated.

Some planners contend that people cannot cope with several *scenarios* and so become confused. Others, including the writer, have found this is not the case and moreover, hold that the very reasons for using a *scenario* approach demand using multiple *scenarios*. Why? 1) A well-structured set of *scenarios* describes the range of uncertainty that must be address for *mission* achievement; 2) multiple *scenarios* significantly broaden the awareness of the client or analyst; and 3) they increase resilience and the ability to respond to the certainty of future uncertainty in both planning or research systems and resulting strategies.

Step 4: Not *What If*, but *If This, Then What?*

The client or analyst chooses what they believe is the *most likely scenario* of the future. There is discussion about what is better to use, the most desirable or the *most likely scenario*. Some

planners say it is better to choose the most desirable, because the client will do its best to achieve the *mission*. However, in using this approach undesirable factors and critical issues have a strong tendency to disappear.

Internal Analysis

This involves identification and evaluation of strengths and weaknesses of the entity for achieving the *mission*. They are usually identified in terms of human, financial, physical, informational and temporal resources.

SWOT Analysis

SWOT analysis brings together the strengths (*S*) and weaknesses (*W*) of the organization to achieve the mission in the context of the chosen scenario and the opportunities (*O*) and threats (*T*) of the strategic environment, delineated in the chosen scenario. Key issues for *mission* success are usually identified at this stage in the process.

Strategy

Strategy is the core actions an entity must take to achieve its *mission*. It describes how the entity will manipulate salient opportunities and threats in the *mission's* unfolding world in relation to its own strengths and weaknesses. Although all the stages of strategic planning outlined here are important, the *strategy* is perhaps the *force majeure* of strategic planning. This is because the strategy is the sum of all products of the strategic analysis and serves as the foundation for *tactical* action in the context of the mission's external environment and an entity's internal resources. Typically, *strategy* is composed of a several *strategic objectives* or *strategic thrusts*, which form the bridge to tactics, such as *action plans* or principal investments (see below).

When time and other resources permit, contingency strategies may be formulated for the alternative, less likely *scenarios*. These are especially useful for *surveillance* activity (see below). Two caveats: attempts to create a single *strategy* for two or more *scenarios* usually results in a product too diluted to be of practical value

Action Plans

This refers to the tactical level of the process, or how *strategy* is to be implemented. More specifically they tells us how, when, who and what financial resources are needed to implement the *strategy*. The *action plan* may be further disaggregated into more specific programs and projects.

Surveillance (Scanning, Monitoring & Assessment)

Strategic planning has a powerful surveillance system. *Surveillance* is carried on throughout the whole strategic planning process at intervals appropriate to an entity's resources, with emphasis usually given to the external analysis and the chosen *scenario*. This assists in assessing the validity of the chosen *scenario* through time by reviewing its characteristics, and in knowing if and when the chosen *scenario*, or an alternative one, is the actual environment of the *mission*. There are two *surveillance* activities: *scanning* and *monitoring*.

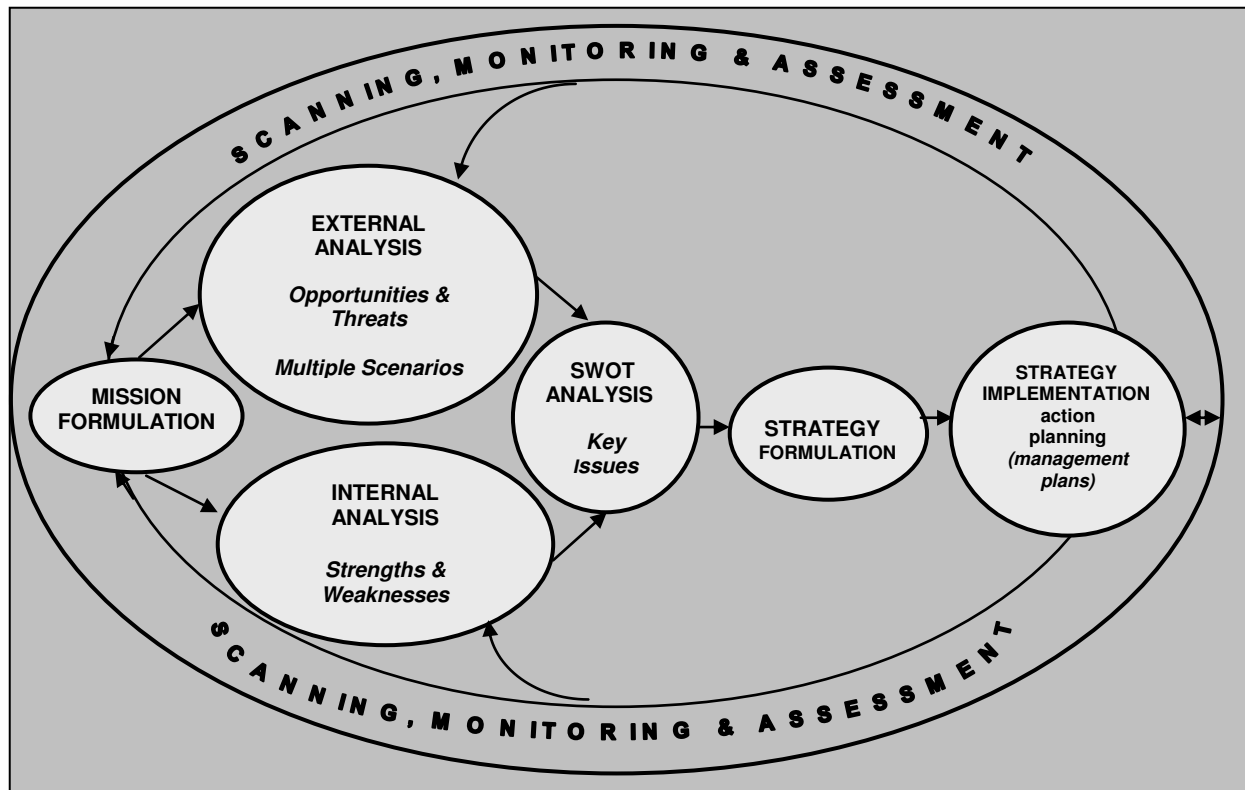
Scanning

Scanning deals with uncertainty and alerts analysts and decision-makers to signs of change. It is a systematic attempt to detect what the futures analyst Igor Ansoff termed the "weak signals" of emerging new conditions, and to do so sufficiently early and accurately that an entity has lead-time in which to shift or develop strategy. The earlier *scanning* detects these weak signals, the more resources an entity can save. It may also indicate the need to shift to an unfolding more likely scenario and its implications for *strategy* modification.

Monitoring

Monitoring is the day-by-day tracking of known characteristics (usually identified in the external analysis above). Compared with *scanning*, *monitoring* is concerned more with the present and near future.

Multiple Scenarios Strategic Planning Process



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Appendix B

External Analysis: Key Factors

Factor Cluster 1: Market for KDCFS products and services		
Key Factors <i>(10 likely most important *)</i>	Opportunity (+) &/or Threat (-)	Principal Characteristic <i>socio-cultural (SC) economic (Econ) political (P) technological (T) environmental (Env)</i>
1) non-timber forest products & services market growth	+	Econ, SC
2) energy cost influences competition between wood & alternatives for building products	+/-	Econ, T, P
3) community forest in competition w/ gov't. & industrial forestry	-/+	Econ, P
4) devolving & evolving skills, technology & harvesting practices * <ul style="list-style-type: none"> • loss of logging skill culture & demographic change; • changing harvesting method; • contractors ability to sustain their efficiency?); • constant work needed to maintain machines & skills. 	-/+	T, SC
5) demand for products & services * <ul style="list-style-type: none"> • global economy, pandemics, eco- 		Econ, P

<ul style="list-style-type: none"> terrorism, pop. growth; • change in demand from chips to logs; • proximity to market (for forest products & recreation); • the direction of fibre industry <ul style="list-style-type: none"> - what/how fibre industry - competition; • cyclical nature of commodity markets driven by consumer trends and supply; • demand for wood fibre; • global wood trade competition • increasing value of bio-fuels 		
6) 80-90% of license trees non-harvestable for profit (using past 5-yr log price average) *	-	Econ
7) fibre use change from high grade	-	T
8) alternative energy sources to hydrocarbons (availability & timing)	+/-	T, P
9) competing demand for fibre and carbon credits *	+/-	Econ, P
Factor Cluster of 1 & 2		
10) growing recreational use of forest area (esp. AM and tourism)	+/-	SC, Econ
11) transition to agricultural use	+/-	SC, Env
12) increase in residential development contiguous to forest, watershed & waterfront increases conflict w/ forestry, wildlife & wildfire management	-	SC, Env

(esp. AM & baby boomers driven pop. increase) *		
Factor Cluster 2: Changing social values and behaviour		
13) community image of and participation in KDCFS (mixed, conflicting & variable through time)	-/+	SC
14) water and watershed use increase, w/ future of water quality & quantity and community demand uncertain * (esp. use by "underground economy" & behavioural change w/ esp. AM)	-	Env, SC, Econ
15) consumptive use of wildlife	-	SC
16) poaching relatively high (takes high value trees)	-	SC, Econ
17) increasing value of natural environment & land (esp. if increasing AM) *	+/-	SC
18) shift from globalism to localism (food & water security, local control, "protectionism" ?)	+/-	SC
19) inter-generational contract (w/ increasing local cost of living, esp. housing, & youth out-migration)	-	SC
20) increasing demand for green certification (by log buyers)	+/-	SC, Env, Econ
21) increasing value of "rural" community lifestyle (esp. w/ increasing AMs pop.)	+/-	SC

Factor Cluster 3: Changing environmental conditions		
22) existing & evolving natural condition of chart areas * <ul style="list-style-type: none"> • easy to grow trees; • geological instability (steep slope, soil erosion); • water availability (high but decreasing ?) • mountainous terrain; • wildfire; • high natural mortality of trees in KDCFS forest inventory (exceeds growth in many areas, & climate change will increase mortality) 	+/-	Env
23) climate change/ global warming (global & local magnitude, slow/swift, constant/erratic ?) *		Env, P, Econ
Factor Cluster 4: Political-Economic Dynamic		
24) compliance w/ federal & provincial changing policies, regulations and guidelines (MFR re-stocking gates, keep cheap loges, cut control; "sensitive" areas, endangered species, etc.)	-/+	P, Econ, Env
25) local staff of MFR interpretation of policies & regulations (permitting, etc.)	-/+	P, Env
26) pressures from other entities' perceptions of KDCFS's practices ("sensitive areas")	-/+	P, SC

designation, special interest groups, etc.)		
27) compliance w/ resource management conflicting objectives, policies, jurisdictions of governing public entities	-	P
28) "ownership" of land unclear (esp. aboriginal claims)	-	P
29) land use policies & plans of regional & local governments (esp. Kootenay Boundary, RDCK, Village of Kaslo)	+/-	P, SC
30) changing local & regional economic & employment base * (e.g. knowledge as a driver of economy & community SC change)	+/-	Econ, P, SC
31) BC gov't. appropriate, accurate & timely information for effective forest management	-/+	P, Env
32) CBT future role as imp't. regional asset for forest management ?		P, Econ
33) concentration of forest products industry	-	P, Econ
34) big industry pressure on gov't. to make policies more favourable to them	-	P

*** KDFs Principal Characteristics Colour Legend**

- Blue = socio-cultural
- Violet = economic
- Pink = political
- Orange = technological
- Green = environmental

Abbreviations:

KDCFS = Kaslo & District Community Forest Society

MFR = BC Ministry of Forest & Range

AM = amenity migration

Appendix C

External Analysis: Alternative Future Scenarios

Kaslo & District Community Forest Society *Alternative Future Scenarios* (2011-2060)

Prepared for
Kaslo & District Community Forest Society

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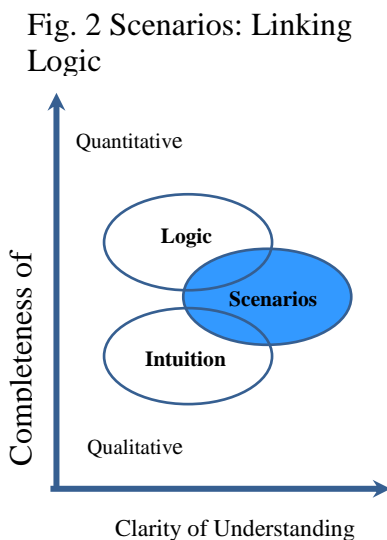
About multiple future scenarios

Multiple future scenarios are coherent narratives of alternative plausible futures, based on complex, interacting socio-cultural, political-economic, environmental and technological factors and forces that constitute the external, strategic environment of an enquiry or entity being planned for. Fig. 1 describes what scenarios *are and are not*.

Fig. 1: What Scenarios Are & Are Not

Scenarios Are Not...	They Are ...
Predictions	Description of alternative plausible futures
Variations around a midpoint base case	Significantly, often structurally, different views of the future
“Snapshots” of end points	“Movies” of the evolving dynamics of the future
Generalized views of feared or desired views	Specific “decision-focused” views
Products of outside futurists	Results of strategic planning team’s insight & perceptions

Source: Ralston, B. and I. Wilson (2006) *The Scenario Planning Handbook*. - Mason, OH.



Scenarios are used as a tool to deepen our understanding of complex issues. Some issues are well understood and can be represented by quantitative models. But more often than not, especially in the public realm, data are too limited or of poor quality, unquantifiable or there are just too many unknowns. In this situation, as the influential 20th century social scientist *Herbert Simon* said, both intuition and logic must be used. Scenarios can be viewed as a tool to bring together logic and intuition (Fig. 2).

Alternative future scenarios reduce our vulnerability to surprises by forcing us on

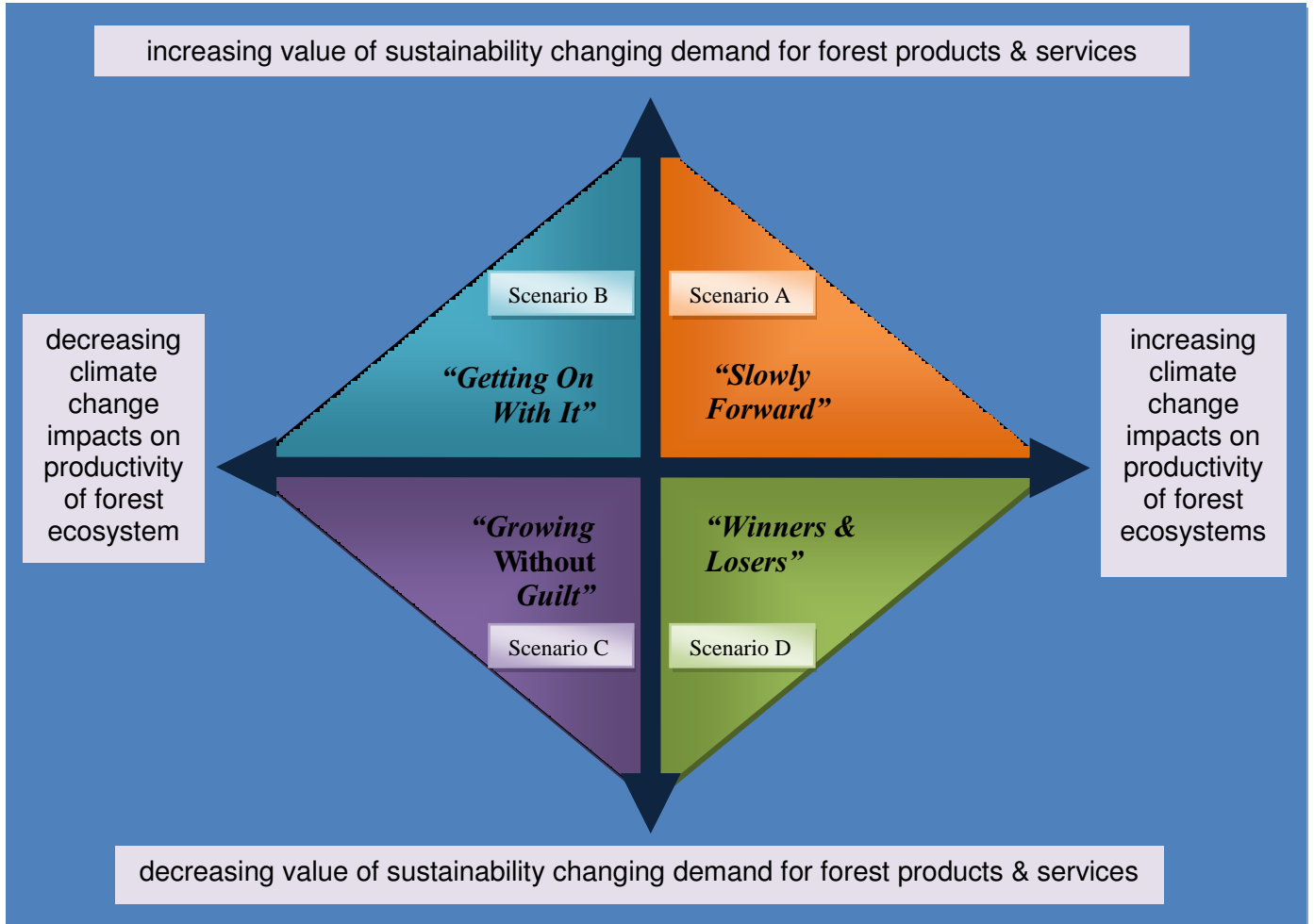
imagining a variety of plausible futures and to think through their implications for achieving a specific mission. They provide a more systemic, superior assessment of opportunities and threats to achieving the mission. Hence, the strategy that emerges from using the multiple scenarios process typically exhibits greater appropriateness, resilience and flexibility.

Guide for reviewing these draft scenarios

1. These alternative future scenarios are not “*what if*” scenarios. They have been developed through a process you began by crafting your mission, then identifying key opportunities and threats (35 *key decision factors*) that will likely impact achieving the mission. They were then clustered and coalesced into the likely main forces out there in the world (*societal driving forces*) likely to drive the unfolding futures of the mission. For the mission of this project they are: 1) increasing climate change impacts on productivity of forest ecosystem; and 2) higher valuing of sustainability changing demand for forest products and services. Subsequently, the *societal driving forces* were made neutral or non-directional and positioned in an axial relationship called *scenario logics*. The number of scenarios that will be developed depends on the number of *scenario logics* generated. In our case, 2 scenario logics generated 4 scenarios (Fig.3).
2. The characteristics of the scenarios (what happens in each scenario) are based on the outcome of combining the two *scenario logics*. We went back to the *key decision factors* you identified and used them to play dominant roles in each scenario. Some key factors are not discussed in each scenarios, and we have used a common set of six overarching characteristics for all: a) societal values change; b) climate change; c) public policy change; d) economic activity/performance; e) technological change; and f) human migration. There are three reasons for doing this: 1) for comparing the scenarios for choosing the most likely one; 2) to assist in strategy formulation; and 3) for later monitoring the scenarios to see if the chosen most likely one continues to unfold or an alternative one is emerging. This method should result in alternative future scenarios that are distinct from each other, internally consistent and plausible (not beyond the imagination of decision-makers that a scenario can unfold). Please review the draft scenarios for distinctiveness, consistency and plausibility.
3. All scenarios have two descriptive levels: global and Canada contexts; and regional and local contexts. Why do you need the global context? Because the driving forces identified are global and will affect Canada, BC, KDCFS and its mission. Although we can do little about controlling what happens globally, we need to identify as early as possible and understand the

global opportunities and threats to our mission, so that we can develop a practical, implementable, and resilient strategy for the Society.

Figure 3. Scenario Logics



Scenarios	climate change productivity impacts	sustainability products & services demand
A: <i>“Slowly Forward”</i>	increasing	increasing
B: <i>“Getting On With It”</i>	decreasing	increasing
C: <i>“Growing Without Guilt”</i>	decreasing	decreasing
D: <i>“Winners & Losers”</i>	increasing	decreasing

4. The scenarios are written in 3 stepped time periods: 2011-2015, 2016-2025, and 2026-2060. Information is more detailed in the first period and becomes vaguer as we move further into the future. This is typical since our ability to picture the future in detail diminishes the further away we are from the present. Hence, there is particularly less details of socio-cultural and political-economic conditions and events in 2026-2060 scenario period.
5. For climate change information we mainly used the models of the UN Intergovernmental Panel on Climate Change (2007 Fourth Assessment Report), and the Government of Canada Canadian Climate Centre.
6. All the scenarios are written in the past tense. This is a technique often used by strategic planners and scenario analysts to help the reader enter the virtual reality of the narrative.
7. The specific events mentioned in each scenario are exemplary only. However, they do represent a type of event that is consistent with the scenario logic and plot.
8. Before the individual four scenario narratives you will find a matrix (Fig. 4), which compares the four scenarios by their six overarching characteristics.

Fig. 4: Comparative Key Characteristics of Alternative Scenarios

Scenario Key Characteristics	Scenario A “Slowly Forward”	Scenario B “Getting On With It”	Scenario C “Growing Without Guilt”	Scenario D “Winners & Losers”
societal values change (for increasing sustainability behaviour)	medium high	high	medium low	low
climate change (to increasing global warming)	medium	low	medium low	high
public policy (to promoting sustainability)	medium	high	medium low	low
economic activity/	medium	medium high	high	medium low

performance				
technology change (to clean/ green technology)	medium	medium high	high	medium low
human migration	high AM; medium EM & CR	high AM & EM; low CR	low AM; medium EM & CR	low AM; high EM & CR

NOTES:

- 1) Human migration: in-migration of AM (amenity migration), EM (economic migrants), and CR (climate refugees); and out-migration, especially youth.
- 2) Technology change entails shift to alternative energy sources (wood, wind, solar, algae, etc.; alternative to wood; alternative fibres replacing wood); alternative building materials and products (bamboo/cane, rice husks, wastes, etc.); “engineered” wood products (laminated beams, etc.); wood fibre replacing plastics, etc.
- 3) Economic activity/performance includes all sectors, traditional and green products and services.
- 4) Societal values change entails changing human use of Earth’s resources to meet the needs of the present generation without compromising the ability of future generations to meet their needs (see project “Mission”).

Most Likely Future Scenario of KDCFS Mission

Scenario A: “Slowly Forward” (2011-2060)

Scenario Logics: 1) increasing climate change impacts productivity of forest ecosystem; and
2) increasing value of sustainability changing demand for forest products and services.

Global & Canada Contexts

2011- 2015

Through this time period the valuing of environmental, economic and socio-economic *sustainability* continued to spread significantly in the world.. Canadians seemed generally to support greater conservation and reduction of *greenhouse gas* (GHG) emissions, but their national Govt dragged its feet, unable to see its way clear of tar sands and hydro energy development and export. This was reinforced by a habit of low risk-taking and having little faith in Canada’s ability to play a significantly competitive role in the emerging global clean/green economy – the *New Economy*.

Very limited advance was made in global agreement for reducing greenhouse gas (GHG) emissions until late 2012, when the international binding *Berlin Climate Change Accord* was reached, led by Germany, USA and China. After touch-and-go wrangling, it included payment to the world’s poorest countries (the G77) to help with carbon reduction, 1% of developed nations’ Gross Domestic Product (GDP), for a 10-year period. Canada, Russia and Brazil did not sign the *Berlin Accord*. Through the period global warming increased, being fed especially by more GHG emissions, and for Canada it was slightly higher than the global average due to methane gas released from thawing tundra and warming oceans. In consort, global water quantity and quality continued to decline, along with its value increasing. While this condition still seemed generally manageable in the developed world, and an export plus for particularly Canada, Russia and Finland, Africa’s water situation became quite critical by 2015.

Disappointment of the Canadian people with their government’s *Berlin Accord* position was an important factor in the shift to a strong federal Gov’t Liberal/Green coalition in 2014. Behind this were an increasing number of Canadians, who as part of a global trend wanted more sustainable life styles, and who improved their organization for greater political participation and representation. Also important was some promising commercialization of Canadian green-tech for alternative energy and cleaner, lower tech innovations for mining, oil & gas and agriculture — for both domestic and global economies.

By the end of this period both the shift to more sustainable behaviour and green technology were moving forward at a modest pace.

Yet, high volatility remained characteristic in both commodity and financial markets around the world. The world still feared the uncertain outcome of the immense public debt governments took on in the 2008/09 *Great Recession*; especially, would the private sector, and the enlarged hybrid public/private sector, actually return to productivity after their tax payers banquet? Oil jumped around between \$US 65 and \$125/bl., and by the end of the period *peak oil* was generally accepted in consuming countries as having past. Yet, most senior governments of developed nations continued to move slowly with clean/green adaptive policy and action. Canada followed suit, while China and Brazil took the lead.

Continuing Middle East tension and standoff in Afghanistan/Pakistan remained an international social and economic threat, and almost everywhere this was a constraint to improving domestic welfare. Canada was able to turn marginally more to the latter concern after its full disengagement in 2012. But the USA became more mired through this period, while NATO forces were steadily reduced and Pakistan further drawn in. National US-Canadian relations became strained, especially manifest in trade. However by 2015, a “*wood for water and energy*” strategy (allowing import of Canadian wood products if Canada exported to the USA more water and energy) tended to balance intermittent intemperance, in spite of who were President and Prime Minister.

Rural areas around the world continued to be a have-and-have-not contrast. Those with high environmental and socio-cultural amenities continued to attract both part-time and more permanent new residents (mainly “amenity migrants”), especially away from seacoasts to mountain areas rich in scenic beauty, forest and water. Over this period the 2nd home type decreased, especially cottages at the end of long trips, along with an increase in cost of travel, particularly some 50% for air travel. But although a middle class with discretionary income had not significantly expanded again after the 2008/09 Great Recession, there was money in the system and its owners’ desire to escape the normal remained high, along with many wishing to lead a more sustainable lifestyle, seemingly possible in some rural places. High amenity rural places were shifting to a more service society and economy driven by both amenity migration and some external demand for their local products and services. However, the accompanying residential development in forested areas and watersheds continued to create local conflict of priorities and risk to ecosystems and private property, principally due to fire hazard, water degradation and forest use impacts.

Globally, the quality of forest ecological systems and their human services continued their downward trend. Modest advancement had been made in reducing the tropical forest cut, especially through carbon credits for

conservation. Carbon credits were an opportunity in this period, especially for those who got in early. While demand increased for traditional forest products from midway through the period, it increased more for green products and services, along with niche markets such as Asian demand for speciality lumber. In the global forest products trade Canada had a less competitive position because of the high value of its currency, which mostly followed the price of oil. Also, Europe began to compete with Canada in the North American market for market share. At the same time global warming continued to bring to more northern forests an increase in insect infestation and fires. There, governmental pronouncements and some successful pilot projects aside, generally public policy and action still trailed the need for innovative mitigation and adaptation.

2016-2025

The earlier characteristic slow change in the global political economy generally continued through this period, in spite of an increasing shift in social values and clearer demand for greater environmental and economic sustainability along with social equity. But in 2017 an international agency was established to regulate carbon sequestering, tax and trade: the *World Carbon Committee* (WCC). Russia and India did not come on board. But Canada did, and at the same time also signed the 2012 GHG emissions *Berlin Accord*. Global climate change continued to increase, with an average temperature rise slightly above the medium high increase scenario of the *Intergovernmental Panel for Climate Change* (IPCC). Canada experienced approximately the same increase. This change was accompanied by more violent storms and erratic swings in precipitation, but generally with warmer winters, especially in the northern and southern hemispheres, along with drought and crop failures elsewhere.

Talk of greater and faster breakthroughs in energy alternatives; especially with some successes in producing liquid transportation fuel from biomass (and the accompanying reduction in reliance on oil, including Canadian tar sands), brought major investment portfolio restructuring and a big run-up in the world's still only marginally more regulated stock markets. In 2019 however, it was clear expectations had exceeded reality and the bubble burst again, taking with it re-inflating housing prices, and this time including Canada's. The construction sector followed, and for 5 years it wallowed along with housing markets, especially in urban centres. The price for lumber and other forest products fell to very low level. This facilitated a large-scale concentration in the forest products industry. For the whole 2016-25 period a slow shift to a cleaner/greener economic base with related new jobs continued, accompanied by an average oil price of \$US 90/bl. Overall the restructuring global and Canadian economies began to turn in a medium performance.

The mid-period economic setback demanded major reductions in public and private sectors budgets everywhere. This, in addition to a state of general exhaustion of all sides of the Middle East and Central Asian conflicts was behind

an armistice with considerable compromise all round. Europe led the settlement along with a consortium of lesser powers. Canada played a significant role, as it also did (along with the Nordic nations, Argentina, and Australia) in establishing a more humane and rational global focus on the growing *climate change refugee* or migrants (CCM) crisis — people moving from areas of the world most negatively impacted by climate change. These sponsors tied their argument to another global issue that had reached critical proportions, the growing labour shortage of more developed countries. Significant among the CCMs were younger, skilled persons who could offset shrinking labour forces in now aged national populations like Canada's.

2026 - 2060

The above slowly evolving and disjointed pattern continued through this 3rd period, but most notably with increasing demand globally for sustainability action. With it, and further improvements in alternative energy sources, especially bio-fuels, a greener *New Economy* was being established. In 2035 this change mothballed Canada's tar sands, while Canada was able to develop a modestly comfortable domestic economy with a likely continuing international niche. There was increasingly wiser use of its natural endowments for sustainable forest, water, food and energy products and services, with growing self-sufficiency and a modest level of exports. Forest Certification became a necessity to enter any valued added forest products market. Tourism and amenity migration continued to play a significant role in socio-cultural and political-economic change and development, but at a decreasing level, especially because alternative energy sources, particularly fuels, had still not become cheap and discretionary travel was taxed heavily. Moreover, from about midway in this period one's personal carbon footprint had generally replaced the car and house size as the measure for community stature.

More severe climatic change-based disruptions, especially in tropical and coastal zones increased in frequency and uncertainty, along with considerable regional variation, such as the colder winters of Western Europe. Yet, global warming seemed to either stop or reach a plateau between 2050 and 2060, including for Canada; slightly above the UN IPCC medium high increase scenario of 2.1°C (1900-2060 period). Related mitigation and adaptation (M&A) policy and action continued to slowly improve and be better coordinated, with increasing global focus on foreign assistance to the poor G77 countries. Through time, slowly a global strategy had been cobbled together and implemented.

Forest ecologies and their management continued to seek a steady state, with the greatest examples of success in the world's more northern and southern latitudes, especially in the Nordic countries, Germany, Scotland, Chile, New Zealand and parts of Pacific North America. At the core of the success

stories were innovation around tree species genetics and hybridization, and integrated ecological systems management, with a particular concern for sustaining water resources and related regional self-sufficiency.

Regional & Local Contexts

2011-2015

Climate change for BC, with the exception of some coastal human communities, remained a rather limited hardship during this period. In the Kootenay Lake bioregion, including Kaslo and surrounding Area D (K&A), the four seasons became slightly warmer, but with more erratic weather of sudden storm events, that impacted more local areas variably and unpredictably. The more extreme events were felt most within watersheds with stream convergence into high order waterways, increasing risk to infrastructure and ecosystems. Warmer winters brought more rain and less snow followed by earlier, and increased spring run-of higher stream flow velocity. Summers were warmer with less precipitation.

The high elevation forest (ESSF zone) experienced the highest mortality, and their die-back influenced stream flow with increased discharge and higher flow during summer. Milder winters and warmer summer temperatures also affected mid-elevation ecological systems, particularly through bark beetle outbreaks (begun in the 1990s) increasing the mortality of pine and Douglas Fir, including the young plantations. Fire hazard also increased, causing two significant forest fires, one destroying two dozen new houses built in forestland in Electoral Area D. Over the period an increase in K&A residential development in forests had occurred, as the preferred pattern continued to be low density on large lots. Kaslo had “encouraged” less sprawl with higher density urban infill, but it was not mandated in either the Village or the surrounding district.

In this period the global amenity migration market, along with its earlier resort development policy became a niche focus of the BC Gov't *amenity migration* (people principally moving to more rural places for their superior natural environment and distinct cultures) was finally recognized as an important part of the world's changing socio- economic pattern. The provincial Gov't, along with the Kootenay, was following the local governments of Vancouver Island and Sunshine Coast. Together with the Lower Mainland, these three led the province in awareness and strategic response to the evolving green economy, and their earlier shift to sustainability criteria for managing change. It also likely reflected their coastal condition vis-à-vis global climate change.

K&A increased its population in the 2011-15 period mainly by in-migration of amenity migrants, along with others who followed to take advantage of the service demands of amenity migrants and tourists. While

retirees of modest and middle-income still dominated these migrants, the period also saw an increasing number of younger persons with creative and entrepreneurial skills in the arts, culture and applied sciences, and a willingness to risk urban incomes in order to enjoy higher environmental amenity, and increasingly, greater food and water security. K&A was catching up with the earlier amenity migration development pattern experienced particularly in the US western mountain interior. In addition, it was answering a growing real and anticipated fear of climate change hazards elsewhere.

However, during the first half of this period seriously greening the economy continued to have only the nominal support of BC and federal governments and Canadian private capital. The BC Gov't continued to focus on promoting the more traditional use of its natural amenities, and only modestly, toward the end of the period really began supporting a combination of traditional and newer, greener, activities. Despite their PR, the Gov't, and most private financial institutions, typically remained shorter-term market orientated, without well-informed and innovative long-term strategy. Almost in spite this context, by 2015 BC's clean/ green products and services firms had slowly increased, and seemed US and more globally competitive (65% of their products & services being exported). Some were attracted to the amenities of the Kootenay Lake bioregion and its communities, despite transportation costs. In K&A small, wood value-added producers and sawmills increased their incomes from low to medium levels.

Energy costs followed the national and international trend up, and by 2015 some increase in local energy self-sufficiency was taking hold, especially through geothermal and bio-fuel applications. In the latter, K&A played a leading role. This paralleled its residents' noted conservation behaviour, especially manifest in waste reduction and recycling. It was more significant than GHG reduction, as K&A and its larger bioregion had been emitting comparatively little.

Yet, despite a growing percentage of both provincial and the Kootenay Lake bioregion's residents turning to greener living habits, the period showed limited overall concrete progress for the province more generally.

2016-2025

The global GHG emissions agreement, especially after Canada signed on in 2017, increased the incentive for the BC Gov't to get behind its clean/green policies with creative incentives.. This in turn loosened up a little more private capital, especially from the USA and Germany, but also domestic. Yet, as it was still unclear if BC had any real, long-term comparative advantage in this arena, development continued to be cautious and slow.

Some advancement was also occurring because of the integrated Canadian and US economies. But the USA became increasingly tougher in trade negotiations: more Canadian water, hydropower, oil & gas and greater US agrobusiness ownership in return for admitting Canada's clean/green products and services. This pressure increased as long-term drought grew more likely for the US plains and California's Central Valley. The global industry of carbon trading for forests, especially within the context of BC's membership in the Western Climate Initiative (a consortia including California, Oregon, Idaho and Washington states), had added a modest amount to BC's income, however carbon credit opportunities declined from midway in this period. However, income lost through this change was compensated by new demand for low and non-GHG producing bio-fuels from forest biomass.

Just past the mid-point in this period, after the 2nd housing and stock market collapse, the BC electorate chose a more representative, globally informed and greener coalition government. This was brought about by voters' general frustration with the previous Govt's limited response to their increasing demand for greater sustainability, and associated opportunities for BC's natural and human resources. Following national and global trends, this sentiment succeeded mainly through the better organizing of NGOs to win provincial political representation. There was a similar political shift in many BC local governments, including in Kaslo and its larger bioregion. One result was that BC, which for some time had been invited to play a larger role the *Western Climate Initiative*, a US and global leader in sustainable development, while remaining cautious, now moved with a little more confidence into this association.

At the same time climate change had become more disruptive for BC due to increasing temperature, but more so from greater volatility and unpredictability of the weather. The coast continued to take the brunt of this shift. For the Kootenay Lake bioregion and K&A temperature increased to a medium warming level, moderately less precipitation in summer, but with more violent and unpredictable storms. In winter rain increased with less snow, accompanied by more intense, faster run-offs and flooding of streams and rivers. By the end of this period winter recreation was moving north.

Pressure on forest ecosystems from bark beetles increased, causing higher tree mortality, particularly in sub-alpine fir and spruce stands. On the other hand, forest management was responding with improved understanding of especially forest fire behaviour and tree species selection. Yet application remained constrained by limited funding. By the end of this period forest fire had become a significantly increased hazard.

Prices for forest products and logs collapsed in 2019 with the new recession and the local forest industry consolidated and strengthened its pricing power for logs. Throughout the period the timber supply from the public lands in the

Interior of BC declined. But, because of the industry concentration and pricing power, the Community Forest found it difficult to take advantage of it.

In-migration to the BC interior continued with the Kootenay Lake bioregion increasing at approximately double the provincial average. K&A's amenity migration shifted to a higher percentage of economic elites, including those with consumer life styles, as well as an increase in younger ones of modest income, who were predominantly conservers. More climate change migrants were also finding their way into the bioregion. The mid-period slump in new housing demand focused the forestry sector on opportunities for pulp mill expansion in pulp and energy (especially bio-mass based), and more concentrated saw mill ownership. Yet for the whole period there was medium growth for the construction and service sectors. Parallel, the cost of housing again increased; typically greater than real local incomes.

As had occurred in other mountain areas of the US and Canadian *New West*, amenity-led residential development in the Kootenay Lake bioregion continued to spread at low density into the forest and along waterways. Early in this period this became a serious focus for increasing conflict over appropriate and sustainable land use and larger social fairness issues related to urban development, forest, water and fire management, and was a growing concern for community forests. Differences were expressed principally in local and regional political arenas, often with rancour. But local political participation also increased, and with it considerably better informed understanding of related opportunities and issues. In 2025 two mechanisms significantly reduced the growing development/ forest & water interface issues, brought higher settlement density, and generally more sustainable development to K&A: governments' shifting most of the actual cost of fire protection to individual forest area property owners (or their insurers), along with recovering the real cost for sustaining water quality and quantity. By the end of this period sustainability had made more concrete advancements —environmentally, socio-culturally and political-economically.

2026 - 2060

Climate change had continued in BC as a limited threat, higher for the south-central interior, and higher still for its coastal areas. The principal issue was violent and unpredictable weather, with less snow and earlier, more violent run-offs. Late in this period, reflecting global and national conditions, it appeared the warming had stabilized in the Kootenay Lake bioregion at plus 2°C (for the 1900-2060 period). Adaptation became the focus for individuals and communities, and vigilance against backsliding was a critical component. For some places in the world good luck had prevailed, and in general Kaslo and its surroundings was one of these — if it proceeded with sensitivity and knowledge. But the Lodgepole pine plantations of the Community Forest continued to be attacked and killed by resurgence of the Mountain Pine beetle.

During this period in both BC and the Kootenay Lake bioregion a society-wide value shift to more sustainable behaviour continued to spread at a modest but increasing rate. This was reflected in the “green advantage” of wood over competing materials being recognized by the market. Economically this was accompanied in the bioregion by a improvement in the forestry sector with a rise in income from bio-fuels, niche markets products and value-added wood products, such as quality timber and architectural components. Especially in east Asia the market grew for wood based building materials. On the other hand, the US Forest Service was again harvesting its timber and exporting logs to Asia. Even log imports from the US National forests into the West Kootenay became common. The BC pulp and lumber industry increasingly expanded its control over wood markets and independent sawmills became marginal players.

K&A increased its population along with its forestry earnings and service sector growth. Amenity migration had continued to be important, along with medium levels of both economic and climate change migrants. In 2060 Kaslo had a permanent population of 2,200 (+100%), and Area D 3,000 (+88%). Second home owners totalled about 1000 (+100%) for both K&A .

Scenario B: “Getting On With It” (2011-2060)

Scenario Logics: 1) decreasing climate change impacts productivity of forest ecosystem; and
2) higher value of sustainability changing demand for forest products and services.

Global & Canada Contexts

2011- 2015

Most surveys confirmed the high level of worldwide dissatisfaction with the limited results of 2010’s three international climate change conferences (Copenhagen, Bonn and Mexico City). The early winter of 2011’s destructive storms in the tropics and East Asia, while Western Europe was also suffering its coldest winter in a century, seemed to focus this sentiment. It quickly found its voice through a European Parliament extraordinary meeting (hosted by Finland) on *Climate Change Crisis of Will* (CCCW). About the same time the Prime Minister of Canada’s candid statements at an old boy dinner’s on greatly expanding tar sands production, declining the CCCW invitation and continuing a presence in Afghanistan was leaked in the *Globe & Mail* and simultaneously went around the world electronically. The response was swift and surprising. Despite winter storms the election brought out 69% of eligible voters, and the pre-election announced Liberal/NDP/Green coalition formed the new Gov’t. It immediately put together a strong delegation for Helsinki, where Canada played a significant role in designing a bolder, smarter international climate change accord.

In May 2011 the legally binding *Helsinki Climate Accord* had specific greenhouse gas (GHG) reduction targets. It also included very limited nuclear energy and clean access to Arctic oil & gas for a decade (in return for recognizing Canada’s Arctic territorial claims), considerable assistance with global food security, and payment to developed countries of 1.5% of developed nation’s GDP for a decade (this was turned down at previous global climate change meetings). In addition, they agreed on a new, slim organization, the *World Environment Commission* (WEC), to manage the emissions accord and significantly boost alternative energy research and development capitalization. This included rapidly advancing the existing various sustainability measurement systems to a single performance-based global one. The lynch pin was a deal brokered 1st among China, Japan, France, Brazil, South Africa, and Canada. While the USA tried to stonewall the agreement, once India signed on, the US President promised to try to move it through Congress. The only major player remaining outside the tent was Russia.

Two additional forces seemed to have driven the breakthrough: 1) the growing recognition by political leaders that public support for sustainability had, or was soon to cross the threshold to social norm, and if they didn't get on with real climate change mitigation and adaptation (M&A) they may well be looking for other employment; and 2) while not assured, moving to the green economy may be the only way out of the 2008/09 Great Recession's continuing high uncertainty and turmoil. In addition, some key financial institutions had come to the same conclusions (two having already underwritten the North African-EU massive solar energy development). Of course there was some nervousness about the influential advisory role of the world's dozen most respected sustainability not-for-profit (NGO) leaders. By 2014 this role had evolved into core involvement of the NGO sector through a global bottom up and top down integrated strategy. There were many skeptics, but the situation seemed markedly different from the past, and also seemed *the* common bright spot in an otherwise tense and troubled world. Moreover, globally there finally appeared to be enough realization that *sustainability* was how the human species would continue.

Despite the continuing weakness of the global economy through this period, a sense of optimism prevailed, and some firm advancements were made in the shift to greener societies and economies. As expected, the Nordic countries lead, but not far behind were China, India, Brazil and a surprising number of small nations like New Zealand, Slovenia and Costa Rica. The optimism was also reflected in equity markets. With stricter, more equitable regulation, global markets modestly but steadily improved from 2014, and with considerably less volatility than in the previous decade. For example, by the end of this period oil seemed to have settled into a trading range of US\$ 65. to \$ 95. /bl. Yet there continued to be uncertainty about the working through of the huge public debt remaining from the 2008-09 recession.

Toward the end of this period the concerted NGO effort (mainly through WEC) focused more on sustaining natural ecological systems in rural areas around the world worst hit by climate change. Funding came mainly from the 1.5% GDP of developed countries pledged in 2011. Globally, rural communities with higher quality environmental amenities continued to attract new residents, especially in zones thought to be least vulnerable to changing climate – higher elevation, inland, with forest, water and arable land. There were still the earlier *amenity migrants*, but by 2015 the 2nd home ownership type had substantially decreased, with many of these shifting to permanent residence. The cost of travel, particularly by air, had increased by 65% with more stringent fuel conservation measures. In addition, a growing number of families of modest means were beginning to leave the largest cities to seek more self-sustaining life styles — perhaps possible in some rural places. Several historians noted it was similar to the back-to-the-land movement of the early 1970s. But this time the migrants were participating more in their new communities and were often skilled in community organization and development.

Despite more than anticipated advance in household, government and private sector conservation, by the end of this period, global warming, including Canada's temperature had increased, being fed especially by still growing GHG emissions, and for Canada particularly from methane gas released from thawing tundra and a marginally cleaner northern oil & gas industry. Forest ecologies around the world were further stressed, with the tropical areas suffering the highest mortality due mainly to insect infestation, less water, and/or heavier flooding. Generally, water quantity and quality decreased, while along with its value continued to increase. The majority of scientists agreed that if the new course could be maintained it would take about a decade to turn the carbon behemoth around. And on New Years Eve 2015 many suggested that the 2nd decade of the century would no longer replace the 1st decade as the "*hottest on record*".

2016-2025

Out of Afghanistan, Canada had returned to its earlier mediator's role and assisted in brokering a fragile but so-far manageable Middle East peace, including the establishment of a Palestinian state. Further east a China and EU lead nuclear agreement was reached with Iran. But the USA remained mired in Afghanistan/Pakistan until the other NATO countries said "*enough*", and then something of a settlement was arranged in 2020. These successes significantly aided shifting more global attention and resources to climate change abatement and renewable energy sourcing.

Globally, and in Canada, the socio-economic picture improved through this period, with western Europe, China and Viet Nam leading the restructuring to a green base. But the general air of optimism was still accompanied by fear of the uncertain social, political and economic results of shifting to the green *New Economy*. In the USA, as it did not take the expected green-technology lead, this fear was fanned by a stronger Republican Party in the Congress and talking heads on their TV shows and blogs.

Early in 2016 the Prime Minister of Canada urged her cabinet to push the Govt's *Sustainable Canada* policy and programmes into high gear, egged on by domestic wins by greener MPs and Canada's only "medium" showing among developed nations in WEC's annual climate change mitigation and adaptation (M&A) accounting. She further focused on federal policy and action to support green industry and employment, and especially a mixture of energy alternatives and direct support to local water resources management and resource-conserving human settlement development (urban & rural). In agreement with the EU approach, the Prime Minister believed that effective *sustainability* would only be achieved through much greater public involvement in local and regional decision-making and action. The local emphasis was being followed through on principally by the NGO thrusts that began in the previous period. Some of the

historical time consuming nature of grass roots involvement was reduced through a federal programme of blanket distribution and low, or no cost access to interactive, electronic communications. Particular emphasis was placed on rural areas, and was accompanied by free training for especially the elderly and youth.

In 2025 GHG emissions seemed to be increasing at a slower rate or had plateaued. Canada's average temperature increased about the same amount. In general forest ecology world-wide appeared the same as in the previous period; only in desert zones did it worsen somewhat.

2026-2060

With some significant set-backs along the way in applying new green technologies and working through the complexities of increasing local collaboration, during this period the world continued to experience a continuous increase in economic activity and employment. Although the shift to a green economy was basic for sustainability, a more primary societal value shift was clear: from conspicuous consumption to resource-conserving behaviour and from ecological exploitation to ecological sustenance. There were of course trade-offs. For example, these changes also marked the end of most long distance tourism and international 2nd home ownership, due mainly to fuel conservation. But permanent amenity migration continued strongly, along with moderate climate change migration.

In 2035 the UN IPPC 2030 50% reduction in GHG emissions target was achieved, and later its 2050 target of 80% was hit that year. The average increase in the global temperature in 2050 was equal to the IPCC low increase scenario, and remained about the same in 2060. For Canada it was a little higher 0.9°C in 2050 and 1°C a decade later. Most scientists thought if vigilant global greening continued, these levels could be maintained. Forest ecological systems under progressively less stress seemed to be recovering t, especially after about 2045.

Regional & Local Contexts

2011- 2015

BC had led Canada in sustainability policy going into this period: *BC Climate Action Charter* (carbon neutral by 2012), *Greenhouse Gas Reduction Targets Act* (reduced GHG emissions by at least 33% by 2020), and *Green Communities Act*, were good examples of regional climate change policies. The main issue was getting beyond policy to action. There were policies and plans

but no appropriate sustainability strategy. For example there was the 2008 *Living Water Smart Plan*, that targeted a 33% improvement in water efficiency by 2020. Too much responsibility for building of green infrastructure was passed on to local governments and First Nations without accompanying sufficient funding for implementation. This was especially burdensome for rural areas. In addition, this plan continued the Gov't "do little" approach to environmental effects of the independent hydro-electric dams proposed across the province. The Gov't continued to push new dams, saying resulting income would help cover severe shortfall in health, education and infrastructure budgets, along with paying for forest fires. Widespread and general participation in non-violent protests resulted in 2012, led by better regionally coordinated non-governmental organizations (community development, environmental, First Nations, youth and elderly). There was civil disobedience and some people were arrested.

The BC Gov't continued to misrepresent and/or misjudge the increasing popular concern for a greater focus on sustainability by Gov't, along with it playing a greater leadership role in harnessing the best of global, green innovation. This view was closely tied to a growing demand that public wealth, especially land and water, benefit 1st the people, and then, perhaps, private developers.

Like the world around it, BC grew warmer in this period, but with the exception of the freak Northern summer of 2009 continuing for the following four years, it was a modest change, which residents outside the province's southern high desert typically welcomed. Both the coastal and mountain valleys experienced an increase in precipitation and flooding of streams and rivers. But this was still mostly manageable. The Kootenay Lake bioregion and Kaslo and Area (K&A) mirrored this picture. Die-off of Pine and Spruce species continued as expected, while more generally the forest ecological system did not exhibit increased morbidity. Similarly the economy of the bioregion and Kaslo reflected that of the province. The forestry sector modestly improved with demand from new construction in the region and from overseas rebuilding after considerable storm damage. The increase in log exports was paralleled by limited increase in prosperity for small value-added operators.

The bioregion's in-migration continues greater than for the province in general. Amenity migration remained important, but with a growing number of in-migrants relocating for greater security from anticipated graver climate change impacts. Many said this meant considerably more money in local circulation, others claimed the opposite. Meanwhile, the local cost of living increased. New houses continued to be built in the forest and by waterways. Local governments, with notable exceptions, mulled and wrangled over what was happening, adhered to the letter of BC government mandated plans, but remained reactive to private development. Muddling through continued as the norm, although there was growing demand for strategic pro-action, especially to

issues of sustaining an earlier “quality of life” and social fairness, such as real affordable housing and maintaining the surrounding natural beauty for all residents’ enjoyment. Tension increased within communities, as it had in those to the south who earlier had not squarely faced similar development pressures.

2016-2025

Through this period socially and economically BC increasingly reflected the shifting global and national shift toward a demand for greater sustainability with greater citizen representation in difficult decision-making. Also, by this date greater regional self-sufficiency, if even at the price of less consumption, was common, especially in rural areas whose population increased as people left shrinking large cities. This growing value change, the provincial Gov’t continuing focus on off-setting provincial debt by private development (especially of public land and water), along with more cuts in social and cultural services (especially public health and education), focused a frustrated electorate in 2016 on voting in a Green/NDP/Conservative populist, globally-informed coalition. As previously in northern Europe, and a more recent Canadian national election, the stigma associated with party coalitions had waned.

The first thing the new BC Gov’t did was reverse Bill 30, giving to local government the right to stop energy projects through review powers. It also stopped supporting new hydro-power dams while the cumulative local and regional impacts were more completely studied for socio-economic and environmental effects. Generally, BC policies shifted to a fairer distribution of the limited public funds to rural places and a more serious focus on low carbon technology and energy alternatives. The Gov’t became quite focused on greener forest use and related products and services for its regional market of BC and Alberta, and then California and China. It assisted in negotiating fair, win-win trade deals, including the sale of well-priced water, greener wood products and some hydro-power. Carbon sequestering played less of an economic role than had been earlier anticipated, as price competition from the vast northern boreal forested area, particularly land under First Nation management, could not be beat.

The changing global climate pattern continued to be reflected in BC. In the Kootenay and K&A, after accounting for the demise of the high mortality tree species, ecological systems impacts were modest, if not an opportunity. Sawmills recovered further and small wood value-added enterprises prospered. The pulp sector saw some improvement with government support and a technology shift to lignol ethanol for fuel.

Of increasing significance was urban development in and adjacent to forestland and its watersheds. Population growth continued and through to 2021 was manifest in further low density, sprawling residential development. A natural catastrophe was the catalyst that brought this pattern to a halt. In the

summer of 2020 a wildfire raged from Metaline Falls, WA north to Salmo, burning some 15,000 ha. and 720 homes and businesses. Discussions and workshops had been going on for several years among local elected officials, BC and federal Gov't agencies and local and regional NGOs about the prevailing low density human settlement pattern in rural areas, especially in relation to significantly better resource-conserving development and associated forest and water management and fire hazard. Progress had been made, but this fire brought discussion to a close. A local/ BC/ federal/ strategy was swiftly put in place. With considerable local incentives, the development pattern for human settlements was switched to high density nodal development (with the 1st emphasis on town site infill). While individuals could, in limited and designated higher fire risk areas, continue to build at lower densities, they now had to personally assume the cost of the risk. In addition there were premiums to be paid for public services and facilities. Real food producing farms were excluded and their production of food for local consumption received tax incentives. K&A played a significant role in formulating these changes and was recognized for its implementation of them. Also assisting was an evolving societal norm-- during this period, especially in the Pacific North West of North America, a strong social stigma had developed toward excessive land and water use, or turning the coin, considerable social respect was accorded to those having a small ecological footprint.

2026-2060

BC society became even more focused on how to contribute to global climate change mitigation and adaptation while having fulfilling and reasonably comfortable lives, but lives more ensuring of sustaining their natural ecological systems. The value base and social norm for behaviour had significantly shifted to that of conserving from consuming, while supporting oneself and community by creating greener jobs. Sustainable economies, appeared to be succeeding. There was considerable economic and socio-cultural experimentation in how to pull this off, and not without failures. Nearly half of the BC workforce had left the congested highways of rush hour traffic and developed skill to telecommute from home. For those who still traveled to work, mass transit had become the preferred and most available mode; light rail in the Lower Mainland and down the length of Vancouver Island, along with hydrogen fuel cell buses connecting other communities with their local and regional service and business nodes. But longer-range individual vehicle mode travel remained expensive. By 2050 transportation and communications in the Kootenay Lake bio-region was similar to Switzerland's in 2010.

BC's changing climate and comparative richness of natural and socio-cultural amenities continued to attract in-migrants from other parts of Canada and elsewhere. With a modest increase in average temperatures its north offered a more benign climate, and warmer southern BC also continued to attract people, including the water-rich Kootenay Lake bioregion. In 2060 Kaslo had a

permanent population of 3,000 (+173%), and Area D 2,400 (+50%) people. Second home owners seemed to have stabilized at a total for both jurisdictions of 800 (+60%). The newcomers in this period were motivated by higher quality natural amenities and a more self-sustaining rural life and economic opportunities generated by the amenity seekers and a prospering, green forestry sector. Some were climate refugees, however early in this period this type of migrant shrank in numbers. Most local-born-and-raised that wished to remain had the means to do so.

In 2060 the Kootenay Lake bioregion continued to exhibit more weather volatility and less predictable weather than a half-century earlier, along with moderately warmer summers and less snow and earlier thawing. But, in sum these changes were relatively modest. Also, from about mid-period significant advances were being made with forest and agricultural crop adaptation to ameliorate most negative climate change affects and take advantage of opportunities. With a seemingly stabilized average temperature of plus 1.3^o C (1900-2060 period), this bioregion was comparatively a very attractive place to reside on Earth.

Scenario C: “*Growing Without Guilt*” (2011-2060)

Scenario Logics: 1) decreasing climate change impacts on productivity of forest ecosystem; and
2) lower value of sustainability changing demand for forest products and services.

Global and Canada Contexts

2011-2015

The details of the 2009 *Copenhagen Accord* were completed at the 2012 *Seoul Climate Change Summit*; four years ahead of schedule. The push did not come from a change in society’s values and behaviour, but especially due to pressure from the emerging clean energy industry, and particularly from nuclear energy and carbon-dioxide capture and storage (CCS) proponents in the USA. Their strategy was that nuclear would kick in about 2020 and then be replaced by 2nd and 3rd generation bio-fuels about 2060. The proponents had been lobbying the US Congress for a long time with this means to meet the population’s ever growing demand for energy without changing its consumptive behaviour, but without emitting carbon dioxide. Significant support also came from Al Gore.

Nuclear power generated more jobs, low- and high-skilled alike, and for a longer period of time, as a single reactor took 6-8 years to build and employed others after. In the USA 100 were to be built. Compared to hydroelectric power the generators could be constructed anywhere, even far from the energy source. It is also a highly efficient and more constant source of energy compared to solar, wind or waves. With the French excellent safety record of nuclear power use and a technological breakthrough for safe storage of nuclear wastes, in 2013 the US Congress passed a bill and more nuclear reactors were built and their waste deposited deep in Yucca Mountain, Nevada. However, China, India, South Africa, along with the United Arab Emirates and several neighbours, were years ahead of the USA, as they had started constructing nuclear power reactors before the 2009 *Copenhagen Accord*.

Canada and Brazil did not follow a nuclear strategy. While Brazil focused on sugar cane-based ethanol, Canada remained mainly reliant on tar sands and hydro-power, along with some solar and wind. Nuclear remained unacceptable to most Canadians. Its strategy was to supply the USA fossil fuels until the USA was able to shift to nuclear power and renewable energy. When USA’s nuclear power programme began its operation in 2020, Canada would supply much of its uranium. There was also some funding of research on cellulosic ethanol

produced from wood. Compared to grain-based ethanol, wood has higher sugar content; higher bulk density which lowers transportation cost significantly; longer storage life and lower storage costs; less intensive use of water and fertilizers; and most of all, is a non-food based product.

But the decision-makers put the bulk of research funds into coal gasification instead, and maintained the forest for carbon credit trading and carbon sequestering. In addition, the pundits thought that Canada could not compete price-wise with tropical countries anyway, as wood grows much faster there, along with lower land and labour cost. The big Royal Dutch Shell-Petro Canada-Iogen (RPI) consortium however, thought otherwise and intensified their research on cellulosic ethanol, produced from Canada's Poplar tree. Iogen was already a world's leader in producing wheat-based cellulosic ethanol, but grain-based ethanol has the lowest yield among different kinds of bio-ethanol. In addition, RPI thought that most tropical countries had severe deforestation problems and because of *Copenhagen Accord's* REDD (Reduced Emissions from Deforestation and Degradation), under which wealthier nations pay tropical rainforest countries for preserving their trees, participating countries could not harvest wood. Canada on the other hand, has abundant high-quality fibre and plentiful water resources.

By the end of this period GHG emissions and global warming had continued to increase. Canada was slightly higher than the global averages due to Arctic methane release and little shift from older fossil fuel technology. Globally forest ecosystems were showing increased stress, especially in the tropical belt, due to temperature increase, insect infestation, less water or too much during increased flooding.

2016-2025

In 2016, the *World Environment Organization* (WEO) was established to manage the *Copenhagen Climate Change Fund* set-up back in 2012. This happened faster than expected as it was championed by a consortia of only 1 UN agency, the G7 developed nations and 4 global banks. Also, it was generally accepted because the most vulnerable countries to climate change were prioritized, especially the poor "listed" G77 nations. Initial funding came from the wealthy G7 and the private sector, with longer-term funding to come from further borrowing and carbon credit trading. Based on the *Copenhagen Accord*, wealthier nations could only buy carbon credits from the listed nations, and through WEO.

WEO was also charged with regulating the reduction in greenhouse gases (GHG) emissions by both developed and developing countries, and the mitigation and adaptation projects of countries received funding through WEO. Both China and India had relinquished their earlier and outdated developing-nation status, and set GHG targets somewhat more in line with their status in

this period of leading industrial powers. However, they were not subjected to WEO's emissions monitoring system as they received no climate change funding from the organization.

Due mainly to China and India's relatively unchecked GHG emissions (as well as others' contributions), the global temperature increased to twice the *Copenhagen Accord's* agreed temperature rise for 2050. Both developed and G77 countries demanded China and India be severely sanctioned. WEO could do nothing, after all its governing *Copenhagen Accord* was a non-binding agreement. However, it was obvious that something needed to be done. The global temperature had risen much faster than anticipated, and with critical results. China, with the concurrence of USA and India, and over otherwise strong global opposition, injected sulphate aerosols into the stratosphere — a solar radiation management technique that dims and cools the earth. Like a large volcanic eruption without ash, this technique worked quickly and brought down the average global temperature a full degree by 2022. This action also helped the USA gain time to shift to nuclear power, bring on the use of CCS technologies at a large scale and commercialize electric vehicles (powered by battery, fuel cells, and micro-computer chips). Also, the USA and France got India back on a mixed nuclear and other alternative energy track, and India joined WEO in 2023.

Late in this period, the USA was back. The forecast two decades earlier that China will replace USA as the world's political-economic superpower did not happen. Although its population was three times that of the USA, supposedly a key factor for overtaking USA, China again was plagued by internal dissension; among its regions and at the centre. What most economic analysts did not consider was China's historical weakness in governing its vast area of many ethnicities, further stressed by democracy demands aided by high-tech communications, and a soft, corrupt central authority. India and Japan were still satisfied to partner with the USA, and also received a 1st power defence umbrella. Canada on the other hand was becoming unhappy with this umbrella. Mainly this was due to the US continued exploration and drilling for gas and oil in the "Canadian Arctic", and playing hardball with import tariffs on Canadian goods and services, especially forest-resource based. Also the USA, along with Russia and China, were giving Canada a hard time in international organizations on Canada's claim to the open Arctic waters.

2026-2060

With a strong USA, the *Copenhagen Accord* became a legally binding agreement in 2026. Significantly weaker China agreed to have their emissions regulated by WEO in exchange for technological transfers and investment in energy-efficient plants. The *Accord* also added CO₂ permits for coal and crude oil exports, which forced most countries to shift to renewable or cleaner energy. In this period, even Russia and the Middle East increased their use of nuclear

power, reserving their conventional fuels as a contingency and for more profitable export.

Airplanes and heavy machineries remained powered by petroleum, albeit with cleaner and more efficient technology than a generation earlier. The world was still dependent on petrochemicals, such as asphalt, fertilizers, plastics, medicines, synthetic fibres and synthetic rubbers. However, mid-way through this period USA, Japan, Germany Brazil, and India (leaders in nanotechnology and biotechnology) focused research on reducing this dependency through 2nd and 3rd generation bio-fuels and bio-materials, including cellulose, salt water algae, coal and organic waste. Later in the period they were brought to market. Since *sustainability per se* was not the over-arching goal, but rather increasing use of renewable materials to meet demand, most bio-plastics and wood composites used daily for virtually everything from automobile interiors to building to cell phones were mainly non-biodegradable.

By 2060, economies no longer mainly relied on an increase in use of fossil fuels, but more on a mix of electrons and molecules. Late in the period 60% of automobile vehicles were either electric or hydrogen fuelled; 90% of the remaining coal- and gas-fired power plants in developed countries and 50% in developing countries were equipped with CCS technologies; 80% of residences relied either on nuclear or solar energy. These human generated changes were principally responsible for a medium low increase in the global average temperature of 1.7°C above the baseline year of 1900. Not bad for a world in which consumers continued to outnumber conservers; although the latter were increasing being heard from.

Although the world's population continued to rise, it was thought to have peaked about 2060. Food supply was a moderate problem, one more associated with greed and corruption than capacity. China and India had both much earlier focused on genetic engineering and mastered feeding their own population while continuing to reduce their population's growth.

Human migration for greater natural amenity especially international second home ownership, had become increasingly rare, limited to some of the wealthy who could still afford high airfares. However, globally people valued being in the natural environment less and less and increasingly sought an urban-centered culture and landscapes. The aged did not travel well, while younger people moved to virtual presence, especially after Japan had perfected 3D technology and mass produced 3D technology equipped televisions, computers and mobile phones. Economic and climate motivated migration was also low by the end of this period. Most countries were performing much better economically compared to 5 decades earlier, and were seemingly less threatened by environmental change than anticipated a half century earlier. Countries or regions that were not able to move to a bio-economy "yet" were isolated and maintained by WEO's *Climate Change Fund*. The developed world (now joined by Brazil, China, India and Russia) tightly controlled immigration, but it remained a

major and constant social, political and economic issue, both at home and internationally.

Provincial and Local Contexts

2011-2015

Comparatively BC had little GHG emissions to cut. Its share of these emissions was only 9% of Canada's total. Power was supplied mainly by hydro with some early use of alternatives. Most GHG emissions came from transportation and expansion of the natural gas industry. Although BC is responsible for only a small fraction of GHG emissions, BC's policies were still towards further reduction. To this aim, BC policies such as *Climate Action Charter* (carbon neutral by 2012), *Greenhouse Gas Reduction Targets Act* (reducing GHG emissions by at least 33% by 2020) and *Green Communities Act*, were implemented through the province's *Gas Tax Funding* (GTF). BC carbon tax was raised from \$15/tonne of CO₂ emissions in 2010 to \$30/tonne in 2012.

Most of the tax collected went back to BC local communities through GTF. However, it was not easy to access GTF. Although the bulk of the funds were allocated for funding innovative green infrastructure projects that cut GHG emissions and improve water quality, funding was highly competitive. Most rural communities were small and so disadvantaged as they did not have the money or understanding for appropriate planning and management skills. In addition, since First Nations were under the Federal government, their benefit was also limited. Further, few NGOs and small businesses, especially small forestry products companies, including community forests, who could have direct impact in reducing GHG emissions, knew how to access these funds. They relied marginally on more familiar funding such as from the *Columbia Basin Trust* and the *Rural Development Partnership*. Moreover, rural mountain communities generally still suffered from a cultural of poverty mind-set, and that their "remoteness" would protect them from external pressures bringing socio-economic and environmental changes. The Kootenay Lake bioregion, along with Kaslo and its surrounding area (K&A), typically exhibited these traits. But, the situation was complex. There was also well-informed sustainability action, such as attempts to maintain agricultural land and water sources, along with community food and forest security, and lake shore public ownership.

In this period BC's economy, which suffered greatly from the continued shrinkage of the forest industry, started to shift to a greener base. The province started benefitting from carbon credits through the *Western Climate Initiative* cap-and-trade programme in 2012, although the full programme implementation did not occur until 2016. The successful Olympics left a good image of Vancouver and the province and started attracting small-scale green businesses. However, this minimal green economic activity and income was no

comparison to previous forest industry heights. Although the export of softwood lumber to USA continued to be problematic, there were some opportunities outside the USA, including China, Japan and the EU. It included new demand for fine furniture and building components, along with and for co-firing coal power plants. Yet, the BC forest industry was quite slow to adapt to these countries' needs.

The economy of the Kootenay Lake bioregion was worse off than the province in general. Employment in the forestry sector was focused on wildfire prevention, with lower incomes than ordinary logging operations. Response to demand for forest products and services such as value-added, special-dimensioned lumber and pulp were low. There was little tourism and while there was amenity migration, these economic activities did not contribute much to the local economy. Also, the Kootenay Lake bioregion did not attract the kind of in-migrants that Vancouver and Victoria did: permanent residents of young families actively involved in the knowledge sector. The bioregion's amenity migrants continued to push up the cost of housing to the point that most younger families could not afford to live in it. Volunteerism, a mainstay of small rural communities quality of life, also markedly declined with an aging population.

By the end of this period BC's average temperature was the same as it was at the end of 2010, and its impacts to forest ecosystem, especially in the Kootenay Lake bioregion, was minimal.

2016-2025

BC's forest industry's hope to earn money through carbon credits was shattered when WEO, created in 2016, to manage the *Copenhagen Climate Change Fund*, stipulated that carbon credits could only be bought from G77 countries, and through it. Following that announcement, the *Western Climate Initiative* cap-and-trade programme soon collapsed. The market for *Forest Stewardship Council* (FSC) certified timber/logs, in-demand a decade earlier, also suffered considerably in this period. The higher valuing of sustainability that increased the demand for FSC-certified wood products a decade earlier had significantly weakened. The world's focus was more specifically limited to controlling earth's temperature increase by shifting to more efficient energy use mainly through improving technology. There was emphasis on neither conservation nor socio-economic equity. So "green certification" mattered little. In line with the world's demand, the BC government and the forest industry shifted their focus from exporting softwood lumber to USA to manufacturing wood pellets for particularly European, Chinese and Japanese consumption, along with local and regional use of bio-mass and wood gasification.

Also, during this period, the BC government continued to push ahead with multi-million dollar projects, especially larger *Independent Power Projects* (IPP) and highly controversial coal-bed methane mining. Although local people continued to protest against the building of these projects due to their adverse impact on fish and wildlife, water quality and quantity, submergence of scarce agricultural land, and First Nations' land claims, they were fully operational by 2025.

As a product of the 2009 *Green Communities Act*, a number of larger rural communities had stand-alone wood gasification heat and power plants, which delivered CO₂ neutral energy at very high efficiencies. It created more stable employment with higher incomes for local people. The employment that was generated through these plants was enough reason for many local governments to invest their gas tax funding in them. Many were also funded through municipal bonds and GTF's Innovation Funds. The economics benefits of these plants were improved due to a high CO₂ emissions tax.

Although K&A was one among the first communities to join *Green Communities* in 2009, it did not have any large, public CO₂ neutral energy infrastructure projects, such as wood gasification because of decision-makers' short-sightedness, lack of innovative and entrepreneurial skills. They continued to rely on more traditional employment, such as forestry. However, although the sale of lumber, logs, and value-added forest products had considerably improved from the previous period, they were not as strong as two decades earlier. In addition Celgar, the Castlegar multi-dollar pulp mill that used to sell bio-energy to BC Hydro a decade earlier closed down; bought-out by Royal Dutch Shell. Tourism and amenity migration continued to decrease in K&A because of the global and regional shrinkage of these activities and this area never developed a strong image as a destination for these amenity-seekers, unlike Rossland and Revelstoke. However, more construction jobs were anticipated due to the recent approval of a large IPP project in the bioregion.

For the period, again the regional and local average temperatures were lower than the global average and trending toward meeting the IPCC target of less than a 2°C increase.

2026-2060

With the shift in USA's energy source, BC intensified its coal gasification production for export mainly to the US. Many forest licences which did not perform reasonably well in the last decade were not re-issued. The BC government used them for carbon storage and to acquire CO₂ permits from WEO to export its hydrocarbons. The Crown also sold some of these properties to wealthy climate refugees who were moving from the still mainly anticipated coastal and estuary flooding, such as those from Vancouver and Seattle; and

from water scarcity and drought, such as those from California and the Canadian and US Sonoran Desert area. Later in this period flatter forested areas were beginning to be converted to agricultural purposes due to the huge increase in US food demand.

During this period in K&A there were three multi-purpose water impoundment projects, a very significant economic boost for the local economy. Although the sales of value-added forest products, lumber and logs remained moderate, the *Columbia Basin Trust* and several large IPP firms provided funds for bioregional community forests for forest and water management, including related long-term climate change analysis, monitoring and evaluation. Tourism and amenity migration in this period were almost non-existent in the bioregion due to society's significant value shift from natural environmental amenities to highly sophisticated urban amenities. The bioregion remained quite rural. For the 50 year period Kaslo's permanent population remained the same at about 1,200 (+9%) persons, while the surrounding area increased modestly to 1,800 (+125%). Second home owners also increased marginally from about 500 to 600 (+20%).

By 2060 the BC average temperature was the same as the medium low global average of 1.7°C for the 50 year period (1900-2060). The Kootenay Lake bioregion was slightly lower.

Scenario D: “Winners and Losers” (2011-2060)

Scenario Logics: 1) increasing climate change impacts on productivity of forest ecosystem; and
2) lower value of sustainability changing demand for forest products and services.

Global and Canada Contexts

2011-2015

Failure of the *Paris Climate Change Summit* in 2011 to agree on the details of the *2009 Copenhagen Accord* made the latter irrelevant. Without global consensus and strategy to mitigate and adapt (M&A) to climate change, it was very difficult for the USA, China and India to act unilaterally on climate change that may slow down their economies. The world was just recovering from the 2008/09 economic recession and serious climate change M&A would not be cheap. Decisive global action was also hindered by the scepticism about the 2007 IPCC's GHG emissions reduction targets. Some credible scientists pointed-out that IPCC's climate simulation models underestimated results of serious feedbacks. The volcanic eruption of Grimsvötn in Iceland in 2010 which caused the cooling of the earth by 0.5°C seemed to prove their point.

Without an enforceable climate change accord, the developing nations, particularly China and India, scrambled to find and secure the energy they needed to climb the socio-economic well being ladder. The developed nations on the other hand, such as USA and Canada, struggled to adapt their energy consumption patterns to maintain their existing lifestyle. For “energy independence” the flight into coal hastened for a number of reasons: it was widely available, low cost, and a local source of employment. In the USA alone, one-half of electricity in 2011 was supplied by coal, so that the carbon bill introduced in 2010 to regulate CO₂ emissions in new power plants, and require utilities to generate a portion of their power from wind, solar and other renewables died on the Senate floor in 2011. In Canada, the development of hydrocarbons (natural gas, coal, and tar sands) accelerated and very little research funding was allocated for alternative fuels. More funds were allocated for expanding delivery infrastructure to supply China and India. The Western Europeans however continued their path to clean energy, partly because they lacked fossil fuels and hesitated to rely on Russia.

By the end of 2015, the GHG emissions increased by one-half, but the average global temperature increased modestly. This was attributed to the

Grimsvötn volcanic aerosols, which blocked the sunlight and caused the ocean surface to cool. However, while it helped the lowering of earth's temperature, Canadian, US and European forests suffered from a considerable increase in forest fires, shorter growing seasons, and trees were more prone to sap stain. Tropical rain forests were not affected because the ash fall did not reach them but, their ambient temperature was a half degree higher than the global average.

2016 - 2025

Just when the world seemed to have recovered from the *2008/09 Great Recession*, the US subprime mortgage market collapsed for the second time in 2016 triggering another international financial crisis. But this time, governments, especially the US, were not able to bail out the private sector because of existing massive public debt. Public debt in 2016 was 350% of GDP in US, 180% in UK, 100% in the Eurozone, and 300% in Japan. Even Canada which seemed the envy of all wealthy nations in 2008 had a public debt increased to 80% of its GDP in 2016. From 2016, bankruptcies and foreclosures went higher. Some countries declared bankruptcy and many defaulted on their debts. Over this period the collapse significantly reduced 2nd homeownership, and more generally migration to rural places rich in amenities. This occurred principally because of decreasing discretionary income, little credit, and the high future financial uncertainty, especially for the middle classes – which continued to shrink. During this period economies turned inward, politics became more nationalistic and religions less ecumenical. Canada and US were not exceptions.

The US Presidential election in 2016 was won by the former Republican speaker of the House, Newt Gingrich of Georgia. His platform of protectionism negatively impacted Canada's tightly integrated economy. Although Canada managed to expand its exports of fossil fuels to China and India, the US remained its prime trading partner. However, with the exception of water and hydropower, all Canada's exports to the USA were heavily taxed including lumber, gas, oil, and food. A more predatory relationship toward Canada developed, with the USA's continued manipulation of US-Canadian border treaties and claims, especially the Northwest Passage through the Arctic. In Canada, public protests were widespread. But the Conservative Gov't chose not to act, which the opposition party took advantage of and brought it down on a vote of no confidence in late 2018. The Liberal Party, running on a platform *Don't Buy America* won a large majority and trade disputes soon increased between these two nations. In addition, Canada withdrew completely from Afghanistan/Pakistan and Indonesian/Philippine war theatres.

More concerned with economic than ecological survival and distanced from its *"best ally"*, Canada accelerated development of tar sands, bitumen and heavy oils. Its earlier strategic investment in expanding its delivery infrastructure to accommodate China and India's insatiable demand for fossil fuels, wood chips, uranium and other metals paid off. By 2025, Canada joined the

ranks of major energy exporters which resulted to more environmental degradation and a significant increase in GHG emissions. Some environmental groups protested, but a majority of the Canadian electorate was quite satisfied with the turn-around in their economy. There was enough funding for health care, a core concern to Baby Boomers who peaked in this period. Although environmental degradation was happening fast now, and global temperature had increased two-fold, the national and international sustainability movement, strong two decades earlier dissipated for a number of reasons. It was difficult for local environmental groups to make their point to a population who for many decades was manipulated by the US, but was now on the path of economic security, with relative independence, while the USA was in big trouble. Further, the increasing impacts of climate change on the environment varied from place to place. In Canada, the changes were seen by many Canadians as positive. There was now more choice of places to live, as temperatures, especially in the North, had become relatively attractive, economically and aesthetically. As a bonus, Canada, with Russia, was cleaning-up on the remaining global winter sport/resort scene.

By 2025, the world's GHG emissions doubled along with the average temperature. The contribution of CO₂ emissions to the increase in global temperature was one-third. The rest came from melting of the polar ice (which absorbed more heat from the sun) and the release of methane gas from permafrost, landfills, manure wastes and coal mining. The increase in temperature would have been more severe if not for a number of small but regular volcanic eruptions that helped to cool the earth and ocean. However, scientists observed that heat recovery occurred much more quickly compared to the past.

The continued warming also hastened the melting of the polar ice, which contained one-fourth of the world's gas and oil resources. The 5 Arctic states (Norway, Denmark, Russia, Canada and the USA) were hotly contesting these resources. Canada knew it needed a strong ally to get its share. Although its former ally was considerably weakened due to its two global wars and public debt, the USA still was the nuclear leader. The disputes could not come to a war. Canada found its champion in the newly formed *China-India-Japan Alliance (CIJA)*. CIJA used its vast holdings of US debt to have the USA cede its Arctic access to Canada in exchange for royalties from Canada's Arctic resource development. The USA's credit was quite weak, especially since defaulting on its debt 2 years earlier. For more than 3 years now, the world was using Euros, and the *ASIA*, the CIJA's currency, continued to appreciate. Mainly in exchange for secured supply of gas and oil, CIJA protected Canada. In addition to global financial clout, CIJA's nuclear warheads could reach US strategic locations.

2026-2060

By 2035 the new oil and gas production in the Arctic (Canada, Russia, and Norway) boosted the world's depleted fossil fuel resources. In addition, CIJA's and Canada's R&D had made progress in the development of solar cells, bio-fuels from landfills, and synthetic organisms, permitting extraction of residual petroleum from wells previously thought depleted. The EU R&D focused on developing second generation bio-fuels particularly ethanol produced from wood. Contrary to earlier research, wood from temperate forests proved to have much higher energy content compared to tropical rainforests. The USA focused on developing high-efficiency water purification processes, and its newly elected President promised to lead the world again in fighting climate change and energy reform, and rebuild relations with allies, especially Canada. By 2050, most of these products were commercially sound. However, in 2060 less than a tenth of the world's energy mix was alternative fuel and the world was faced with a new challenge; oil and gas had clearly peaked. All available reserves were identified and the space exploration for other energy resource on Mars had just begun.

Economic migrants and climate refugees, particularly from G77 countries, increased considerably in this period. At first, Western Europe, Canada and Japan accommodated them as their populations were rapidly ageing. However, it triggered ethnic and racial tension, which took a lot of resources to deflate. In 2052, CIJA in partnership with the EU, curtailed-off most immigration and led the developed world in financially compensating G77. At the same time they reopened climate change negotiations as the socio-economic model was showing serious weaknesses.

Although the world economy was better compared to four decades earlier, global in-migration for rural natural amenities was virtually non-existent. The middle class could afford neither 2nd homes nor relocation on retirement (those still able to actually "retire"). On the other hand, the elite economic class mainly remained and recreated in their urban glass towers and immediate surroundings, not the rural countryside. The quality of the rural natural environment had been degraded along with a lack of attention to its human communities from the urban power centres. The exception was for mining and agricultural productivity.

By the end of 2060 with almost 5 decades of neglect of climate change, world's GHG emissions quadrupled and the average global temperature was plus 3°C (compared to the 1900 baseline). Although this increase in global temperature was high, the catastrophic climate change impact that the 2007 IPCC Report had suggested at this level of GHG emissions appeared to have been avoided. The rapid increase in temperature from 2025 seemed to have dried out the upper levels of the troposphere which decreased water vapour — a significant contributor to global warming. The question now is would they continue relying on their good luck or accelerate the shift to bio-fuels now that oil and gas had peaked? Also, could the severely damaged global forest ecological

systems be rehabilitated and again be the significant asset they promised to be four decades earlier?

Regional and Local Contexts:

2011-2015

The BC Liberal party maintained a small majority through this period. The province was deeply in debt due to the billions of dollars spent at the 2010 Olympics that failed to bring the anticipated revenues, along with the more general debt load the province carried. Most of BC's public programmes and projects that dealt with education, health, climate change and water infrastructure were grossly under funded. The forestry industry was of little help. The Obama Administration continued Bush's policy of tariffs on softwood lumber. The paper industry was also in sharp decline mainly due to the continuing Internet revolution, with information, books and magazine articles accessed with little paper. It was cheaper, faster, less time consuming and could be accessed any time of the day through computer, cell phone or ipod. Further, although the housing market did well from 2009 through 2015, wood was not the preferred building material, but rather glass, cement, steel, aluminum and wood composites (with plastic). These building materials lasted longer than wood and with minimum maintenance. In addition, the BC Ministry of Forest and Range spent almost its entire budget in 2013 for wildfire suppression. Due to increasing impacts of climate change and wildland-urban interface, wildfires became a major problem in BC. Some money was made from previous investment on coal and wood gasification projects. In addition, the *liquefied natural gas* (LNG) export facility located near Kitimat, BC, exported clean natural gas to particularly China, started its operation in 2013. But these incomes were not enough to cover for the services expected by British Columbians.

Although demand for wood chips and pellets was high, the forestry sector in the region could not compete with cheaper Asian and Latin American prices. The region's pulp industry slowed down again due to decreased demand for paper in most developed countries, and soft lumber tariffs remained high. Value added wood products did better. Illegal logging was also a huge issue for community forests in this period. Residents felt that they have a right to harvest any forest products, and particularly trees from their community forest. High value trees were always targeted which considerably affected timber sales.

In this period the communities in the Kootenay Lake bioregion struggled with wildfire prevention due to poorly controlled wildland-urban interface. Most *Official Community Plans* did not appropriately consider this land development issue. Not only was it a serious wildfire risk, but also a threat to wildlife (plants and animals alike) and watershed management. Funding for these activities was quite limited and was never enough. Moreover, communities with community

forests considered such issues were the responsibility of the latter's management.

There was a modest increase in BC's and in the bioregion's average temperature as global and BC economic activity in this period was much less compared to a decade earlier.

2016-2025

BC's financial trouble continued. Its housing market collapsed following the US housing market 2nd crash in early 2016. To stimulate the economy after 2008/09, the Canadian housing and mortgage institution made mortgages very easy to obtain. This resulted to considerable increase in homeownership and over-inflated housing prices. For example, just before the housing bubble burst, the average price of a single-family detached house in the Greater Vancouver area was 2 million dollars. This was 80% higher than the national average and 60% higher than that of Toronto. It was not surprising that BC had the highest number of foreclosures in Canada.

The BC government focused on economic survival, which it claimed "demanded" the effectiveness of more centralization of public decision-making. *Sustainability* was *de facto* put on the back-burner, with relevant policy remaining on the books without funding. It fast-tracked the *environmental impact assessment* (EIA) approvals of a number of controversial projects, despite considerable public protests. Included were large IPPs in the Kootenay and coal bed methane development in northern BC, coal mining in the Similkameen, and the expansion of shale gas mining in the Horn River area. Shale gas reserves in the Horn River area was considered as big, if not bigger than Alberta's tar sands. It also promoted resort-like developments in rural areas. But this policy proved hollow as there was too little private or public funding available to support the related infrastructure development (road improvements, local airports, solid and liquid waste disposal systems, etc.). Moreover, natural resources extraction projects (logging, hydro, oil and gas mining) were always prioritized over less environmentally destructive recreation-based projects, and the former usually got in the way of the latter.

By the end of 2025, while the economic condition has considerably improved compared to a decade earlier, the environmental degradation of especially rural places rich in natural resources, particularly coal and oil shale, increased. Although the Kootenay Lake bioregion's economic activities remained less polluting (water, wood, and marijuana growing) the environment, especially forests, was considerably affected by higher temperatures with increased fluctuations in the temperature, humidity and rainfall. In addition, illegal logging and marijuana growing, and the cumulative effects of numerous IPPs in the bioregion exacerbated the increasing impacts of climate change on forest ecology. Towards the end of this scenario period, a severe Douglas Fir

bark beetle outbreak occurred. A disastrous wildfire was imminent since the BC Gov't and the *Columbia Basin Trust* (CBT) funding for wildfire prevention had been significantly reduced. CBT was not doing well financially. Due to numerous IPPs (large and small) they had trouble reaching the needed water levels to meet their legal obligations for US hydropower export.

2026-2060

The province' environmental degradation continued. By the end of this period in general BC's natural and socio-cultural amenities and biodiversity, particularly that of its interior valleys, had been significantly diminished due to unsustainable natural resources use and distant, poor and insensitive centralized decision-making. Some migration for greater amenity still continued, but it was limited to small number of wealthy Canadians and foreigners that purchased the most attractive Crown land that the BC Gov't was marketing with rigour from 2040 to raise its revenues.

In 2060 the temperature in the interior of the province was much warmer. For the 1900-2060 period the average temperature in the Kootenay Lake bioregion increased by 3.5°C; 0.5°C higher than BC's. Wildfires started early in the spring and typically occurred until late autumn. Water supply was erratic, with sudden, violent storms, heavy run-offs and low snow packs. Summer was often, but not predictably, significantly hotter. Drought, and high forest mortality due to insect outbreaks were prevalent during this period. There was quite limited climate change mitigation and adaptation programmes due to lack of funding. Area salvage logging was typical. Although the demand for lumber, logs and pulp have increased in this period, the price was cheaper compared to 4 decades ago.

By the end of this period, due to its lower economic activity compared to the rest of the province and reduced attractiveness of its natural environment, K&A was not a destination for either economic or amenity migrants. Youth out-migration was extremely high. However, climate refugees, notably the low-incomed, increased in K&A. In 2060, both the population in the Village of Kaslo and Area D decreased from a half century earlier, Kaslo's population was 800 people (-27%) while Area D was better-off with 1,500 people (-6%). Second home owners had also decreased to 400 people (-20%). Tough times had returned. What could Kaslo do to turn this around?

Appendix D

Internal Analysis: Key Decision Factors Strengths & Weaknesses

KDCFS KEY STRENGTHS	KDCFS KEY WEAKNESSES
<p>Human Resources</p> <ul style="list-style-type: none"> • Society Board members are volunteers and residents of Kaslo & District (7 elected by general membership; 2 appointed). Therefore, significant concern about the community forest, and commit their time and skills. • Woodlands managers (2) are professionally trained w/ considerable experience. • Membership is open to all Kaslo & Area D residents, a strength, since members do not benefit financially from the Society it likely attracts people who are concerned about the community forest and its role in K&A, and will participate in the Society to achieve its mission. 	<p>Human Resources</p> <ul style="list-style-type: none"> • Board members skills and experience can vary considerably over time as volunteers serving 2-year terms. • As a "citizen's board" difficult to assure level of decision-making and management competence needed for an organization w/ complex mission (especially equitable community development along w/ producing & selling forest products and services into competitive markets). • Membership varies through time in size and interests.
<p>Financial Resources</p> <ul style="list-style-type: none"> • Society has funds to maintain operations for 3 to 4 years. (approx. \$800,000) 	<p>Financial Resources</p> <ul style="list-style-type: none"> • Current funds considered by some members as insufficient for new, experimental or

KDCFS KEY STRENGTHS	KDCFS KEY WEAKNESSES
<p>w/ \$250,000 set aside for silviculture and \$85,000 for water damage self-insurance).</p>	<p>speculative initiatives; by some other members as inadequate for the Society to continue planning functions.</p>
<p>Policy/ Governance</p> <ul style="list-style-type: none"> • Governance of Board of Directors accountable to Society members, who give directions especially through their AGM: local community based. • Professional Woodlands managers (2) influence policy and prepare and implement plans and operations. • Society adapted policy on water protection & management more stringent than governing BC Department of Environment. • Society have considerable management and use permit (forest, water and botanicals). • Some members of board, management and general membership wish to explore opportunities and risks of new forestlands-based products and services. • Board recognizes 	<p>Policy/ Governance</p> <ul style="list-style-type: none"> • Society is relatively young, still in its formative stage of development (in a time of new opportunities and threats w/ high future uncertainty). • Society is accountable to membership that is open and fluctuates in size and manifests a variety in interests and images of the Society. • The most active members appear to emphasize opposing values and purpose for the community forest: pro industrial forestry and pro environmental conservation/protection (including NIMBYs with primary interest in protecting their viewscape and little recognition of residing in an area with forestry). More centralist members are much less engaged in influencing policy and operations. Therefore issues that affect K&A community face two typically opposing but

KDCFS KEY STRENGTHS	KDCFS KEY WEAKNESSES
<p>differences in members' values and views and strives to institutionalize greater agreement through due process and new planning systems.</p> <ul style="list-style-type: none"> • More generally, Society is undertaking strategic planning (medium and long term) to guide policy and short term (1 to 5 yr) planning, and operations (essential in a time of new and emerging opportunities and threats w/ high future uncertainty). 	<p>committed minorities.</p> <ul style="list-style-type: none"> • This condition is reflected over time in an organizational identity lacking shared philosophy and values. It is expressed through <ul style="list-style-type: none"> – inconsistency (e.g. swings from industrial to environmental poles w/ associated image), – invigorated particularly by controversy – inward looking and reactive, not proactive – risk averse – lack of self-assurance • Society does not have jurisdiction over apparent opportunities for new products and services (recreational/ tourism services & facilities that license area offers), but has some associated responsibilities (wildlife and biodiversity protection, etc.) • Although increasingly aware of new and emerging opportunities that forests offer (non-timber forest products, fire wood/ bio-fuel, urban wildland fire interface, carbon sequestration, recreation, etc.) has been without appropriate information, strategy and focused purpose to move on.

KDCFS KEY STRENGTHS	KDCFS KEY WEAKNESSES
	<ul style="list-style-type: none"> • Limited understanding of growing urbanization-forestry interface issues, especially from values and behaviour that come w/ growing amenity migration and tourism-driven development. • Limited, direct experience with enterprise development and marketing, especially innovative products, manufacturing and services.
<p>Physical Resources Forest license area (w/ tenure now "area-based").</p>	<p>Physical Resources</p>
<p>Community Image of Society</p> <p>(see EA Opportunities & Threats part of SWOT Analysis)</p>	<p>Community Image of Society</p> <ul style="list-style-type: none"> • Not well developed and managed by Society (lack of knowledge and/or lack of clarity/ agreement on image? – see above).