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A case study to meet the Global Moment: bioregional strategy and knowledge systems interaction for the Greater Tkaronto Bioregion (GTB)

Iethi'nistenha Ohwentsia

Our Mother The Earth

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Abstract

We are in global ecological and cultural overshoot. Meeting this moment requires whole-system regeneration, social and ecological, for which the bioregion, not the city, is the smallest holistic scale. The Greater Tkaronto Bioregion (GTB) redefines the Greater Toronto Area in hydrological, geological, ecological, and cultural terms. It encompasses 3 million hectares, with about 25% of Canada's population in dense urban areas, rural and natural landscapes. Emphasizing Two-Eyed Seeing, through which Western science interacts with Indigenous knowledge, a Horizon 3 bioregional strategy moves us toward right story by living into the uniqueness of a given place in the larger context of Earth regeneration. This includes creating a Bioregional Learning Center, a portfolio of interwoven projects, and a Living Flows Fund. The GTB is revealing a different kind of resilience and regeneration in deeply balanced, place-based yet translocal terms.

Keywords: Toronto; Bioregion; Indigenous; Regeneration; Systems

1. Overshoot and Story

Everything human beings create is a story, from a chair to a city. These stories exist in the context of a bigger Overstory we share over time – the meanings, values, and structures that guide us collectively. If our Overstory is wrong story, defined as reductionistic “unilateral or unbalanced ritual, word and thought” (Yunkaporta, 2023, p. 21), then everything we create is wrong story, and we are both trapped and inevitably thwarted by it.



Fig. 1: City of Toronto urban density (R.M. Nunes, 2021)

Modern cities, such as Toronto (Fig. 1) which is the largest in Canada and the fourth largest in North America by population, have effectively declared their independence from nature (Girardet, 2014). Despite well-intentioned sustainability efforts, they are steeped in wrong story. We are out of balance with life itself. There is a conceptual systemic incongruency between an urbanizing world and the ever-greater impacts on local environments and planetary life systems by the overconsumption and resource demands of large urban areas (Girardet, 2020).

We are in ecological overshoot, exceeding the capacities and resources of the planet (Catton Jr., 1980; Bardi & Alvarez Pereira, 2022; Stockholm Resilience Centre, 2025). Ecological overshoot is related to cultural overshoot. Our supercharged cultural capacities, including our god-like technologies, make our complex society possible, but have surged to the point that, for the first time in human history, they alter landscapes so profoundly as to affect self-regulation of the entire planet (Brewer, 2024). Simultaneously, immense complexity across all areas of society overwhelms the ability of existing institutions to process information and solve problems, leading to collapse (Tainter, 1988). Cultural overshoot is also reflected in the concept of metacrisis: a loss of collective paradigms, broken narratives, and pullulating misinformation that leads to a breakdown in sensemaking, meaning, and cultural/psychological wellbeing beyond prevailing epistemic capacities and spiritual sensibilities (Rowson, 2021). In other words, we are lost in wrong story.

In their present form, captured by wrong story that emphasizes domination and extraction and increasingly based on non-sense, modern cities cannot be regenerative. They are a temporary fiction of a fossil fuel energy pulse that exponentially boosted our cultural reach. As material and financial resources are depleted, and climate extremes outmatch urban infrastructure, there must be a shift toward localized ways of living, with less energy and materials, in balance with all other life on Earth – named by some as The Great Simplification (Hagens, 2022).

A bioregional approach offers a regenerative pathway through breakdown. “Urban areas must be reconceived so that they can assume a responsible and harmonious position in the actual web of life that is Earth’s biosphere” (Berg, 2004b). If we can (re)learn how to live in our place on the planet – grounding in Indigenous values, principles and lifeways interacting with the best scientific knowledge about human behavior, cultural evolution, and the dynamic Earth – and interconnect bioregions in mutual learning and collaboration, we can move toward regenerating the entire Earth (Brewer, 2023).

This is a multi-century endeavor and, in Indigenous terms, seven-generation thinking. We cannot ‘save the world,’ but we may be able to save places. By saving places, we may ultimately be able to ‘save’ the world (and humanity itself), though not as we know it. We will need to compost many things, from the way we think about what we value to financial flows to the physical environments we create.

We need to live into right story.

Right story is not about objective truth, but the metaphors and relations and narratives of interconnected communities, living in complex contexts of knowledge and economy, aligned with the patterns of land and creation. Right story never comes from individuals, but from groups living in right relation with each other and with the land. (Yunkaporta, 2023, p. 21)

Right story in the current global context looks like the story of Bioregional Earth (Bioregional Earth, 2025). Bioregional Earth was birthed at the 7-Generation Bioregional Earth Summit (Legacy Project, 2024a). A collaboration between the Legacy Project, Design School for Regenerating Earth (DSRE), and Indigenous Environmental Institute (IEI) at Trent University, the Summit took place in the Greater Tkaronto Bioregion (GTB). It was a six-day hybrid event, with local in-person sessions and a livestream reaching thousands of people around the planet.

Bioregional Earth isn’t an initiative, organization, or network. It is an Overstory, stewarded by the Summit organizers with wise voices from past, present, and even future generations. To be clear, this isn’t a single, written story with a beginning, middle, and end. It’s a living, multifaceted story that really has no beginning or end, only an ever-evolving middle. It may be expressed and take shape in many ways. As cultural historian Thomas Berry noted, “If a particular society’s cultural world – the dreams that have guided it to a certain point – become dysfunctional, the society must go back and dream again. We must reinvent the human... by means of story and shared experience” (Dellinger, 2018).

The long history of humanity has been one of deep harmony with all other life on Earth. Bioregional Earth is a new/old story to rebalance the activities of humans with a living world. This whole-system Overstory, which might be described as The Great (Re)Turning, is woven from the interaction of a Western science-based bioregional approach and Indigenous knowledge and lifeways, as well as from holistic Earth System Science, Prosocial, and the Earth Charter (Bosak, et al., 2025).

Never underestimate the power of story, because stories are really all we are. As part of knowledge interaction, we need story informed both by the mythic Euro-American context and an Indigenous context. The extension of social narratives beyond a single community or generation is the power of myth. In an Indigenous context, stories are companions and living beings. Right story, properly shared, has an ability to evoke realities and illuminate possible lives (Garrouette & Westcott, 2013).

Planting the seed of an Overstory of Bioregional Earth is intended to evoke a shift in how we see our world and our place in it, like the shift that happened from the iconic 1968 Earthrise photo. Rather than just focusing on design challenges and the physical metabolism of cities, we need a cultural shift to bring about a reconciliation

between humanity and planetary life systems (Girardet, 2020). This is a story we live into by coming into right relationship with each other and with the land.

The Overstory of Bioregional Earth centers bioregions as the smallest scale that retains whole-system integrity for all life. The story points toward ecopsychosocial wellbeing: I (as an individual) can't be okay unless we (families, communities) are okay, and we can't be okay unless the living systems around us are healthy.

2. What is a Bioregion?

A bioregional approach is a way to simultaneously understand the uniqueness of a given place and our connection to it, while also seeing our place in the larger context of the planet. Our current challenges are planetary, so that context is critical. To regenerate Earth at the scale needed, we must consciously cultivate, steward, regenerate, and connect bioregions around the planet. Earth regeneration (Brewer, 2023) is about working at the actionable scale of the bioregion while also understanding how what happens locally fractally scale-links into larger planetary processes.

Planet Drum Founder Peter Berg was a pioneer in bioregional thinking. His work offers a guiding vision and 'greenprint' to transform cities from 'gray to green' (Glottfelty & Quesnel, 2015).

After an initial surge of interest in the 1970s, there's been a recent resurgence in bioregional momentum. Bioregions are taking shape around the planet through networks like DSRE (Design School for Regenerating Earth, 2025), co-founded by Joe Brewer and Penny Heiple, which is informing several dozen bioregions on five continents. Although it's tempting to look for a global map of bioregions, that's wrong story in this emergent moment.

Where do any of us actually live?... [Rather than a street or city], we all live within the web-of-life, of course... Reinhabitation is a term for undertaking the practice of living-in-place, becoming part of a bioregion again. (Berg, 1983)

Bioregions are defined by the people who live in that place. They "determine what stewardship frameworks make sense for that area, what best represents them, and their way of life and living" (Letsinger, 2024).

The concept of bioregion is multilayered and dynamic, as explained by another bioregional pioneer, Kirkpatrick Sale:

[A bioregion] is any part of the Earth's surface whose rough boundaries are determined by natural characteristics and human dictates, distinguishable from other areas by attributes of flora, fauna, water, climate, soils and landforms, and by the human settlements and cultures those attributes give rise to. The borders between such areas are usually not rigid – nature works of course with flexibility and fluidity. (Sale, 2000, p. 55)

As a holistic scale, a bioregion encompasses all the interrelationships between life, including humans, in a place. The prefix *bio* comes from the Greek, meaning 'life.' Thus, a bioregion is a life place (Berg, 2004a) – the place in which you live your life and which gives you life.

Understanding your bioregion can start by identifying local watersheds. From there, you layer on geological features and ecological characteristics. Then you add local culture, including Indigenous history and lifeways. If humans can exert such influence over the entire planet as to have an epoch named after them, the Anthropocene, then to exclude them from consideration in a bioregion is to miss a vital piece of a holistic understanding. The place in which people live certainly shapes them. At the same time, humans and the cultures they create affect any given place on Earth – currently often for worse, but potentially for better if we can (re)learn how to be stewards of our place, as many Indigenous cultures have done living in place for millennia.

From an Indigenous perspective, a bioregion is about being in right relationship within Natural Law (in Western science terms, the realities of physics and ecology).

A bioregional approach is very much about being grounded in right story. A bioregion is both a “geographical terrain and a terrain of consciousness to a place and the ideas that have developed about how to live in that place” (Berg & Dasmann, 2015).

The GTB was first described by former Toronto mayor and federal cabinet minister David Crombie in his seminal 1992 *Regeneration* report (Legacy Project, 2024b). He writes about a bioregional approach as both ‘a way of doing things’ and ‘a way of thinking,’ while acknowledging that it’s not a new concept. Indigenous Peoples have long understood their connectedness to the ecosystem – the land, water, air, and other life. Thinking about the whole bioregion helps focus attention on the interdependencies (Crombie, 1992). Crombie reminds us that everything is connected to everything else, which should be a foundation of urban planning.

It’s important to recognize that a bioregion isn’t just a larger scale than a city or a smaller scale than a nation. It’s a completely different concept, much like the difference between a tree and wooden chair. A chair is a story humans create. It could look like anything. Similarly, a municipal or national boundary is a story we create. The tree, on the other hand, is real. It’s alive, and it tells its own story. More importantly, the tree makes the chair possible – just as a bioregion makes it possible for us to be alive. The bioregion is what’s real and, as Indigenous Peoples tell us, right story starts with what’s real.

The terrain of consciousness that a bioregion evokes moves us to focus on regeneration, both social and ecological. Regeneration is a healing process that restores and maintains whole-system health, as well as anticipating and preventing future harm. Joe Brewer elaborates:

Regeneration is the dynamic processes inherent to all living systems that enable them to reproduce the condition of being alive from moment to moment. Any design pathway for Earth regeneration will need to match this description – meaning it must be an expression of autopoiesis, embodied as biomimicry for human economic, political, and social activities... Think about this in terms of a nested hierarchy of scales that are all functionally interdependent with each other, centered on the bioregion. (Brewer, 2023, pp. 44-45)

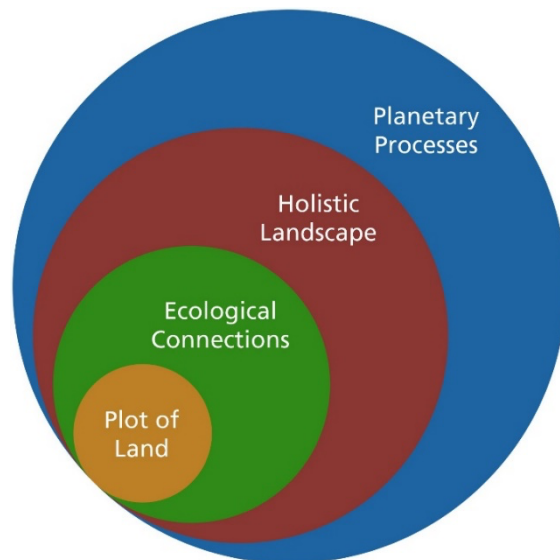


Fig. 2: Scale linking (Joe Brewer, 2023)

When the focus is at the scale of regenerating the bioregion (Fig. 2), then one person’s backyard or farm makes more sense in the larger story, and activities/projects coordinated across the bioregion can multiply their effect. How does a plot of land (e.g. housing, community garden, farm, forest) relate to the ecology around it (e.g. river running through it) relate to the holistic landscape (e.g. geography, geology) which ultimately relates to

planetary processes (e.g. hydrological cycle, jet stream, patterns of heat and drought)? Understanding the nested system of relationships supports deeper learning and wiser action.

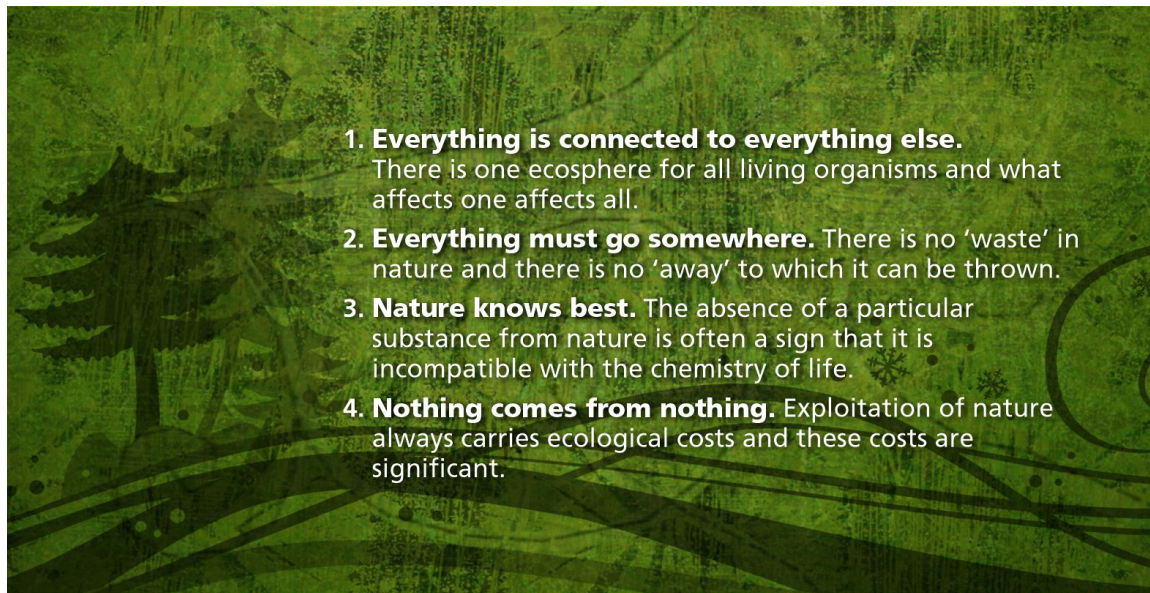


Fig. 3: Laws of ecology (Legacy Project, 2026)

Scale-linked regenerative design takes us into right story of the relationship between cities and the natural systems on which they depend. Girardet (2018, p. 62) (Fig. 3) outlines four laws of ecology. Within a bioregional approach, these ecological laws highlight fundamental principles for regenerative land-based design.

The lead author of this paper is *Iethi'nistenha Ohwentsia*, which is Mohawk for Our Mother The Earth. *Ohwentsia* means Earth, and forms the root meaning for the word *tewakatonhwentsyoni* which is 'I want' or 'I need.' Everything we want and need comes from the Earth. We are giving the land voice through this paper. This honors the collective and acknowledges that all Indigenous stories, learnings, cultures and languages come from the land. Generations of human beings are just a conduit. The land must also guide bioregional organizing and planning. How do the rivers flow? Where are the ravines and hills? What is the geology? What are the ecological corridors? What can we learn by listening to the land? The land informs all decisions and choices – because we either move with the land, or the land moves us.

3. Greater Tkaronto Bioregion (GTB)

The GTB is nestled in the Great Lakes Basin of North America (Fig. 4), a significant region with 21% of the Earth's surface fresh water.

Indigenous trade routes and use of the watersheds along the shores of Lake Ontario go back further than the pyramids. 10,000 plus years ago, inhabited by Indigenous Nations such as the Anishinaabeg, Haudenosaunee, Delaware, Algonquin and Huron-Wendat, the area was essentially bioregional. Indigenous Peoples interacted so closely with the landscape in a co-creative relationship that Indigenous lands and Indigenous Peoples became extensions of one another (Cajete, 1994). Indigenous Nations thrived through hunting, fishing, gathering and growing.

As settlers arrived and colonization took hold, domination and extraction became the story that guided decisions around the land. People became increasingly separated, physically and psychologically, from their place. Indigenous Peoples, who knew the land best, were displaced, marginalized and ultimately ignored, along with their knowledge and cosmological stories.

Urbanization expanded into watersheds and wetlands, building infrastructure in areas prone to flooding. Conservation Authorities, unique to the province of Ontario, started being formed in the 1940s to address flooding, deforestation, and erosion. In 1954, Hurricane Hazel caused severe flooding and damages of \$100

million (over \$1 billion today). The storm focused efforts on managing Ontario's watersheds on a regional basis. We either move with the land or the land moves us.

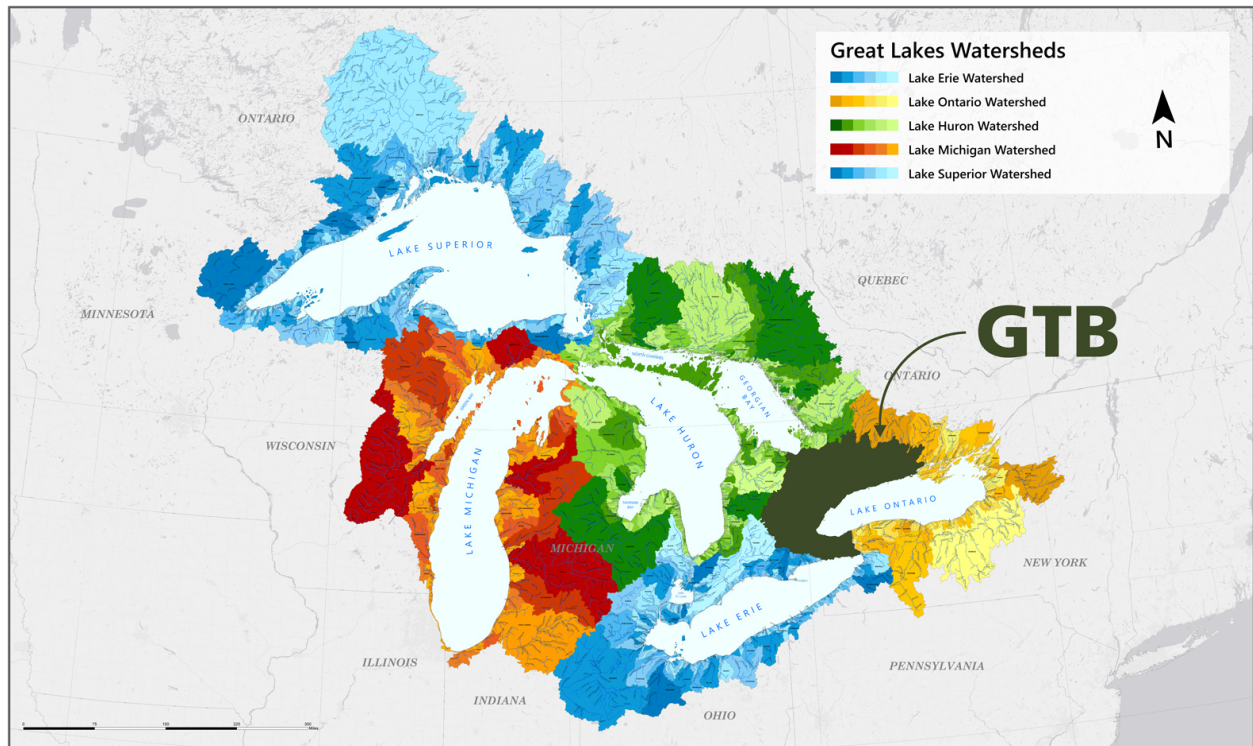


Fig. 4: Great Lakes Basin watersheds (Nature Conservancy, 2019)

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Fig. 5: Conservation Authorities, organized by watershed, in the GTB (Conservation Ontario, 2015)

Organizing around watersheds is foundational to a bioregional approach. The existing Conservation Authorities, already organized by watersheds, afford a bioregional advantage. Their boundaries (Fig. 5) help define the ‘fuzzy boundary’ (i.e. in a dynamic state of evolution) of the GTB. There are 13 Conservation Authorities that make up the GTB.

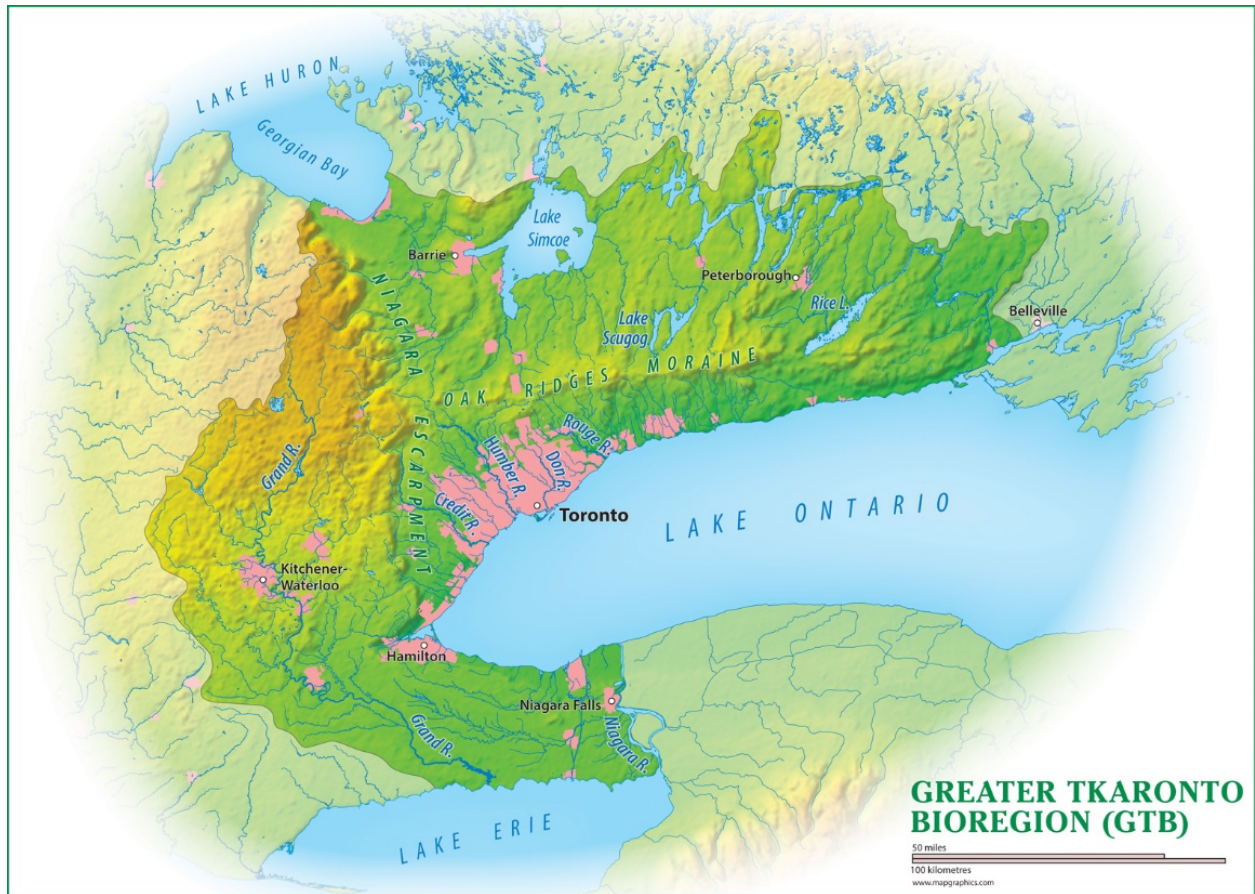


Fig. 6: Map of the Greater Tkaronto Bioregion (GTB) (Map Graphics, 2025)

In addition to watersheds, two defining geological features of the GTB (Fig. 6) are the Niagara Escarpment and the Oak Ridges Moraine. The Niagara Escarpment is a UNESCO Biosphere Reserve with rich biodiversity. The Oak Ridges Moraine is a unique formation of glacial sand and gravel deposits that captures rainwater like a sponge, filters it, and slowly releases it into the landscape to create 66 waterways.

The GTB is 3 million hectares with over 10 million people, a quarter of Canada's population. Toronto is the most multicultural city in the world. Many Indigenous prophecies tell of a time when the four sacred colors of Peoples of the Earth – yellow, red, black, and white – will come together in harmony for the continuation of life. The GTB may well be a petri dish for the planet.

The 1992 *Regeneration* report led to the creation of the world's largest Greenbelt in 2005 around the City of Toronto. The 800,000 hectares of protected land includes high-quality farmland and environmentally sensitive areas.

The GTB has over 100 municipalities. There are eight First Nations in the GTB with Constitutionally recognized Treaty and Indigenous Rights to their Traditional Territories: Six Nations of the Grand River; Mississaugas of the Credit; Chippewas of Georgina Island; Chippewas of Rama; Mississaugas of Scugog Island; Alderville; Hiawatha; and Curve Lake.

Rather than treating the City of Toronto and smaller surrounding cities/towns as economic or municipal units, the GTB frames them as a systemic whole grounded in watersheds, landforms, ecological patterns, and long human histories.



Fig. 7: Tkaronto, Trees in the Water (HonestTraveller, 2015)

The name Greater Tkaronto Bioregion (GTB) evokes the long history and embeds knowledge interaction. While ‘bioregion’ is a decidedly Western scientific term, Tkaronto is Indigenous in origin (Mohawk), often translated as ‘where there are trees in the water’ (Fig. 7).

In the context of ecological and cultural overshoot, the concept of a bioregion offers a powerful framing. Given its scale and ecological coherence, the GTB is an opportunity to transcend traditional approaches. By grounding identity, learning, planning, and regeneration in right story, it reshapes how people understand their relationship to place and the actions they take.

At the time of his report, Crombie (1992) warned about the need to remediate environmental harms from past activities, prevent further degradation, and ensure the future health of the GTB as it continued to grow. More than 30 years later, as systems unravel in a time of global uncertainty, the bioregion is literally and figuratively at a watershed. As one of the richest cities in the world, Toronto ‘should’ be thriving. But, like many other cities, what’s becoming increasingly visible is breakdown: more flooding and heat events, the state-of-good-repair backlog for city infrastructure, road congestion, unaffordable housing costs, increasing poverty, fewer social supports, greater mental health challenges. Leaders are spending more time just managing the urgency of the moment, trying to put out fires.

Perhaps we need to revisit the sacred fire – connecting with the land and the life it supports.

4. Right Relationship and Two-Eyed Seeing

A bioregional approach is far more than a technical planning exercise. It is a cultural challenge, both within and between cultures.

It also calls us to find our way back to Spirit. With an emphasis on objectivity and replicability, Western science has largely dismissed the value of Spirit. From an Indigenous perspective, there is no separation between the physical and spiritual. Our path into right story is in many ways a journey to recover the sacred. Indigenous

Peoples have successfully managed complex reciprocal relationships between diverse living entities and human cultures, with their eyes on the time horizon of the future seven generations (Legacy Project, 2024c). Living into right story means a fundamental reframing of how many see the world. It's not about 'natural resources' or 'resource management.' The land isn't a resource; it's a teacher:

It's right there, it's waiting for us to pay attention to it, to guide us, through dreams, through visions, through practice, and maybe that's our greatest strength, is getting people reconnected to the source of knowledge. (Goodchild, et al., 2021)

The worldview shifts to being in right relationship (with self, others, the land) within Natural Law for a good life. Right relationship encompasses respect, working at authentic relationship, responsibility, reciprocity, and regeneration.

Indigenous legal scholar John Borrows explains that Natural Law is "derived from fundamental experiences and observations of the natural world." (CBC/Radio-Canada Ideas, 2014). It offers and explains "the relationships, responsibilities, and obligations that all forms of life have to one another" (M'sit No'kmaq, et al., 2021). From Oren Lyons, a Haudenosaunee Onondaga Nation Faithkeeper:

The laws of the natural world are absolute. Our instructions, and I'm talking about for all human beings, our instructions are to get along. Understand what these laws are. Get along with the laws, and support them and work with them. We were told a long time ago that if you do that, life is endless. It just continues on and on in great cycles of regeneration, great powerful cycles of life regenerating and regenerating and regenerating. (Lyons, 2008, p. 24)

From the Western science perspective of ecological overshoot, we're exceeding the safe operating space for humanity (Stockholm Resilience Centre, 2025).

Crucial are transformative changes in the ways Westernized systems and societies view the world. Indigenous Peoples, who have lived on this land 'since the beginning,' may provide guidance, through their worldviews and ways of knowing, for confronting [the crisis]. (M'sit No'kmaq, et al., 2021)

As Native American restoration ecologist Dennis Martinez (Martinez, et al., 2008) observes,

Humanity has never faced global ecological collapse before. To get through this keyhole, we're going to need the enduring knowledge of Indigenous science, as well as the best of leading-edge Western science. It's high-tech meets high-TEK (Traditional Ecological Knowledge), and in many cases modern science is affirming what the keen empiricism of First Peoples has long known. (Nelson, 2008, p. xxii)

Indigenous Mi'kmaq Elder Albert Marshall and his wife, spiritual leader Murdena Marshall, call this Two-Eyed Seeing (Bartlett, et al., 2012). Both knowledge systems can work together to meet current challenges. Science can explain many things, but Indigenous knowledge is a mirror of your own spirituality, your connectedness to another realm of being that enables you to be in balance within a holistic system – a world in which everything is connected to everything else. In this context, knowledge is framed as "Spirit rather than commodity or property, emphasizing the importance for sharing and encouraging learning" (Bartlett, et al., 2012). In Indigenous cultures, no one person ever has more than a piece of knowledge; so, we must engage with many Elders and Knowledge Holders. As we go back and forth between worldviews and learn together, the journey offers the sacred gift of humility in respectful, equitable collaboration. This is far different than the Western notion of 'consultation' required in many project planning and development processes.



Fig. 8: Two Row Wampum belt (Kaswentha), Dr. Dan Longboat (Legacy Project, 2024)

In the GTB, the Two Row Wampum belt (Kaswentha) (Fig. 8) informs Two-Eyed Seeing. Two rows of purple beads run alongside each other, representing two vessels. One is the canoe (Indigenous) and the other is the sailing ship (settlers), each with their own ways. The vessels travel side-by-side down the River of Life, separate and distinct yet together. But now, the River of Life is in trouble. The canoe and the ship must work together for the continuation of All Life. The space between the two purple rows is made up of three columns of beads that often represent the essence of right relationship across the cultures: peace, friendship, respect. This is the ethical space of interaction. It is the “safe, middle space that respects the strengths and limitations of two people, their cultures and communities” (M’sit No’kmaq, et al., 2021). It’s a space “for knowledge systems to interact with mutual respect... and achieving common ground” (The Indigenous Circle of Experts (ICE), 2018, p. 17). Both knowledge systems must inform the work of sustaining and strengthening the River of Life. Everything we do should be about the continuation of life – not just human life but All Life, for this generation right to the end of time.

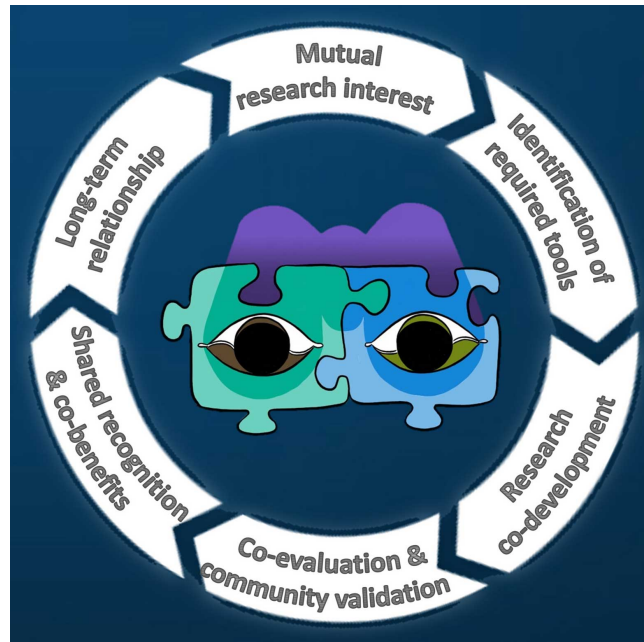


Fig. 9: Two-Eyed Seeing process (Nicole Burton, 2021)

In practice, for example fisheries management (Reid, et al., 2021), knowledge interaction is a cyclical process (Fig. 9) that recognizes a mutual interest, identifies required tools, co-develops and co-evaluates for co-benefits, and is embedded in long-term relationship.

[It] respects multiple realities (reflective of a relativist ontology), considers multiple knowledges [and learnings] as valid and equal (an intersubjective and pluralistic epistemology where experiential and relational knowledge is equally valued), embraces relational accountability by promoting respectful representation and reciprocity (a value-centred axiology), and carries out highly inclusive and situated processes (a participatory and place-based methodology). (Reid, et al., 2021)

Two-Eyed Seeing centers process over outcome and is actualized in its pursuit of responsibilities to All Life – now and seven generations ahead (McMillan & Prosper, 2016). It's a rich concept that goes beyond simply the 180-degree vision of two eyes, to added layers of time (ancestors and descendants; behind and ahead) for 360-degree vision, as well as land and sky (physical and metaphysical; below and above) for the 720-degree vision of a fully engaged Human Being (Legacy Project, 2025a). That's the kind of vision we need in this moment of global crisis for whole-system transformation.

As a complement to the scientific concepts of ecological and cultural overshoot, The Prophecy of the Seven Fires of the Anishinaabe (Toronto Zoo & Turtle Island Conservation, 2010) talks about a time when the waters become so poisoned that animals and plants are sick or die. Forests and prairies are disappearing, so the air begins to lose the power of life. In this time of the Seventh Fire, a new consciousness of people emerges from the fog of wrong story. They will be given a choice between two paths: a green path of life and a charred path of death. If they choose the green path, they'll need to retrace their steps to pick up that which has been lost, broken, or forgotten. Important stories will be returned to them. They will soar with the White Eagle and remember the Original Instructions (Nelson, 2008) to find wisdom in the ways of the Circle of Life.

The choice is ours: do we choose to continue to destroy life or do we choose the continuation of life?

5. Bioregional Strategy in the GTB

All sustainable human cultures in the past were Indigenous and essentially bioregional, emerging from a specific landscape through millennia. In a time of ecological and cultural overshoot, on a planet where everything is literally connected to everything else, the only way to meet this global moment is a whole-system, emergent approach centered on bioregions. But bioregional strategy can't take root in current wrong story. If you try, our experience is that it gets co-opted. It won't happen through a traditional municipal planning or community consultation process.

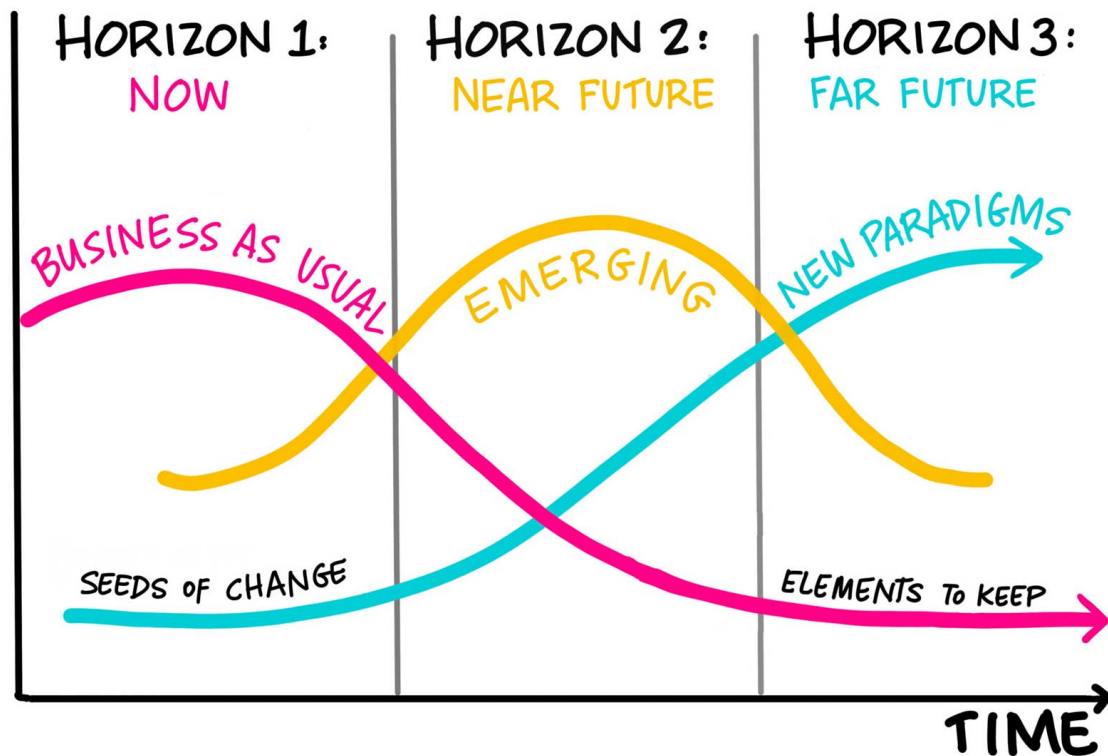


Fig. 10: Three Horizons Model (Sam Bradd, 2022)

The Three Horizons model (Sharpe, et al., 2016) (Fig. 10) is helpful for understanding how to implement bioregional strategy. Through their mandate, governments work primarily in Horizon 1, stabilizing the existing system by doing things like keeping the lights on, ensuring there is food, making medical care available, etc. Horizon 2 is about creating bridges to the future by supporting innovation that may move away from parts of the old system. Horizon 3, more akin to Indigenous seven-generation thinking, is where bioregional strategy happens. It starts living into a future that is both desirable and necessary. Instead of asking 'how do I redesign this sidewalk?' the question becomes 'do I even need a sidewalk and what are the alternatives?' Horizon 3 creates new ways of being and doing, often integrated deeply with wisdom from the past. Horizon 3 work gives the Horizon 2 bridge-builders somewhere to go, offering scaffolding that makes Earth regeneration possible to envision and act on. As Horizon 3 work, bioregional strategy needs to seed at the edges, creating parallel structures and processes to what exists as glimmers of what can be.

Bioregional strategy cannot be linear nor siloed. Given everything is connected to everything else, it can't look at economy or environment or education separately. A whole-system approach is transcontextual (Bateson, 2018). Every issue, situation, or phenomenon exists within multiple contexts simultaneously. These contexts are interwoven, each influencing and being influenced by the others. Traditional approaches to understanding a complex reality often fail because they isolate contexts, addressing them separately rather than as one large,

interconnected whole. A whole-system approach embraces uncertainty and ambiguity, understanding that there are no easy answers or clear-cut solutions. It's more relational, dynamic, and responsive to the complexities of life – like an ecosystem.



Fig. 11: Bioregional Ecosystem (Patricia Kambitsch, 2024)

The Legacy Project (Legacy Project, 2025b) is the Core Team for the GTB. Working closely with Joe Brewer, who has been doing bioregional regeneration in the Northern Andes of Colombia since 2020, the GTB utilizes his ecosystem model and bioregional platform (Legacy Project, 2024d) (Fig. 11), which evokes a tree with interconnected branches. The Legacy Project and DSRE are working together to create a multicapital Living Flows context for bioregional work, emphasizing that an economy must be embedded in the ecological flows that support life.

The tree of the Bioregional Platform has three branches growing simultaneously: Bioregional Learning; a Tapestry of Local Efforts (existing and new) which becomes a portfolio of regenerative social and ecological projects; and Funding/Governance. In keeping with Horizon 3 work, these are developed as parallel structures and processes to what exists.

The keystone structure is a Bioregional Learning Center (BLC). Donella Meadows was one of the lead authors of the *Limits to Growth* report in 1972. After that report, she convened some of the best thinkers in the world, The Balaton Group, for ten years. The Balaton Group explored the big question of how humans could live sustainably on the planet. The answer took the form of a vision of localized economies in bioregions, anchored by centers where knowledge about the life place is brought alive.

There needs to be many of these centers, all over the world, each one responsible for a discrete bioregion.

They would contain people with excellent minds and tools, but they would not be walled off, as scientific centers so often are, either from the lives of ordinary people or from the realities of political processes. The people in these centers would be at home with farmers, miners, planners, and heads of state and they would be able to both listen to and talk to all of them... They are able to see things as a whole, to look at long-term consequences, and to tell the truth. Above all, the job of these centers is to hold clear and true the context, the values, the ways of thinking, through which all development plans proceed...

This will take years, but [the centers] have the potential to transform the way people all over the world think about their [life place] and their options. (Meadows, 1982)

What Meadows is talking about is whole-system intelligence, where each bioregion comes to know itself in a holistic manner and can guide itself toward whole-system ecopsychosocial wellbeing. A BLC brings together the best of Western science with the knowledge and stories of the people who know the land best, local First Nations. Its activities include sharing bioregional vision and storytelling, creating an accessible knowledge database about the life place, offering learning for all generations and people in different leadership positions, research and evaluation, participatory design and experimentation, community practices and monitoring systems, and ultimately resilience at the holistic scale of the bioregion.

There must be ways to retain and pass on practical knowledge about native species, understanding how to build homes in the local climate using locally-sourced materials, comprehension of what it means to have sustainable food systems in this particular place, complexity thinking, prosocial skills, and incorporation of the performance arts that cultivate sacred relationships with local ecologies in respectful and persistent ways... Bioregional learning centers around the world learn from each other. (Brewer, 2022)

The BLC is the literal and figurative entry point for everyone to learn about a place and how to care for it – not only people who live in the place, but also newcomers and visitors. This is particularly significant in the GTB, with Toronto as the most multicultural city in the world. Wherever we choose to live, we have a responsibility to learn about that land and to take care of it.

In the GTB, the nascent Bioregional Learning Center is both centralized and decentralized. Its ‘home’ is the Legacy Project’s site The Cedars on 100 acres, an idea studio and meeting space in the center of the bioregion. The Cedars is like the central disc of a flower, holding all the petals together and providing coherence to the whole. The petals of the flower are all distinct yet connected. The GTB BLC extends out through a network of existing learning sites/programs, 13 Conservation Authorities, seven universities, Indigenous Environmental Institute (Trent University), parks and farms, along with libraries and schools which enable deep community engagement across the bioregion. Working with IEI, there is a vision for the BLC concept to expand out and support an Indigenous Great Lakes Network.

Anchored and informed by the BLC, the GTB Core Team has brought together a tapestry of local efforts (second branch of the tree of the Bioregional Platform). The efforts (e.g. programs, projects, organizations, community groups) – some long established but until now disconnected and others new – become a portfolio of hundreds of regenerative social and ecological projects. These are in municipalities across the bioregion, strategically chosen to reinforce each other in the context of the bioregional story and multiply impact. This is whole-system work. Drawing again on the metaphor of a tree, they might be conceived as root enabling conditions with a diverse crown of project clusters with dynamic flows between them.

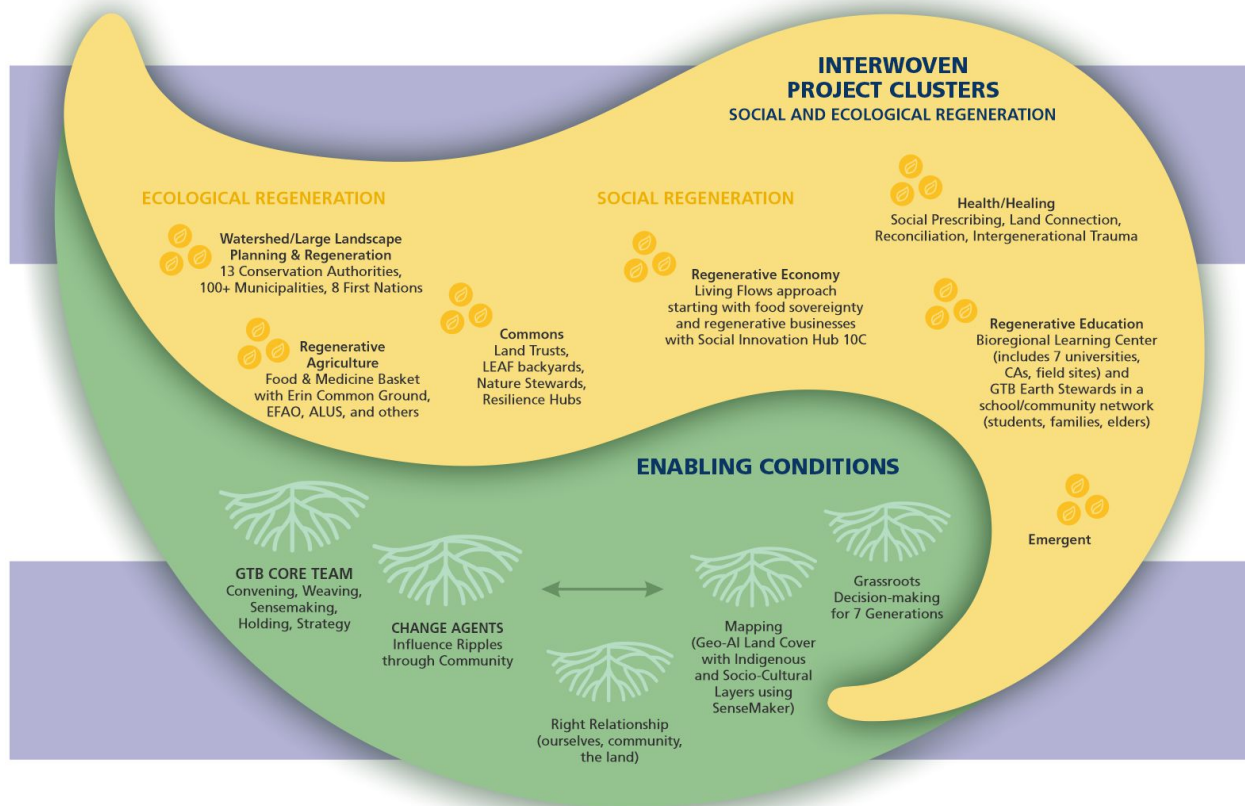


Fig. 12: GTB Enabling Conditions and Project Clusters (Legacy Project, 2026)

Fig. 12 represents a whole-system bioregional approach to organizing work on the ground for ecological and social regeneration, drawing on four foundational themes of ecological regeneration (shown with subthemes), regenerative economy, regenerative education, and health and healing. This isn't a Theory of Change, but an actual description of work happening now on the ground in the GTB. The background evokes the Two Row Wampum belt as a reminder that all work is in the context of knowledge systems interaction. Everything is also in an emergent swirl of dynamic Living Flows.

Root Enabling Conditions, supporting all the Project Clusters, start with the GTB Core Team (Legacy Project) which convenes, weaves, sensemakes, holds processes, and enables strategy. The Core Team also supports and empowers Change Agents, who are leaders in various Project Clusters and whose influence can ripple through the community. Working at the edges, bioregional strategy isn't necessarily about collaborations at the municipal/organizational level, but about finding those individuals who are aligned and can multiply effect. Enabling Conditions include nurturing right relationship and building capacities for grassroots decision-making within and between Project Clusters.

From a bioregional perspective, mapping is a critical Enabling Condition. Maps are a key part of the bioregional story, enabling inhabitants to see their place in new ways – not through municipal boundaries, but through landforms and waterways. We always start with the question, 'Where does your water come from?'

Mapping the GTB takes the unique form of a Geospatial Artificial Intelligence (GeoAI) project (Legacy Project, 2026) in which Western science interacts with Indigenous knowledge for co-creation of a broad and deep, multilayered land cover mapping dataset. The \$12.5 million project will be used for planning, implementation, and monitoring for climate change mitigation, adaptation, and ecological regeneration across urban, farm, and forested areas. From the perspective of municipalities, which currently have a patchwork of disparate datasets, the project brings them together under the bioregional framing with the consistent data coverage they need.

For the base of the mapping, AI algorithms are being developed to process remote sensing data such as satellite and LiDAR data, along with field-verified survey data and local Indigenous knowledge of the ecology and history on the ground, to generate consistent, detailed land cover data across the bioregion. Indigenous layers (e.g. Treaty and Traditional areas, place names, ecologically significant areas) led by the eight First Nations build on the scientific base, as do socio-cultural layers using Cynefin's SenseMaker software. This enables both knowledge systems, along with grassroots needs, to come into play for better policymaking and priority-setting. There are hundreds of other projects in the Project Clusters. Again, these have been strategically interwoven for bioregional meaning and action, and are informed by the BLC. Some examples of work happening on the ground in the GTB:

- 13 GTB Conservation Authorities convening to coordinate watershed and landscape restoration projects, collaborating with local First Nations to build right relationship.
- Regenerative economy work with social innovation hub 10C, with an initial focus on food sovereignty, including Indigenous growing and food harvesting practices.
- Creation of a Food & Medicine Basket, made up of sites across the bioregion to begin creating parallel structures and processes for local resilience, informed by the work of a \$10 million Our Food Future initiative.
- GTB Bioregional Market started in 2024 which features local producers as well as youth creating projects to regenerate the bioregion. The Market uses storytelling as a currency to move beyond money.
- GTB Earth Stewards program for young people 12-29 years, teachers and families enables deep community engagement and offers hands-on learning, site visits, mentorship (including Indigenous learning), and funding for community legacy projects.
- A Wellbeing Path uses social prescribing by healthcare providers to connect into community and nature.

The third branch of the tree of the Bioregional Platform is Governance and Funding. These are emerging in both a local and global context. Bioregional strategy goes beyond the bioregion itself. Earth regeneration requires learning and collaboration across bioregions in very new and different ways. For governance in the GTB, for example, leaders in the Project Clusters are practicing (with support from the BLC) the skills needed for decision-making that takes into consideration needs within and between Project Clusters, as well as the role of the bioregion within larger planetary needs. In other words, they are practicing how to develop a bioregional mind. From the standpoint of knowledge interaction, this means developing both scientific knowledge and the wisdom and respect inherent in many Indigenous protocols.

One of the great challenges for Earth regeneration is how financial resources flow into, across, and between bioregions around the planet. The Legacy Project and DSRE are working together to create a Living Flows approach and global Living Flows Fund. If the River of Life is in trouble, multicapital flows need to move like water. Water is life, and water is constantly changing forms, circulating and flowing from one place to another. In our current system, money doesn't behave this way; so, we can't fund regeneration by following the old rules. We need a new understanding of public goods investment and a shift in philanthropy. As NATO asks nations to commit 5% of GDP for war, and billions go into the development of AI, what should we be investing in life? The emphasis shifts from ROI (Return on Investment) to ROL (Return of Legacy). The question becomes less about how much a portfolio makes and more about what it means.

ROL moves from transactional to relational. In fact, it brings money alive, flowing it out of the existing broken system, and gifting it into a life-affirming future. Money can't flow if right relationship doesn't flow at the same time. Learning from Indigenous protocols, money and knowledge may only be transferred if the exchange establishes or improves an authentic, ongoing relationship. If it is right relationship, it increases the health of land-based life systems near and far, through practice and knowledge exchange that feeds right story.

Going beyond simple problem/solution, funding must focus on whole-system health. Impact comes not from one project, but from strategically clustered and interwoven projects. Imagine creating responsive financial flows in regenerative learning ecosystems through a network of scale-linked funding pools. We've already started practicing with a Living Flows Fund.

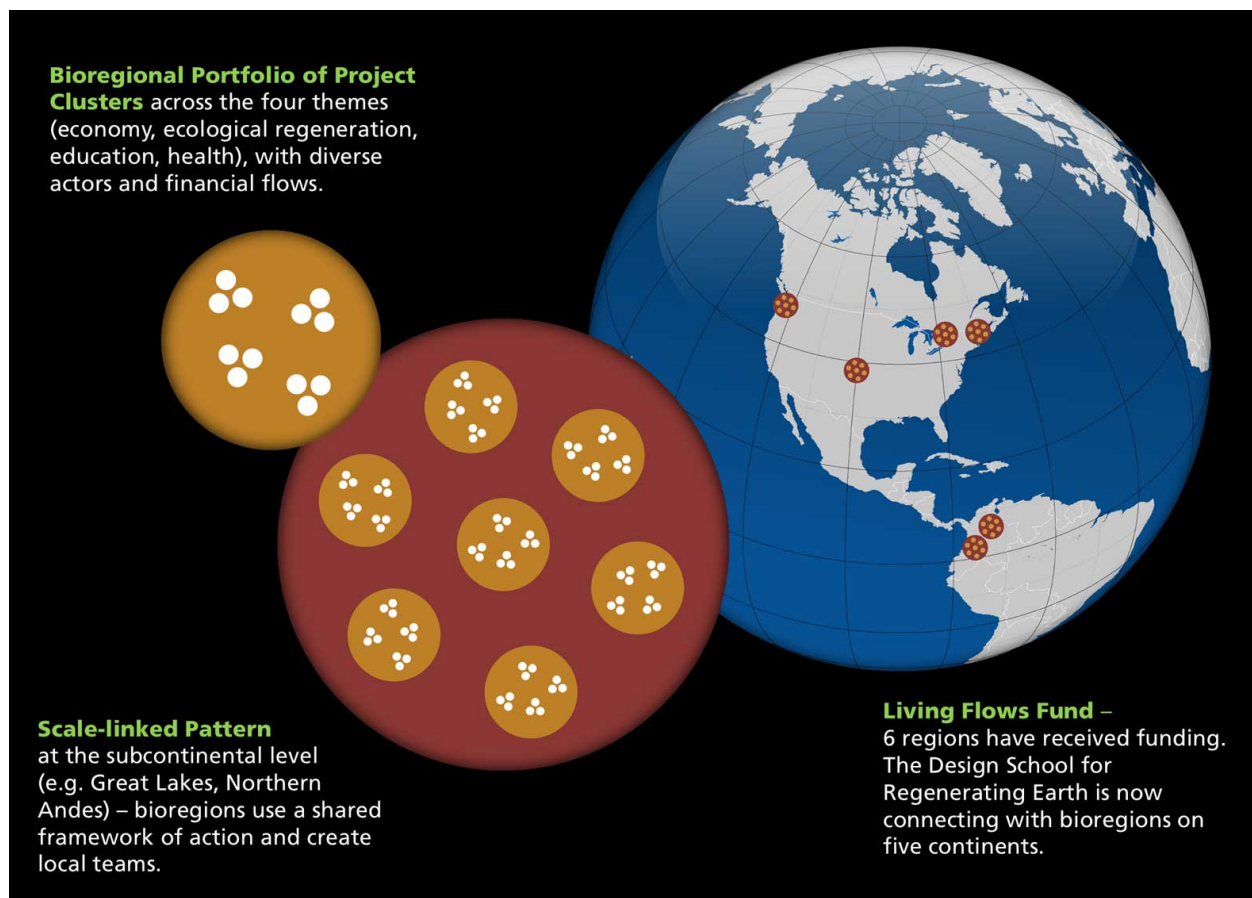


Fig. 13: Scale-linking for bioregional impact (Legacy Project, 2026)

Patterns of similarly-structured, place-based work (Fig. 13) show how we can effectively fund bioregional work. Each bioregion has a local team and Portfolio of Projects clustered into four similar themes. This scale-links to the sub-continental level, like the Great Lakes or Northern Andes, in which bioregions collaborate. Then that links to the Living Flows Fund, which can allocate funding where and when it's needed across and between scales. We laid the foundation in the GTB at the Bioregional Regenerative Finance Forum (Legacy Project, 2024e). DSRE was able to flow some funding into six regions. We've mobilized a few million dollars, but clearly Earth regeneration will need billions of dollars. The coherent, whole-system Living Flows Fund is a way for cascades of resiliency to begin to take hold around the planet.

Bioregional Earth is the Overstory calling us, illuminated by stories happening daily around the planet. The Legacy Project, DSRE, and IEI, in collaboration with various partners in different moments and at different scales, are living into the story through practices around bioregional learning, on-the-ground projects, and governance and funding. DSRE has been convening and training bioregional leaders since 2023, with a focus on creating a planetary network of BLCs across five continents. This is happening.

6. Living into Right Story

As breakdown continues, bioregional organizing offers a Horizon 3 regenerative pathway forward with local economies grounded in the realities of a given place. It's time to live into the story of Bioregional Earth. Cities cannot continue as they presently exist. We need a bigger life-based strategy. By grounding identity, learning, planning, design and regeneration in right story in life place, humans can reshape their relationship

to place, and by extension how they understand and act in that place. People are ultimately dependent on the life of the place where they live. This isn't a footnote to planning, but a central fact.

There is power in Western science and Indigenous knowledge systems working together to sustain, perpetuate, and strengthen the River of Life.

Earth regeneration is about working at the actionable scale of the bioregion – not too big, not too small, defined by what's real and relevant – while also scale-linking Living Flows across bioregions. We must consciously cultivate, steward, regenerate, and connect bioregions around the planet.

Our real horizon isn't the edge of a city, or even a bioregion. It's the fork in the road where we must choose whether to continue to destroy life or choose to work for the continuation of All Life.

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