

Draft 3A

Good Jobs require Healthy Ecosystems and Healthy Communities

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Thoughts about Good Jobs

If humankind continues to approach its problems from the perspective of temporary expediency, future generations will face tremendous difficulties. Dalai Lama

Good jobs are in the eyes of the beholder. For someone who needs a job and is willing to work, almost any job may look “good.” For other people, a good job may mean doing something you love, something you believe in — something creative. In either case, society needs to further people’s opportunities for a good job by creating policies and an environment where people who need a job and are willing to work are able to find safe, rewarding jobs with fair benefits. Our education systems, backed by government policy and broader social policy need to give priority to offering people opportunities to do something they love and believe in—to learn instead of being “educated.” Providing people with the opportunity to do something they love will have spinoff benefits from more compassionate, caring societies to more egalitarian, creative, and inclusive cultures.

Many think of good jobs as being *meaningful work*. Like the term “good jobs,” meaningful work is also to a great extent in the eyes of the beholder. However, we can identify some points that most people will agree contribute to the work being meaningful:

- work has purpose — meaningful work plays an important role from laying the bricks to designing the architecture for a cathedral.
- work feeds into the meaning of life as a whole — work provides a part of what is necessary to meet the needs of life today with due attention paid to not borrowing from the needs of future generations.
- work benefits a greater good — the community, and ecosystems that support the community are better off as a result of the work.
- work influenced by culture — we are taught that certain work, certain jobs are meaningful and good. These teachings need to ensure that people are neither exploited, nor put in unsafe situations in their work.
- work provides the ability to alter tasks — people will find work more meaningful if they are given the latitude to use their organizational and creative skills to modify tasks to be both more effective and interesting to the person carrying out the job.
- work provides the ability to associate with compatible people and ideas — paying attention to worker happiness, as it relates to their association with coworkers not only results in good jobs, but also increased performance in the workplace. (adapted from Weir, 2013)

Good jobs from meaningful work can be defined in human terms, however, ultimately good jobs depend upon healthy communities that are maintained and sustained by healthy ecosystems. Thus, good jobs start with ecosystems that have natural ecological integrity.

Before I consider some examples of good jobs — meaningful work, I would like to start with the underlying need of good jobs — natural, healthy ecosystems. This discussion will necessitate us looking well beyond the job place, both in spatial and temporal terms. At the same time, we need to

remember that, like water drops held in a basin, ecosystems literally “hold” cultures and their economies—jobs.

The Values behind Good Jobs

Since good jobs depend upon healthy ecosystems, there is a need to ensure that the foundation for jobs ensures the maintenance of natural ecological integrity. This is achieved through adopting an ecosystem-centred value system, as opposed to a human-centered value system.

Ecosystem-centred value systems are holistic — recognizing that all parts of Earth are interconnected and interdependent. What we do to one part we do to the whole system. Earth-centered values recognize the intrinsic value of whole systems, recognize that we will never be able to fully understand the intricacies and processes that sustain us and the other parts of Earth, and recognize that we must design and carry out activities — jobs — which maintain and/or restore healthy, natural ecosystems.

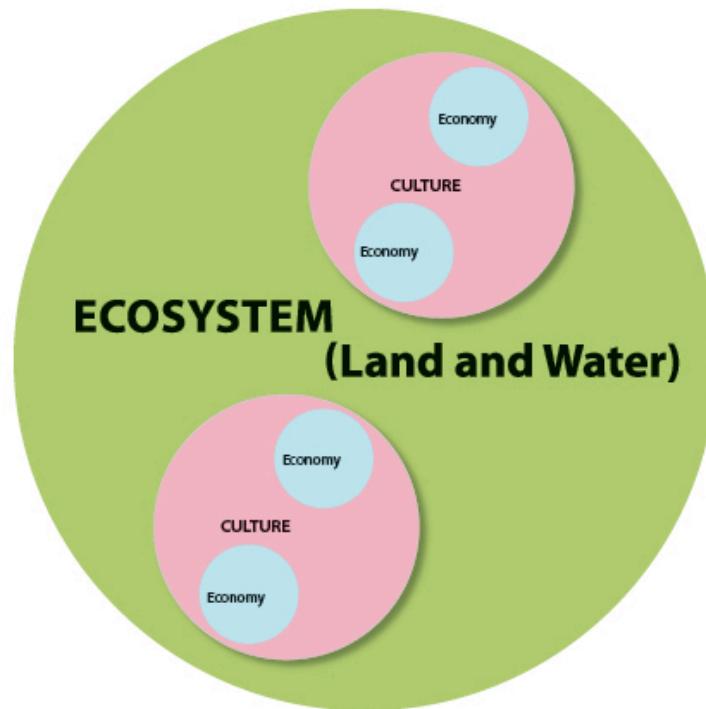
Ecosystem-centred values are inherently precautionary. Activities that follow the precautionary principle deal with uncertainties by directing decisions, interpretations, plans, and activities to err on the side of protecting ecological integrity, as opposed to erring on the side of protecting resource exploitation. Applying the precautionary approach to an activity means that if you are not sure that an activity protects, maintains, or restores natural ecosystem functioning, then modify the activity so that it occurs within ecological limits, or do not do it.

In contrast, human-centered values see the world through a narrow focus: Earth is a resource repository for human use and benefit. Human-centered values may acknowledge the importance of “the environment,” but overall see the parts of Earth, which are classified as “resources,” as having no value until they are extracted and put to use by people. The environment is not really seen as something we are part of and depend upon, but rather something “out there” that needs to be balanced with resource extraction activities.

Human-centered values do not see whole systems. This flaw blinds us to the connections between our actions and degradation of the functioning of Earth. Global warming is the most obvious and pressing ecological crisis that threatens not only our species, but nearly all species that inhabit Earth. This crisis is the direct result of poorly planned human activities—jobs—that benefit corporate bottom lines, not society as a whole. Clearcuts and mines that pollute water, and urban development that destroys ecosystem integrity are other examples of how human-centered values threaten the ecosystems that ultimately provide our jobs. We can design lasting jobs that operate within Earth’s limits—jobs that support our needs and the needs of the species with whom we share this planet.

Ecosystem-centred values recognize an important hierarchical relationship between ecosystems, cultures, and economies. Economies are part of human cultures and human cultures are part of ecosystems. Therefore, protecting ecosystem integrity and the range of natural ecosystem functions provide for healthy human cultures, and the economies that are part of these cultures. This relationship is shown in figure 1, below, and is well-grounded in both Indigenous knowledge and western science.

AN ECOSYSTEM-BASED CONSERVATION PLAN IS BASED UPON A HIERARCHIAL RELATIONSHIP



Economies are part of human cultures, which are part of ecosystems. Therefore, maintaining the integrity of ecosystems provides the basis for sustainable cultures, including their economies.

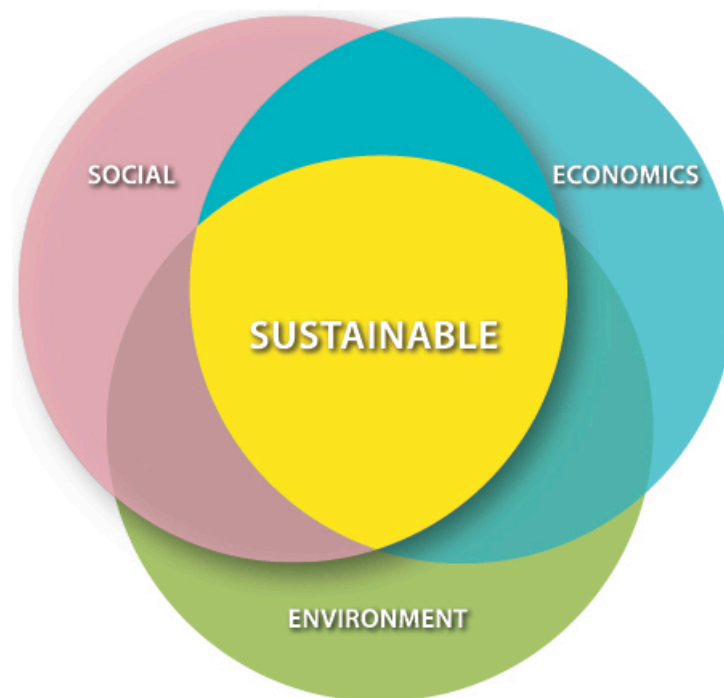
Figure 1: Hierarchical relationship between ecosystems, cultures, and economies.

The important relationship between ecosystems, human cultures, and their economies is also evident in the meaning of the words “ecosystem” and “economy.” The word ecosystem begins with “eco,” which is derived from the Greek word *oiko(s)*, meaning house or home. Thus, ecosystem means *home system* — our home. In contrast, economy means management of a household or home thus, an ecosystem is inclusive of an economy or management of the home system, and the health of the economy and the culture within which an economy is found depend upon the health of the ecosystem.

This ecosystem-based hierarchical relationship is not to be confused with “sustainable development.” The diagram in Figure 2, below, shows the sustainable development model, which portrays environmental, social, and economic factors as relatively equal. In the sustainable development model,

where these three factors “intersect” is where plans are considered to provide for sustainable activities. I cannot think of any places where social factors are outside of the environment, nor where economic factors exist outside of social factors. This model does not reflect actual relationships between environment, social, and economic aspects.

THE SUSTAINABLE DEVELOPMENT MODEL



The environment (ecosystems), society (culture), and the economy are given relatively equal consideration in designing a plan.
Where these factors “intersect” is where plans are considered to provide for sustainable activities.

Figure 2: Sustainable development model of human activities.

The sustainable development model is an assumption of convenience to maintain at least minimal levels of economic growth. In contrast, the ecosystem-centred hierarchy constrains economic activities within the limits of ecosystems and cultural priorities. Changing government and industry priorities from perpetual economic growth to a steady state economy is an essential change necessary for lasting “good jobs.”

Limits to growth are necessary, whether we are speaking of a biological organism or an economy, because we live in a finite system. If any organism, be it a bacteria or a buffalo grew forever, that organism would subsume everything. Thus, continued economic growth is neither biologically possible, nor socially desirable. A steady state economy manages without growth by recognizing and staying within ecological limits, and by focusing on human needs, not on creating artificial human “needs,” nor satisfying human wants.

Planning Good Jobs

A clear contradiction emerges in society’s use of Earth: we understand little about the functioning of Earth, the processes that sustain life in all its forms. What we do understand indicates that Earth is an extremely sensitive, complex, and interdependent system that can be easily damaged. However, despite this framework of uncertainty, governments and industry are carrying out activities and making extensive plans to modify Earth using the same or similar philosophies to resource exploitation that have been applied largely unsuccessfully from the time of the industrial revolution.

Good jobs cannot be developed through government policies that focus on short-term profit taking, nor by governments controlled by corporate capitalism. Jobs that come from governments with these structures and biases not only put workers in positions where their respect for what is important is compromised, but also undermine the possibility for meaningful employment in the future.

Ecosystem-based conservation planning (EBCP) is a practical, tested way for people to live in ecosystems within ecological limits. EBCP is the foundation for developing good jobs, which emphasize the development of diverse, sustainable community-based economies. In the history of human civilization, economies that have been sustainable over the long-term are community based economies. Because decisions in community-based economies are made close to the land and water — ecosystems — affected by economic activities, community-based economies have the best chance for decisions that respect ecological limits and maintain ecological integrity.

Community-based economies are fundamentally different than today’s national and global economies in that community-based economies see jobs as profits, as opposed to money as profits. Thus, community-based economies operating under the principles of ecosystem-based conservation planning offer a better opportunity than today’s global economy for “good jobs.”

A healthy global economy is built upon the development of healthy local or community-based economies. Hence, ecosystem-based conservation plans for local landscapes constitute the foundation for healthy global economies that both maintain ecological integrity and provide for human well-being, including good jobs. A healthy global economy is built from the ground up—being the sum of diverse, ecologically responsible community economies.

However, the reverse is not true. In other words, healthy global economies cannot be developed from the top down, because such plans are built upon centralized power structures that give first priority to maintaining the interests of power centers, as opposed to giving first priority to maintaining ecological integrity and developing healthy communities. Today’s global economy may be characterized as a centralized, corporate controlled economy that is built on the degradation of local ecosystems and destruction of local economies.

Ecosystem-based conservation planning means relating to and using the ecosystems we are part of in ways that ensure the protection, maintenance and, where necessary, restoration of biological diversity from the genetic and species levels to the community and landscape levels. An ecosystem-based conservation perspective works at all scales from the microscopic to the global. The priorities that guide ecosystem-based use of land and water focus first on what to protect, and then on what to use.

Within this definition, several concepts need clarification:

- The word *natural* reflects pre-industrial ecological conditions and includes Indigenous management systems.
- Maintaining *ecological integrity* includes protecting, maintaining, or restoring natural ecosystem *composition, structure, and function* — the parts, the arrangement of the parts, and the processes of ecosystems.
- *Protection* means the maintenance of ecological integrity through the establishment of *ecological reserves at multiple spatial scales*. Protected areas may include Indigenous cultural activities and soft human uses such as ecotourism and wild crafting.
- Ecosystem-based conservation planning is inclusive of a wide range of human activities, and recognizes that healthy human communities provide the necessary human resources to implement ecosystem-based conservation planning.
- The sum of community economies is the global economy. Therefore, ecosystem-based planning recognizes that the starting point for the development of sustainable economies needs to be at the community level.

There are two priorities for ecosystem-based conservation plans:

- *First priority: protect or restore ecological integrity...* In other words, maintain and where necessary, restore natural ecosystem composition, structure, and function at all spatial scales through time.
- *Second priority: provide for balanced ecosystem use across the landscape...* In other words, provide fair, protected land bases for all ecosystem users, both human and non-human.

Given the long era of aggressive exploitation of natural resources, i.e. ecosystems, many of the good jobs of the future will focus on ecological restoration, as well as restoring community health and well being, including community-based economies.

Ecological integrity is a key concept of ecosystem-based conservation planning. Ecological integrity may be defined as: “a system’s wholeness, including presence of all appropriate elements and occurrences of all processes at appropriate rates” (Franklin 2000).

Several scientists on the Coast Information Team (British Columbia) have suggested a set of goals that would increase the probability of maintaining ecological integrity:

- maintain viable populations of all species;
- represent, within protected areas, all native ecosystem types across their range of variability;
- maintain evolutionary and ecological processes — i.e., disturbance regimes, hydrological processes, and nutrient cycles;
- manage over periods of time long enough to maintain the evolutionary potential of species and ecosystems; and
- accommodate human use and occupancy within these constraints (CIT 2003).

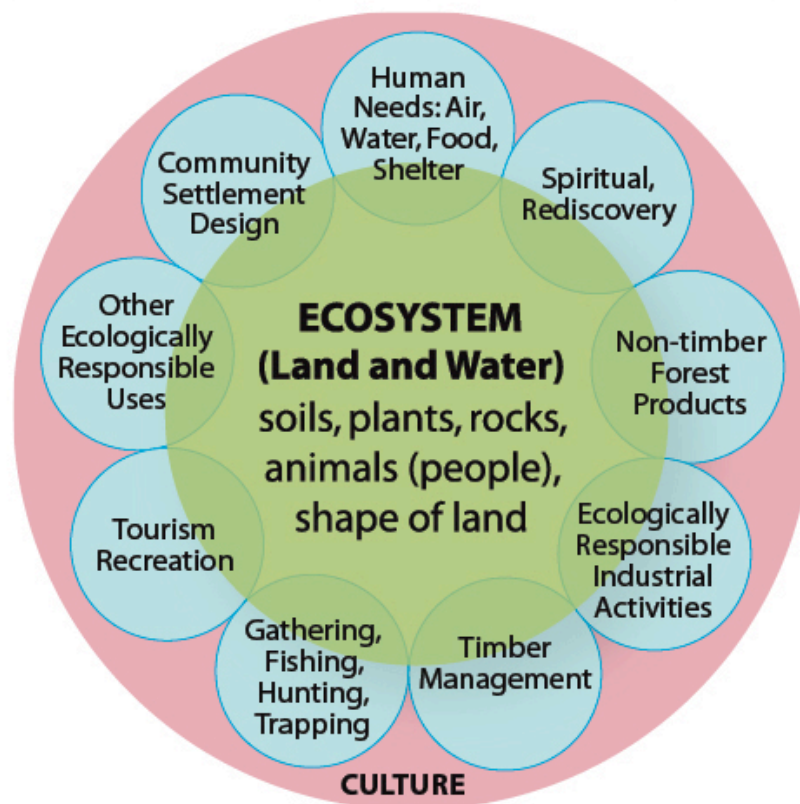
Figure 3 is a conceptual view of ecosystem-based conservation planning. Note that protection of ecological integrity (protection of the land and water) is at the heart of the plan, and that human uses are balanced and evenly distributed in the plan area to maintain ecological integrity. This conceptual view of an ecosystem-based plan also shows that such plans are community-based, where communities are inclusive of many interests, share decision-making power, and take responsibility for their actions.

CONCEPTUAL VIEW OF AN ECOSYSTEM-BASED CONSERVATION PLAN

— a framework for making decisions —

First, protect the land and water—ecosystem.

Second, use the land and water—ecosystem in ways that maintain all of the parts and processes.



Ecosystem-based conservation plans are community-based.

Healthy communities have place, are diverse, and take responsibility for their actions, ensuring that the needs of future generations guide their actions in the present.

Community-based plans share decision-making power, are inclusive of most interests, and develop clear lines of accountability for activities.

Ecosystem-based plans start with defining *ecological limits* and designing *networks of ecological reserves*. Networks of ecological reserves at multiple spatial scales are large contributors to carbon sequestration and storage, particularly in forest landscapes. As well, ecosystems where human uses

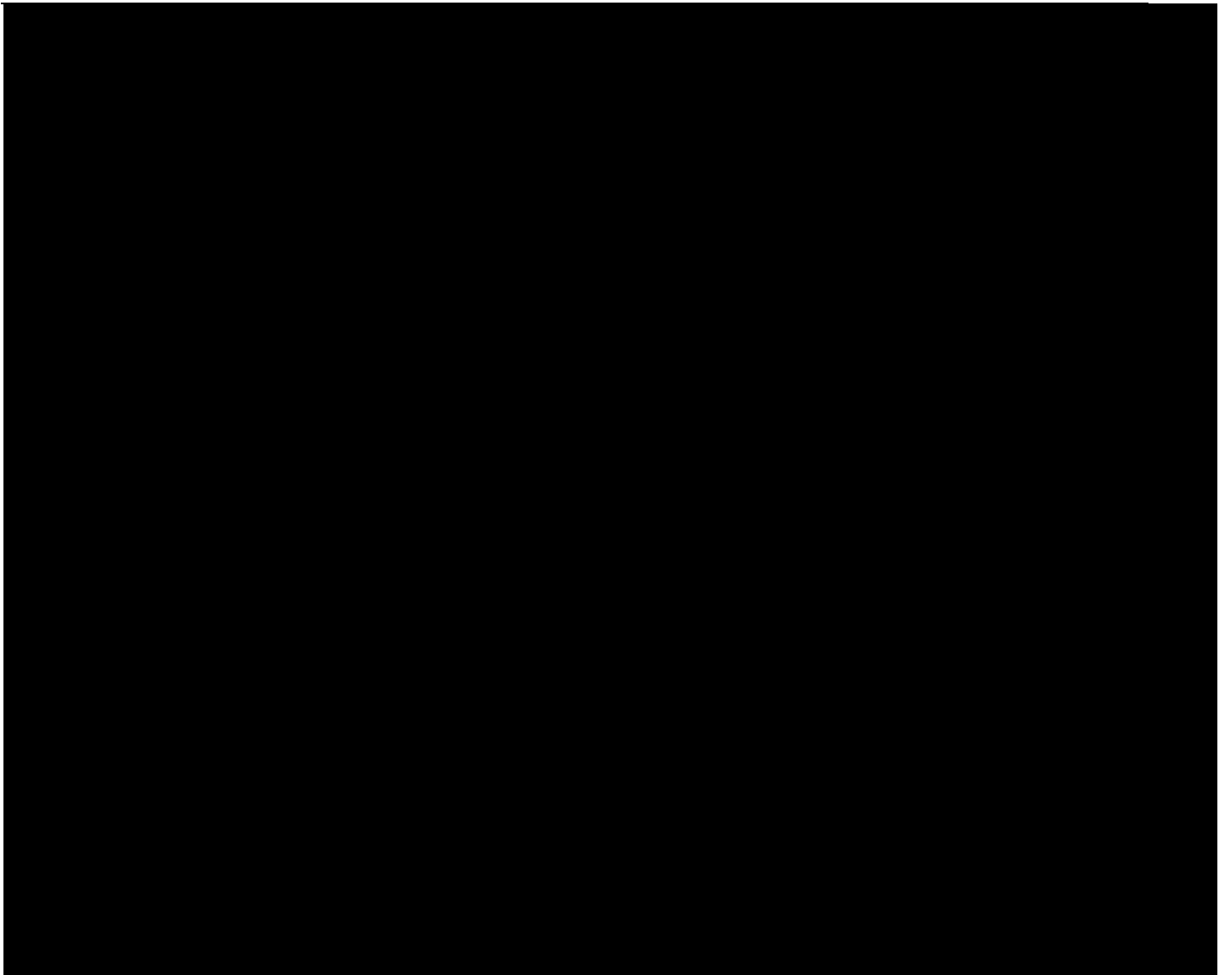
occur (the *matrix*) maintain ecological integrity, thereby improving the sequestration and storage of carbon compared to many conventional human activities.

Thus, implementing EBCPs has the potential to provide an important way to mitigate the impacts of global warming, and provide the gene pools to help species adapt to a changing climate. Most importantly, ecosystem-centred values direct people to the full range of changes to governance, economics, and lifestyles necessary to reach a world of zero carbon sources of energy.

Networks of cultural reserves often supplement networks of ecological reserves, in order to ensure that both the ecological and cultural frameworks are in place to maintain healthy ecosystems and healthy communities over time.

Once ecological limits are clear, and networks of ecological and cultural reserves established, human use areas are mapped and defined, including the specifications for uses that occur within ecological limits. Designation of human use areas forms the foundation for local economies, and ultimately an ecologically and culturally sustainable global economy.

Figure 4 shows a conceptual example of a network of ecological reserves at a small landscape scale.



Before leaving this brief introduction to ecosystem-based conservation planning, I want to emphasize that EBCP is a practical, well understood process. Ecosystem-based conservation plans may be prepared at a variety of spatial scales and within a wide range of budgets. EBCPs need to become the foundation for human use of Earth, if we are deal with the challenge of global warming, evolve to a co-operative, compassionate world society, and learn how to live as a respectful part of ecosystems.

The most desirable place to start an EBCP is at a large landscape scale, because landscapes “hold” smaller areas, like watersheds and patches. Thus, what happens in the landscape affects the smaller areas that the landscape “holds”—are nested within the landscape. However, particularly during the transition from human-centered approaches to ecosystem-centered approaches for job creation, EBCPs may be developed for small areas, like individual forest stands or urban neighborhoods. This way of using EBCPs will contribute to the transition from degrading global economies and jobs that exploit workers to ecologically and culturally sustainable economies and jobs that respect workers.

Meaningful jobs are the profits of ecosystem-based conservation plans, and the community-based economies that comprise these plans.

Policy Suggestions:

1. *Develop ecosystem-based conservation plans (EBCPs) that maintain and restore natural ecological integrity and define human use areas within ecological limits. The human use areas and ecological limits define the types and numbers of “good jobs” that result from the EBCP.*
2. *Develop and implement EBCPs through socially responsible government agencies at the regional and local levels.*

Note: Reestablishing/establishing regional and local government agencies to develop and implement EBCPs will provide for a significant number of good jobs. These jobs will provide meaningful work that focuses on ecologically and socially responsible decisions and activities.

Opportunities for Good Jobs

Restoration

Restoration, specifically *ecological restoration* is necessary across the urban, rural, and unsettled landscapes of British Columbia, indeed across much of the world. The need for ecological restoration is catalyzed by poorly thought out approaches to resource development, from urban settlement and agriculture to forestry and mining, which have largely ignored the maintenance of natural ecological integrity. The focus has been short-term economic expediency — profit-taking, as opposed to the focus of protecting and maintaining the ecosystems that sustain us and our needs.

Ecological restoration is assisting natural processes to mend, replace, and develop natural composition, structure, and function. The key word in this definition is *assisting*. Ecological restoration focuses on how human activities may assist natural processes in redeveloping ecological integrity at all spatial scales.

While restoration activities offer excellent opportunities for good jobs — meaningful work, the first tenant of effective restoration is to put an end to the activities that cause the need for restoration. In other words, extraction of tar sands oil, clearcut logging, open pit mining, and similar types of resource exploitation need to end and/or be replaced with ecologically and socially responsible alternatives.

Place is a critical element for effective restoration. It is easier to develop a sense of responsibility for care giving for ecosystems among people living in or near the ecosystems in question. Therefore, the people to lead restoration are not the officials of centralized governments or the employees of centralized corporations, but the people who live where the problems are. They may not have created the problems, but they are best ones to take responsibility for restoration, because they have place. Having place frequently brings with it a commitment to neighbors and respect for ecological integrity. In an ecosystem-based approach, having place encourages the maintenance and restoration of healthy ecosystems.

Urban Restoration

The history of our cities is one of expelling nature and constructing a sovereign built environment exclusively for humans. We have assumed that cities are not only independent from nature, but that they should fully replace the “wild” landscape of nature with a more sophisticated, cultured, and advanced landscape. Cities are manifestations of our battle to overcome nature, to separate ourselves from the cycles of the earth, and to insist on what William Cronon calls a fabricated “human-nature

duality.” In city building, this false duality has facilitated the impetuous tearing apart of nature in a hasty quest to sterilize our habitat at the expense of both humans and non-humans.

The tragic assumption that we and our cities are separate from nature provides false comfort as we bury urban streams, eradicate natural vegetation and habitats, and disconnect ourselves from the cycles of life. This disconnection blinds us to the effects of our actions, and leaves us illiterate to read the signs from a nature in distress. Instead, we are engulfed in an urban landscape too frequently “depressing, brutal, ugly, unhealthy, and spiritually degrading.”

Rather than being liberated by our imagined separation from nature, we suffer emotional, psychological, and physiological wounds, pay an unnecessary economic price, and leave our children missing something they have never known. Alienation from nature afflicts us with a “nature-deficit disorder” manifested in a wide range of maladies affecting all community members, but extracting its greatest toll from our children in the form of obesity, anxiety, depression and a disconnection from the living world. As children grow up in an urban landscape bereft of nature, we are gambling with the consequences of a generation uniquely severed from the earth’s systems at the same time that those very systems are under more stress than any point in human history.

(excerpted from book proposal: “Inviting Nature Home: an Ecosystem-based Approach to Cities,” by Cam Brewer, Herb Hammond, and Sean Markey, 2013)

As indicated above, urban areas are under severe stress from climate change/global warming. Unlike many rural environments and relatively unmodified ecological landscapes, cities do not have other than remnants of ecological integrity to help them mitigate and adapt to the changes wrought by global warming.

Cities also face problems with infrastructure, particularly storm sewer infrastructure, which is badly outdated and inappropriate to handle the intense storms that accompany climate change. There is evidence that the cost of upgrading storm sewers to handle the coming intense storms is prohibitive for most municipalities. However, restoring natural ecosystem integrity in as many places as possible throughout an urban watershed may not only be cheaper than upgrading storm sewers, but restored natural forest ecosystems accompanied by changes to water impermeable surfaces may provide the relief necessary for cities to handle intense storm events.

Ecological restoration as part of an urban EBCP involves re-establishing natural vegetation patterns and permeable surfaces throughout the watershed, so that water can be held in forest canopies, drip to the forest floor, percolate naturally through soil, follow natural terrain features, and gradually find its way into restored creek and river channels.

Ecological restoration treatments to re-establish natural vegetation and permeable surfaces in urban areas are important sources of good jobs, and include:

- “day-lighting” buried streams and reestablishing natural riparian composition and structure,
- establishing bio-swales,
- converting lane ways and parking areas to natural, permeable surfaces and multilayered vegetation,
- establishing multilayered vegetation in parks and other types of protected nodes on private and public property,
- replacing impermeable street and sidewalk surfaces with permeable asphalt and other appropriate permeable products,

- improving permeability around residences and other buildings by removing impermeable surfaces, reducing soil compaction, and establishing multilayered vegetation,
- establishing storm water collection facilities on residential lots and in public places, so that storm water may be stored and used for domestic purposes, like gray water and watering gardens, and
- identifying and describing other potential ways to increase the permeability of urban ecosystems.

Note: Multi-layered vegetation facilitates more water percolating into soil during a rain storm compared to single layers of vegetation or no vegetation cover. This occurs because water is “caught” or “held” in the leaves of the multi-layers of vegetation and drips through the canopy, permitting soil water to drain and providing for steady recharge of water in the soil. In contrast, more water reaches the ground quickly with single layers of vegetation or no vegetation cover, thereby increasing the likelihood of overland flow that, in urban areas, would reach storm water drains and in intense storms potentially overload the drains.

Policy Suggestions:

3. *Develop a socio-ecological economic analysis to compare upgrading storm sewers to handle intense global warming storms versus restoration of natural vegetation and permeable surfaces in the urban landscape. This socio-ecological economic analysis will provide the foundation to support urban ecosystem-based restoration.*
4. *Provide property tax benefits and financial assistance for property owners, who are willing to undertake ecological restoration treatments on their land, which further the urban ecological restoration goals.*
5. *Provide property tax benefits for landowners who are willing to place a conservation covenant on their land, so that it forms a permanent node of natural ecological integrity within the urban landscape.*
6. *Restore natural ecological integrity within parks and other protected areas in the urban landscape, and use these restored areas as “learning centres” for people of all ages, and all walks of life, particularly politicians.*

Forest Restoration

Climate scientists generally agree that maintaining intact, natural forest ecosystems is an important way to mitigate the impacts of global warming/climate change. Intact, natural forest ecosystems contain broad gene pools that give the individuals in these ecosystems a better chance to adapt to climate change compared to the narrower gene pools found in plantations and other types of forests managed for timber. Frequently landscapes with intact, natural forest ecosystems contain areas of old-growth forests, which are the best forest phase for sequestering and storing carbon, and conserving water, which will be in short supply in a warmed world.

Thus, protecting intact natural, intact forest ecosystems from development is an important hedge against the impacts of global warming. Where forests have been clearcut and replaced with tree plantations, there is a need to restore natural ecological integrity. While restoration of clearcuts and tree plantations to old-growth forests requires long time horizons, beginning these restoration treatments now is very important in the face of global warming. Due to their lack of ecological resilience, the narrowed gene pools of planted trees, and the degraded hydrology of young plantations or natural stands resulting from clearcutting, these ecosystems are very vulnerable to damage and perhaps loss from global warming.

Ecological restoration treatments to restore natural ecological integrity and intact forests, including old-growth forests are a source of good jobs, and include:

- reestablishing dead tree structures, like large snags and large fallen trees,
- reestablishing natural drainage patterns,
- reintroducing indigenous plant communities along successional pathways, with particular attention paid to plant communities that are able to prosper in the climates wrought by climate change,
- encouraging vegetation communities that rebuild soils,
- thinning overstocked stands of trees, removing fire ladders, and raking deep litter layers away from large trees as preparatory treatments to the reintroduction of low intensity ground fires,
- reintroduction of fire after establishing appropriate stand composition and structure, in appropriate seasons and under the right conditions (this recommendation is subject to review due to the effects of global warming), and
- designating individual trees and groups of trees to become full cycle trees to live out their natural lifetimes, die, become snags and, eventually fallen trees. This treatment is very important to ensure that natural, intact forest composition, structure, and function are reestablished.

Particularly given global warming/climate change impacts, virtually all clearcuts and tree plantations/managed forests originating from clearcuts require some level of ecological restoration, both to protect these stands from loss in global warming and to provide for ecological sustainability of timber supplies. Thus, ecological restoration of forests offers a nearly limitless number of good jobs.

Policy Suggestions:

7. *Implement a stumpage surcharge to cover the cost of ecological restoration when clearcutting is used to manage a forest area. This stumpage surcharge will be used to fund ecological restoration of forests.*
8. *Include a basic restoration levy in all stumpage determinations. Note that in the case of ongoing clearcutting, both the stumpage surcharge and the restoration levy will be charged.*
9. *Dedicate a portion of the carbon tax to fund ecological restoration of forests.*
10. *Develop ecosystem-based restoration plans for landscapes, and give priority for employment in preparing and implementing these plans to local community members and groups.*

Value-added Wood Products

For many years, the number of jobs produced in British Columbia for the volume of timber cut and processed into wood products has been amongst the lowest in Canada. In a glaring paradox, British Columbia’s position as producing few jobs for the volume of timber cut continues despite having the highest quality timber remaining in Canada. In other words, when it comes to forestry and milling of wood products, British Columbia does the least with the best.

As shown in the latest “The State of Canada Forests – Annual Report 2014,” this disappointing trend continues. The Annual Report 2014 shows that British Columbia produced 0.85 jobs per thousand cubic meters of timber cut and processed into wood products, compared with Ontario, who produced 3.47 jobs per thousand cubic meters and, Quebec, who produced 2.44 jobs per thousand cubic meters.

If one goes back in time, direct forestry and wood products employment has steadily declined, when considered by the number of jobs produced for each thousand cubic meters of timber cut. For example, in 1944 2.5 jobs per thousand cubic meters were provided; in 1965 1.7 jobs per thousand cubic meters

were produced; and in 1987 0.9 jobs per thousand cubic meters resulted. As shown above, the employment rate for timber cut is even lower today.

Here are some of the reasons for the lower employment rate for the volume of trees cut in BC compared to Ontario and Québec, and for the steady decline in employment for the volume of trees cut in BC:

- Mechanized logging and milling has significantly reduced the number of people necessary to cut and mill a given volume of timber. This change has supported corporate profit-taking, at the expense of good jobs. With more public control of timber supplies, particularly local control, people may decide that there is a better balance between jobs and profits. Indeed, in a community-based economy jobs are the profits.
- An important part of keeping stumpage rates low in British Columbia is to continue to produce high volumes of low valued products — commodity lumber. This contributes to the timber industry argument that due to the low value products, the industry is unable to afford higher stumpage rates. By paying less for the public timber resource, timber companies are able to maximize profits, at the expense of producing good jobs through more labour intensive logging, and value-added wood products manufacturing.
- The removal of appurtenancy requirements from tenure agreements has enabled large timber companies in British Columbia to export minimally finished wood products, as well as logs to mills outside the region where logs are cut, including outside the country. This situation is akin to exporting jobs, as well. An irony in exporting minimally finished wood products and logs is that the finished products from these materials are not infrequently sold back to British Columbia residents.

The first place to increase employment for the volume of timber cut is in the logging aspect of forestry. In the past several decades, mechanized logging has increased log production by as much as 10 fold or more. To some degree, we cannot go back to slower methods of logging, because there is a need to compete with other jurisdictions where logging has also been mechanized. However, an easy way to double the employment gained from many logging operations is to shift from clearcut logging to partial cut logging. Partial cutting requires more care and attention to protecting ecosystems, and often uses different equipment to achieve this goal.

The change from clearcut logging to partial cutting is not only good for employment, but also good for ecosystems, and the communities supported by these ecosystems. Shifting away from clearcutting ensures that there is continuous forest cover on a site. Thus, appropriately designed partial cutting is an important way to mitigate the effects of global warming, because there are always a substantial number of trees to sequester and store carbon on the site, and to conserve water.

Jobs produced from ecosystem-based partial cutting provide meaningful work, compared to jobs from clearcutting. As loggers come to understand that a more holistic, ecosystem-based approach is better for the forest, they become more connected to the forest and more meaning is created in their work. I have worked with loggers for decades and I cannot think of a logger who made the transition from clearcutting to partial cutting that has ever returned to clearcutting. The meaningful jobs associated with partial cutting not only result in individuals being fulfilled from their work, but also results in healthier, happier individuals and communities.

There are examples of good value-added wood products manufacturing in BC. Value-added wood products are separated into secondary wood products and tertiary wood products. Secondary wood

products include paneling, molding, flooring, specialized timbers, and wood siding. Tertiary wood products constitute wood products like doors, windows, cabinets, and prefab small buildings.

The *good jobs* employment potential of value-added wood products manufacturing is significant. The best way to understand this potential is to consider different options for 30 board feet of wood (one board foot is 1 inch thick, 12 inches wide, and 12 inches long). Milling 30 board feet of lumber from a log employs a person for about one minute. Making a cabinet out of 30 board feet of wood employs a person for 1 to 2 weeks. Thirty board feet of wood will produce six violins and employ a violin maker for one year.

The Harrop Procter Community Forest owns their own mill and produces a variety of secondary wood products, including flooring, paneling, and wood siding. This value-added wood products manufacturing results in 5 jobs per 1000 cubic metres of timber milled. Currently, Harrop Procter only mills 1000 cubic metres per year of the 10,000 cubic metres they cut.

The barriers to milling more of the timber Harrop Procter cuts are space—more land is necessary for a larger operation—and being able to expand the range of products produced in their value-added production. To expand their range of value-added products would require significant investment in new equipment, which may or may not be sound for a small local mill. If nearby mills developed value-added manufacturing lines for species like western hemlock, and small cedar logs, a much higher portion of the timber cut in Harrop Procter would result in value-added products.

Whether this additional value-added is produced in Harrop Procter or adjacent local mills, increasing value-added manufacturing is a viable option. The manager of Harrop Procter Forest Products, Rami Rothkop, advises me that there is a much bigger demand for their value-added products than they are able to currently fill, and he believes that they and/or adjacent mills would be able to manufacture and sell value-added products from most of their annual cut of 10,000 cubic metres.

The largest challenge to increasing the amount of value-added wood products manufacturing in BC is the control of wood supplies by large timber corporations that do not see moving to value-added wood products to be in their best interest. If these timber companies can continue to make satisfactory monetary profits, without investing in new value-added mill equipment, their choice is likely to be the status quo, because that is the easiest way to meet their obligations to their shareholders.

If large corporations are not willing to facilitate more *good jobs* through value-added wood products manufacturing, why not give control of timber to community-based enterprises that are willing to commit to logging without clearcutting and the production of value-added wood products? The answer is that through corporate control of government, large timber corporations are able to indirectly write BC forestry legislation, regulations, and policies. Thus, an important change to both improve the ecological characteristics of forestry practices and provide for more good jobs is to ensure socially responsible, government control of our publicly owned forests, including the laws, regulations, and policies under which these forests are managed.

There is an urgency associated with “getting on with” implementing value-added wood products manufacturing in BC. That urgency stems from the fact that a large portion of the high quality, old-growth forests have been cut with only minimal benefits to society in terms of employment and ecologically responsible forest management. Because much of the remaining high quality wood is found in forests that are either ecologically sensitive/ecologically important, or in socially contentious locations, there is a need to develop ecosystem-based conservation plans with local communities to

determine where and how high quality wood may be extracted within ecological limits and consistent with local priorities.

In the future, government legislation and policies need to ensure that wood extracted, particularly high quality wood, is manufactured into at least secondary wood products, and ideally tertiary wood products as close to the source of the timber as possible.

Policy Suggestions:

- 11. Implement legislation, regulations, and policies that require at least secondary manufacturing in a local community for timber cut near the community. Development of this requirement may consider minimum distances, or a formula for defining minimum distances from where timber is cut to where it must be manufactured.*
- 12. Implement a log and commodity lumber transportation tax to apply to logs and minimally processed lumber that are shipped out of a local area without being manufactured to a specified minimal level of secondary manufacturing. The returns from this tax will be used to fund ecological restoration and implement ecosystem-based conservation plans.*
- 13. Increase the timber volume controlled by Community Forest Agreements (CFA’s) to be at least 50% of the volume cut annually in BC. Require that these tenures be operated under ecosystem-based conservation plans and that the community participates directly in the decision-making about how the CFA is managed.*
- 14. Provide stumpage credits for practicing “light touch” partial cutting that maintains ecological integrity at a level sufficient enough to mitigate the impacts of global warming.*

Ecosystem-based Forestry, Value-added Wood Products, and Tree Cutting Rates

Currently, the number of people employed in conventional forestry and milling of wood products is less than one person per 1,000 m³ (approximately 25 truck loads) of timber extracted. In contrast, five people or more could be employed per 1,000 m³ by conducting forestry through partial cutting and secondary manufacturing of wood products.

In other words to employ the same number of people in forestry and milling as occurs today in BC, the annual tree cutting rate (i.e. allowable annual cut) could be reduced by 80% with lighter touch forestry and secondary wood products manufacturing. Such a change would be a great boost to maintaining the intact forest ecosystems that sustain us, including the maintenance of water quality, quantity, and timing of flow; provision of biological diversity; and the sequestration and storage of carbon to mitigate the effects of climate change. From a societal standpoint such a change in the cutting rate, by altering forestry and milling practices would provide many new meaningful jobs, and more diverse, stable community economies.

This may sound like a radical shift, but this change is actually readily attainable. This change simply means that timber companies need to invest in people, as opposed to machines. While this means that a larger portion of corporate profits are invested in people, this change still provides adequate room for reasonable profits without sacrificing ecological integrity and community well-being.

Concluding Thoughts

Good jobs, particularly if they are to be lasting jobs, depend upon the dominant societal value being an ecosystem-centred value system. Without putting the integrity of ecosystems first, human activities ultimately degrade our home system. Our warming, unstable climate and the overwhelming consensus of climate scientists warn us that the consequences of a human-centred value system are an Earth near the point where our species and many others will be unable to survive.

Good jobs need to take up the challenge to reverse the process of global warming, and in so doing not only contribute to individual and community well being, but also contribute to a necessary shift in values in our society, from local to global levels.

Developing and implementing ecosystem-based conservation plans (EBCPs) are important parts of the framework for this shift in values. EBCPs will define the precise nature and number of good jobs for a variety of activities in any given locale: urban or rural, forest or grassland, terrestrial or marine.

The examples of good jobs that I have provided emphasize ecological restoration, because restoration is necessary to mitigate the effects of climate change, and to heal the mistakes of past resource extraction efforts. However, good jobs are not limited to restoration. Jobs that operate within ecological limits, support community well being, promote the protection of ecological integrity, and provide safe working conditions, purposeful tasks, and fair remuneration are *good jobs*.

With a sense of urgency, we need to set in motion the educational and political changes necessary to shift society’s dominant value, and restore ecologically and socially responsible government.

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Ecosystem-based Conservation Planning explanation and materials used in this paper are derived from the work and writing of Herb Hammond, which are published in a variety of locations. Two key references for Hammonds work are:

Hammond, Herb. 1991. *Seeing the Forest Among the Trees: The Case for Wholistic Forest Use*. Polestar Press

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