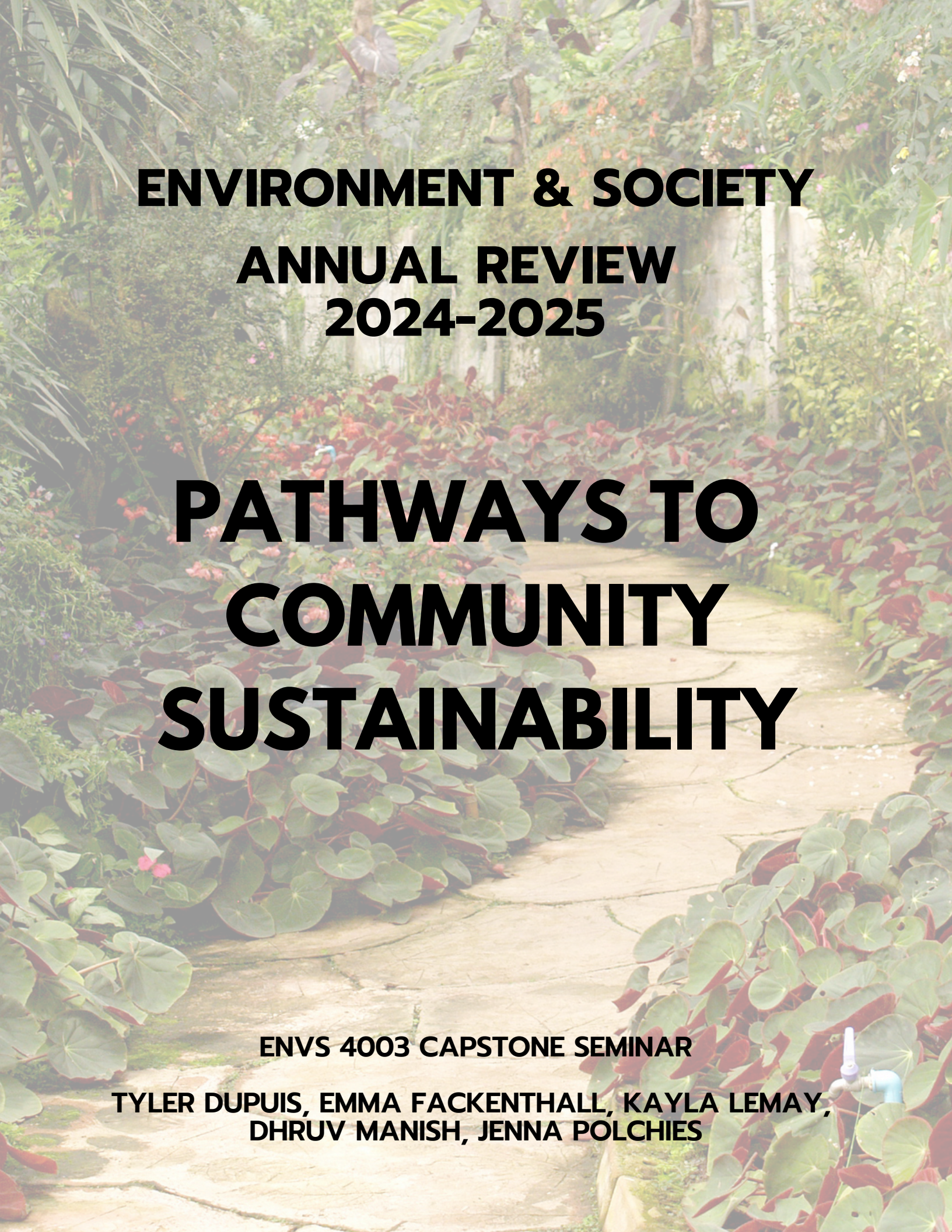
ENVIRONMENT & SOCIETY

ANNUAL REVIEW 2024-2025

PATHWAYS TO COMMUNITY SUSTAINABILITY



ENVS 4003 CAPSTONE SEMINAR

TYLER DUPUIS, EMMA FACKENTHALL, KAYLA LEMAY,
DHRUV MANISH, JENNA POLCHIES

Environment & Society

At STU we recognize that the greatest environmental challenges facing society are not scientific - they are political, economic, cultural and ethical. The Environment & Society program explores all these dimensions, focusing on where we are today, how we got here, and where we need to go in the future.

Environment & Society prepares you to contribute to achieving a sustainable future, no matter what career path you choose.

2024-25

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The Annual Review

Welcome to the inaugural issue of the Environment and Society Annual Review.

This is a project of students taking the Capstone Seminar, the final course in their four-year Environment and Society program.

A 'cap stone' is the piece of stone finishing a building. In a university program, a capstone course is the culminating experience of an educational program. Capstone seminars encourage students to synthesize their knowledge gained over their undergraduate experience and apply it to new problems or contexts. They provide students time and space to reflect on what has been learned during their studies and what it means to them as they move to the next stage of their life journey.

We are initiating this Annual Review as the collective signature product of Capstone students' reflections on where we are and where we need to go. Rather than writing for me as their professor, they are writing for you. More than showcasing their learning, they seek to inspire other students, friends, family and peers to engage with the big question facing us all:

How can we ensure a livable planet and a fulfilling life for all, now and into the future?

Each year, the AR will reflect the unique learning and personal interest of each student within a common theme.

For this first issue, we have explored the theme of community sustainability. It is a theme that is solution- and future-oriented and provides readers with a vision and concrete ideas of what alternative approaches to collective living actually look like.

How can we ensure a livable planet and a fulfilling life for all, now and into the future?

The context for these students is their understanding that the global economy dependent on fossil fuels and constant growth is unsustainable.

it is driving climate change, extreme levels of biodiversity loss, ubiquitous toxic contamination and catastrophic accumulations of waste across the world. Systems have to change, Paradigms have to shift.

This year's Capstone class spent time exploring what alternative systems for providing for basic needs - food, energy, shelter - at the community level might look like. The articles they have written for this issue represent just a taste of the many topics that we explored together. We hope you enjoy them.

Professor Janice Harvey, Environment & Society

How to Be a Better Neighbour

KAYLA LEMAY

In our everyday lives we are surrounded by hundreds, even thousands of living beings who are ignored or forgotten by us. Today, some animals are seen as popular, cute, even icons of the natural world while others are demonized and misunderstood due to popular media. An example of this is found within the Old Testament Book of Genesis in which serpents are representations of temptation and sin.

Abandoning the adopted social views of these unpopular species and seeing them with fresh eyes will make you appreciate the natural world even more. To do so you must let go of some of your preconceived fears. Fear of the unknown is a natural reaction in our human nature and it tends to surface when encountering unsettling animals.

An animal we are all familiar with is the Earwig. Its skittering and abdominal pincers make them particularly cringe-worthy. I used to think Earwigs were terrifying and unsettling but then I learned they are very good mothers and stay with their young unlike other insects. They help keep other pests away and they only pinch you if they feel threatened. They are as scared of you as you are of them! I have become more tolerant of these little creatures and instead of squishing one I opt to relocate it instead.

To get over your uncertainty and fear of nature's creatures, learn about species of plants and animals that live in your neighborhood. I highly recommend downloading identification apps like Merlin, I-Naturalist, E-bird and the Seek app to help you to get identify and become acquainted with your non-human relations. Doing this might even add another hobby to you daily life.

Knowledge of non-human species is a powerful tool in unlearning the modern myth that humans are separate from Nature and that progress means dominating and overcoming Nature's forces. This worldview is at the heart of many of the environmental problems facing the world.

Aldo Leopold called for a 'land ethic' in which the role of 'Homo sapiens changes from conqueror of the land-community to plain member and citizen of it.'

You will soon begin to realize that you're less alone in the world than you may have thought and that all these new neighbours are amazing, as they uphold the ecosystems we depend on. Birdsong is no longer a collection of sweet sounds but a personal greeting of sorts. The bee buzzing around you is not trying to hurt you but just saying it likes the colour of your shirt since it mistook you for a flower. Small interactions with the natural world become so much more personal when you get to know its inhabitants and you reclaim your place as a resident of nature.

The awareness of your origins in nature will make you realize how separated we are as a society from the Earth. Our communities no longer welcome beings other than humans as we have become self absorbed. Rekindling natural knowledge and acquaintances can help spark a movement of even better cities, towns and communities for all of us.

A view of the WFN cultural site and Wolastoq River

Reclaiming Food Systems

Indigenous food sovereignty on Wotstak First Nation

JENNA POLCHIES

Today's Western food system has replaced once local small farms and short distribution chains with large centralized systems dominated by mega corporations, long global food chains, ultra-processed foods, and insurmountable food waste. This has led to a rise in “food deserts” and “food swamps”. The Worldwatch Institute describes food deserts as areas that lack access to fresh, healthy, and affordable foods. A related concept is food swamps which are areas with a high concentration of fast, convenient, highly processed, and poor nutritional foods.

While the industrial food system has contributed to ecological degradation and a higher prevalence of health issues, our everyday consumption of food from this system is also linked to these problems.

If we understand that power is embedded in our everyday practices, we can see a clear resolve: We can create alternative systems to oppose the global industrial food system and create sustainable food systems governed by communities. In their book, *Sustainable Materialism: Environmental Movements and the Politics of Everyday Life*, David Schlosberg and Luke Craven describe the citizen-led development of alternative systems to provision basic needs, that resist the dominant flows of power and goods through everyday life, communities, and environments. They call this movement sustainable materialism. In their research, they examined the motivations behind these initiatives and found that people are organizing to replace industrial systems based on ecological and social justice concerns. These alternative movements create new food systems to embody sustainable relationships between people and nature. The idea is to move beyond the individual consumer to the collective motivations that create distinct food systems for the community. It is becoming increasingly clear that we must create an alternative vision for sustainable urban and rural life.

For food systems, this would require returning to local, community-focused, sustainable food systems. The concept of sustainable materialism intrigues me because, during the final year of my post-secondary education in the Environment & Society program, I spoke with members of my community about growing food to increase our self-reliance. I am a member of the Wotstak (Woodstock) First Nation reserve, and my community is classified as both a food desert and a food swamp. Our reserve is situated outside Woodstock, NB. The reserve has two convenience stores located at the top and bottom of the reserve.

The international peasant's movement, La Via Campesina, defines food sovereignty as "the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems".

A few years ago, I had the chance to conduct interviews about food insecurity in my community. We found that there are people on our reserve who are food insecure. One definition of food insecurity is 'the limited or uncertain access to nutritious food, which also includes limitations on the ability to obtain nutritious food in ways that are socially acceptable.'

I envision the Wotstak (Woodstock) First Nation community creating an alternative food system. This would include expanding its garden, building greenhouses, and establishing a farmers' market for us to sell and distribute food. The idea is that our community will be able to address food insecurity, grow culturally significant medicines and fresh produce to replace the bulk of these from the supermarket and foster a connection to the land. This vision includes our community becoming more involved with traditional activities of hunting, trapping, fishing, and gathering that are now less common. My community needs an alternative food system that addresses food insecurity through sustainable means.

The sustainable materialism movement provides a framework to explore other communities with similar goals. Indigenous communities worldwide are bringing food systems back into the hands of the community and returning to natural systems through community gardens and greenhouses.

A related concept to sustainable materialism for Indigenous communities is food sovereignty. My community used to depend on traditional activities for their food. Some of our culturally appropriate foods are moose, deer, muskrat, salmon, berries, and fiddleheads. These foods have almost become a delicacy since the bulk of household food sources come from the supermarkets in the town of Woodstock. From the food insecurity survey, people were displeased with having to source their food from supermarkets because of the rising costs of fresh produce and the low cost of processed foods. Seeking food sovereignty for Wotstak First Nation would mean we could define our own food needs and sources.

In Canada, several Indigenous communities have established food security projects. A common strategy in these communities is to build greenhouses or small-scale gardens. To maintain a sustainable food system, you need an enthusiastic group that shares a common goal.

In Inuvik, Northwest Territories, the community renovated a hockey arena into the Inuvik Community Greenhouse where members can rent plots to grow fresh food and learn about gardening. Securing the means to grow food allows this community to address food insecurity, increase their self-sufficiency, and create economic opportunities. This community garden aims to offset the cost of groceries, but its primary function is to foster a strong community bond. Creating this community bond and fostering a human-nature relationship is the key to success for these new food systems.

Other Indigenous communities creating alternative food systems to address food insecurity are Flying Dust First Nation and Île-à-la-Crosse. These northern Saskatchewan communities operate community gardens and farmers' markets to increase food sovereignty and as educational tools for their youth.

The Flying Dust Market Garden started as a small farm in 2009. They are now growing 14 varieties of potatoes, 10 different vegetables, and a variety of fruits in their orchard. The First Nation recently added a bee operation to pollinate the garden, and they raise chicken and bison for meat. This project provides the community and surrounding areas with fresh produce and allows youth in the community to get firsthand experience in agriculture.

In addition to addressing food insecurity, Île-à-la-Crosse reserve in Saskatchewan expressed the need for healthier eating and reestablishing a connection with nature. The high school students and elders worked together to teach the younger children about how food is grown with the message that food is medicine. To do this, they built a greenhouse that operates year-round runing on a propane furnace. They first started growing common produce such as tomatoes, cucumbers, and peppers, and has expanded its crops to produce Swiss chard, kale, onions, and parsley.

Looking at the Wotstak (Woodstock) First Nation reserve, I feel optimistic about building a sustainable community. I have learned through my research on sustainable food systems that to build a sustainable community, we first must start. The three communities I explored had a vision and through the support and participation of the community, shifted towards a system that benefits both people and Nature. These communities began with a desire for self-reliance and used that desire to give back to the community. They are teaching youth there is an alternative to supermarkets, closing the gap between producers and consumers, and deepening relationships with the living world.

The Flying Dust Market Garden. © Jason Cardinal

The community green house in Inuvik, formerly a hockey arena.

In a world where most of our food is grown far from where we live, we must take the procurement of food under community control. For Indigenous communities, being able to meet our community needs by producing culturally appropriate foods using sustainable methods allows us to counter the colonial systems that have sought to dismantle our way of life.

By doing this, we as First Nations are able to replace the destructive values that underpin the industrial food system, and ensure our youth are taught the importance of regenerative and sustainable systems that can support current and future generations.

Kihkan means 'garden' in Wolastoqey.

Wotstak (Woodstock) First Nation garden.

Jenna Polchies

Goumi berry shrub in the St. Mary's Food Forest, Fredericton

Permaculture

Regenerating the future

Kayla Lemay

Australia, 1978

Industrial agriculture is on the rise. Chemical fertilizers and pesticides are championed to erase famine. Gas guzzling machinery replaces humble human and animal power as the market accelerates demand. The family farm is no longer a source of food for the community, nor a well-paying livelihood but a commodity production site to supply global distributors. The fast-paced and extractive focus of the industrial agriculture industry doesn't sit right with Bill Molinson and David Holmgren. Inspired by Indigenous land management, ecological functions and old school ways of farming, they pioneer a new approach which they call permaculture.

Molinson (1928 – 2016) is deemed the father of permaculture and won the Right Livelihood Award, known as the Alternative Nobel Peace Prize, for his practice and promotion of permaculture theory. He founded the Permaculture Institute in Tasmania and co-authored with David Holmgren *Permaculture One: A Perennial Agriculture for Human Settlements*. He followed this with *Permaculture Two: Practical Design for Town and Country in Permanent Agriculture*.

Holmgren, an avid ecologist and writer, was a student of Bill Molinson. Holmgren continues to educate about and promote permaculture living through presentations, courses and books to audiences worldwide. In central Victoria, Holmgren has built one of the best physical examples of permaculture. Melliodora is a 40-year-old food forest with passive solar housing, mixed vegetable greenhouses and a revegetated stream nearby. It all began as a barren 2 ¼ acre of brambles. Both Molinson's and Holmgren's knowledge continue to spread internationally.

Bill Molinson (l) and David Holmgren (r)

What is permaculture?

Permaculture is an alternative food growing system that focuses on perennial food sources rather than annual plantings seen in conventional farming. Using perennial plantings that require little to no tilling, growers can build soil health and create small scale ecosystems like forests.

Biodiversity becomes the strength of these forests as each plant provides a specific function that supports the other plants. Living mulch, pest deterrents, pollinator food, nitrogen fixers, nutrient accumulators and of course food sources all create the permaculture food forest

The goal is to produce a yield while using little to no imported resources such as chemical fertilizers and pesticides. Rather than focusing on only food, permaculture is also a base for community building. Three ethics sit at the center of the practise: earth care, people care and fair share/future care. A fourth ethic - transition aware - is a more recent addition.

Earth care

Earth care is integral to permaculture practice since we depend on fragile ecosystems to support us. Globally there is very little healthy soil left. We have lost around 35 percent of the world's arable land in the past 60 years due to intensive agricultural practices, logging, erosion, urban sprawl and climate change.

A rare newly molted Cicada in the St. Mary's Food Forest, Fredericton, NB

People care

Food is the center of all societies. We gather, break bread, share stories and realize ideas at dinner time. That's why permaculture seeks to rebuild the resiliency found in close communities. Rather than being individualistic, permaculture ethics seeks to build community by taking care of each other. The people care ethic supports human rights and ensures everyone has a place.

Compassion is at the heart of permaculture. Compassion starts with oneself and extends to family and then neighbours.

Four ethics sit at the center of the practise: earth care, people care, fair share/future care, and transition aware.

We need to be conscious of our actions and steward the land while being aware that we are not the only inhabitants here.

Many facets of permaculture focus on regeneration. Regeneration in an ecological context refers to restoring or renewing damaged elements in an ecosystem. An example of regeneration in a permaculture context is healing degraded soil by reintroducing native species and nutrient fixing plants. Another example is to restore abandoned or neglected areas with a new permaculture project instead of establishing new gardens in healthy areas.

Lack of compassion leads to ignoring those in the community who are experiencing hard times and exclusion. It also leads us to turn our gaze away from injustice. If a community member needs support, it is important to uphold them.

People care recognizes that coming together benefits everyone in the long run and makes it easier to focus on the positives during difficult times. Navigating obstacles becomes much easier when we open our hearts and our doors to those in need.

Fair share / Future care

Greed and resource hoarding does not belong in a permaculture community. Ensuring others including the land are not dragged down by your choices is courtesy. Having modest expectations and slowing down our lifestyle will benefit everyone and ourselves in the long run. Giving back to the land that provided for you will ensure more yields in the future and those extra yields should be shared with others in the community, so they don't spoil. Reciprocity is an important part of Permaculture as it is in Indigenous cultures as it helps inspire deeper appreciation for what you get, what you have and what you can share. It fosters connection and harmony towards your community and the earth. As Robin Wall Kimmerer says, "all flourishing is mutual."

Transition aware

The important element of permaculture is to not rush things. Following the flow of nature ensures we don't overstep. Trees take decades to mature, rich soils take years to develop, and system change slowly propagates through the years. It is important to realize that it takes a collective effort and lots of time to make change happen. Just remember we are all part of the continuous movement and in time our collective contribution builds the foundation for systematic change.

Community apple cider making event at the food forest at St Mary's Church in Fredericton.

"All flourishing is mutual" — Robin Wall Kimmerer

Permaculture in action

Making a permaculture project a reality takes a lot of time and consideration. The important thing to consider is that yields from trees, shrubs and other perennial plantings will not be much in the first few years. You can supplement with annual vegetables and/or animals depending on the space you have available while waiting on your slower growing plantings. A peri-urban food forest case study in Scotland found that a mature food forest of 0.19 acres produced 713kg of food annually. Imagine what a whole acre could produce!

For a food forest to function you need to keep in mind the needs of each plant and whatplants you can pair up so they can support one another. The goal is to create plant guilds. Each layer will produce different types of yields. The overstory can provide fruits and nuts; the understory can consist of fruit and nut shrubs; the herbaceous layer provides leafy greens and herbs; and creeping herbs and fruits like thyme and strawberries can form ground cover. Over the long term, a food forest is low maintenance due to its perennial nature. Pruning and mulching are the only upkeep needed in a mature project. Food forests can be low maintenance food production powerhouses which is ideal for community food production.

My experience with permaculture

I've always been around a garden. Being outside led me to get acquainted with the local climate and my non-human neighbours. I think it is what led me to be so proactive in addressing environmental issues. Living sustainably was a no brainer for me but over time the term sustainability left a sour taste in my mouth. It is vague, has been greenwashed and overall has been taken over with shallow performative actions even in politics. I want to see regeneration. I want to see system change. I want to live with the earth and not against it. I'm tired of growth. I want us to thrive.

My love for gardening and my values are reflected in a beautiful bundle of regenerative potential called permaculture. I was introduced to permaculture during a summer job in 2024 at St. Mary's Community Food Forest in the Fredericton community of Devon. Everything clicked into place. I learned about perennial food sources, getting inspiration from patterns found in nature to build food production projects and to value the slowness of the natural process. Most importantly it shifted my perspective from an individualistic focus on life to a collective one.

Permaculture isn't just growing food for yourself but sharing it with others. It is more than food too! The food forest is focused on providing for the surrounding community and becoming a community gathering place.

I participated in and helped organize community events, free workshops, educational opportunities and fundraisers. I now feel closer to the community I worked in thanks to it, and it helped foster a greater sense of empathy and fulfillment within me. I encountered many like-minded folks who reside in my community and more outside of it. I don't feel alone, and I feel hopeful through these community-based actions.

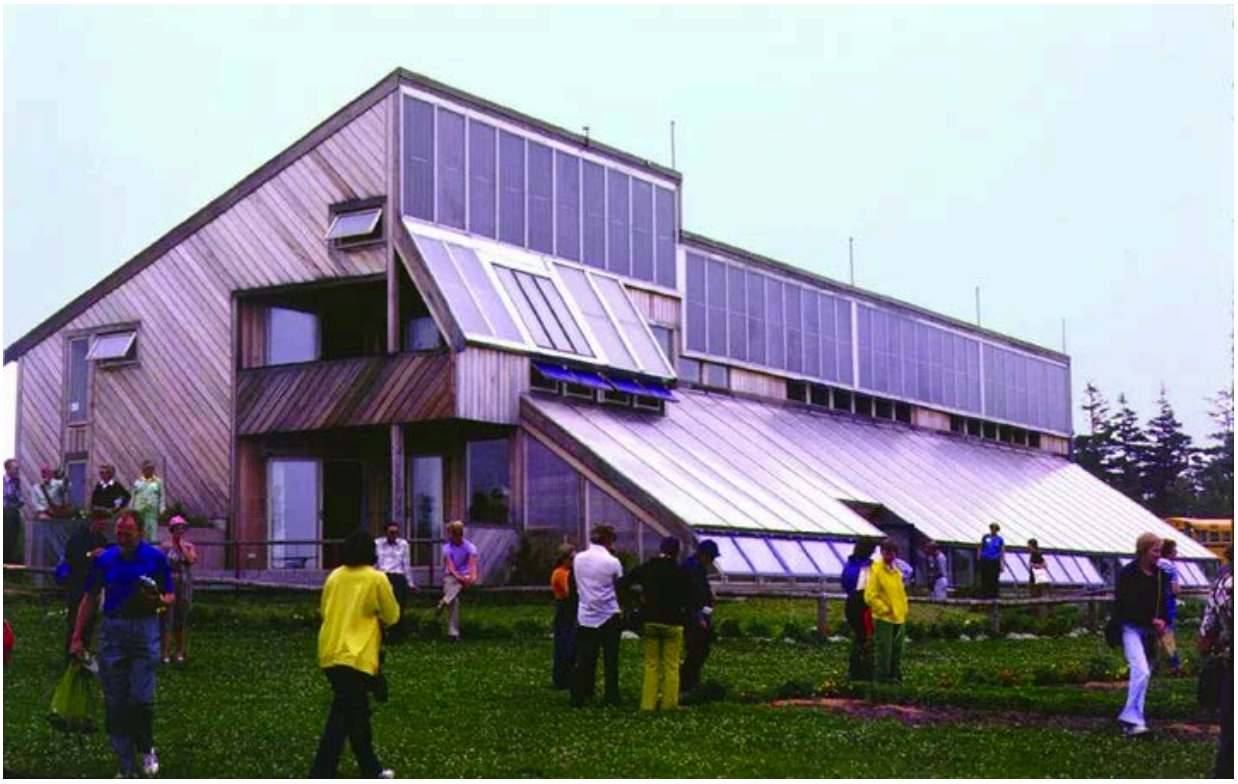
Permaculture is more than an agricultural movement. It is a system blueprint.

Permaculture is more than an agricultural movement. It is a system blueprint. Our current growth-based economy does not have our best interest or the environment in mind, The superficial and individualistic culture that has come out of this economic system needs to change as well. Using permaculture as a framework to live by has kickstarted homegrown movements in New Brunswick and all over the world. System change is closer than we think.

Harvested beets, leftover apples and some seabuckthorn berries going to the community fridge.

The Ark
What's old is new again

Dhruv Manish



In this time of climate crisis, the idea of living sustainably has gained much attention, especially the need to abandon fossil fuels – oil and fossil (natural) gas in particular – as sources of heat, electricity and mobility. But these are not new ideas.

Fifty years ago, alternative building, energy, and food systems were hot topics in North America, spurred by a confluence of events and ideas. The first Earth Day in 1970 brought 20 million people into the streets. The back-to-the-land movement saw urban kids move to the country to set up homesteads. And they were reading influential books such as Limits to Growth and Small is Beautiful. People started reclaiming old practices and experimenting with new technologies.

The New Alchemy Institute was the embodiment of this movement. Located on Cape Cod, Massachusetts, it was started marine biologist John Todd, writer and activist Nancy Jack Todd, and fish biologist Bill McLarney. Their purpose was to research and design food, energy and shelter systems that worked in harmony with nature – in other words, sustainable human support systems. Their research included organic agriculture, aquaculture and bioshelters, solar greenhouses that operated as self-contained and regenerative ecosystems.

The OPEC oil crisis of 1973-74 underscored the vulnerabilities associated with North American fossil fuel dependence as oil prices spiked and shortages ensued.

In response, the Canadian government became interested in alternative energy solutions and sustainable living models. In 1974, the PEI premier Angus Campbell invited the New Alchemy Institute with Solsearch Architects to design and build a demonstration bioshelter on the island. The PEI government provided the land, while both federal and provincial governments provided $350,000 for research. The building cost $150,000 to build.

The Ark was called a "new commitment to living lightly on the earth." The project aimed to provide a self-sufficient living environment for a family of four, providing food and energy while cycling waste. The idea was to create a self-sufficient habitat that harmoniously integrated human life with natural ecosystems, embodying a pioneering approach to ecological design and sustainable architecture. Construction of the Ark began in 1975 and concluded in 1976. The design integrated various sustainable technologies, many of which were experimental at the time but have since become emblematic of green architecture.

Solar energy. The Ark employed a passive solar heating system combined with thermal mass heat storage. This featured south-facing translucent roofs and ultraviolet- and infrared-permeable glazing on greenhouse windows.

Wind energy generation. A wind turbine generator was installed to produce electricity.

Thermal efficiency. The building had highly insulated walls and roofs to minimize heat loss. The design also reduced exterior surface areas and edges to enhance energy efficiency.

Integrated food production. The passive solar agriculture/aquaculture greenhouse facilitated year-round cultivation of vegetables integrated with fish production. Fish waste provided nutrients to the greenhouse through recirculating water. This system not only provided food but also contributed to waste management and heat retention.

Composting toilets. The Ark utilized composting toilets, promoting efficient waste recycling and reducing water consumption.

Life of the Ark

The Ark's inauguration in the fall of 1976 was a significant event, attended by notable figures including Prime Minister Pierre Trudeau, PEI Premier Alex Campbell, and American Stewart Brand, organizer of the 1970 Earth Day and founder of the Whole Earth Catalog. The gathering reflected the broad spectrum of interest in the project, from government officials to members of the counterculture and local community. Over the subsequent years, the Ark attracted thousands of visitors —tourists, architecture students, and advocates of appropriate technology—all drawn by its vision of harmonious collaboration between humanity and nature. Friends of John and Nancy Todd lived in the Ark for 18 months once it was completed. At that point, the PEI government took it over and established an alternative energy research centre.

Opening day at The Ark. Prime Minister Pierre Trudeau is at the microphone.

With the election of the Progressive Conservative of Brian Mulroney in 1984, federal funding for several alternative energy projects ended, as it did in the United States with Republican Ronald Reagan's election the previous year. This represented a seismic political change that halted and reversed much of the progress in sustainable systems innovation that the 1970s generated. The Ark was sold and run as a motel and restaurant for the next decade before it was demolished.

Prime Minister Pierre Trudeau and John Todd tour The Ark on opening day.

The Ark's Legacy

Despite its eventual demolition in the late 1990s, the Ark's legacy endures as a pioneering example of sustainable design. It demonstrated the feasibility of integrating renewable energy, efficient resource use, and ecological stewardship into residential architecture. The principles embodied by the Ark remain pertinent today, offering valuable lessons as contemporary society grapples with environmental challenges and seeks sustainable living solutions.

The Ark project on Prince Edward Island stands as a testament to the potential of innovative, ecologically conscious design. It serves as both an inspiration and a blueprint for future endeavors aimed at creating sustainable, self-sufficient communities that exist in harmony with the natural world.

Integrated greenhouse system at The Ark.

Note: The New Alchemy Institute closed in 1991. John Todd formed Ocean Arks International in 1981, pioneering the fields of ecological design and industrial ecology.

Appleseed Homes

Finding Hope in Knowlesville

Sustainable, reciprocal, and aesthetic living in rural NB

EMMA FACKENTHALL

In 2024, I had the opportunity to participate in an experiential learning trip to Costa Rica with other classmates at STU. I was asked post-trip to talk about my experience and I described San Ramòn and La Fortuna, two of Costa Rica's remote areas, as an *intermingling, supportive, regenerative, and ecological societies where "humans and nature worked in reciprocity*. Rural Costa Rica was such a contrast to my home in New Brunswick where life is much more socially remote and the barrier between humans and nature is much more clearly defined. At home, we demand so much from the land and contort it in unnatural ways, clearcutting for kilometers and expanding residential sprawl. Costa Rica instilled in me a desire to bring such an ecologically interconnected community back home, but I was not sure how.

Fast forward to March 2025, and I was introduced to an amazing rural community in Knowlesville, NB during a class field trip. More than any reading or assignment, seeing this alternative way of living gave me hope for my home province and reminded me of the beauty in those rural Costa Rican communities.

Leland and Tegan Wong-Daugherty were our guides for the day. Over two decades ago they bought land in Knowlesville, set up their homestead, and started their family. Motivated by their desire to have neighbours with children and guided by the principle that everyone should have access to affordable shelter, they established a 'land

share' arrangement to provide free access to land for anyone who wants to live a rural life. They divided their land into several one-hectare lots and made them available on a first-come-first-served basis. Their only stipulation is that the recipient wait one year before building a house on the land to give time for second thought. Now 13 solar-powered off-grid homesteads form a new intentional community within rural Knowlesville.

With no school in the area, the next step was to create one so children did not have to bus to Hartland. Tegan Wong-Daugherty started the Knowlesville Art & Nature Centre (KAN), an alternative homeschool collective that embraces an ecocentric approach to learning. Our tour introduced us to the KAN, located in an old church that was moved to the site and renovated for school purposes. The KAN campus is also solar-powered with composting toilets, a kitchn, greenhouse and outdoor oven and other outdoor learning spaces. We viewed the community water hand-pump, the nearby micro farms, and culminating with a chili lunch with home-grown ingredients and a lively discussion in the Wong-Daugherty home - a home unlike any of the new builds rapidly pitched in my community of Penniac. This house is an Appleseed Home. Founded by Leland and Tegan, Appleseed Homes started "with a vision of affordable housing for farm and garden-centred lives," the way of life for Leland and Tegan for 30 years.

What is unique about the house is that the walls are made of straw bales with a timber frame. Upon first hearing of straw bale homes I was skeptical, especially since as a kid I was repeatedly read the story of The Three Little Pigs in which the Big Bad Wolf easily blew down straw and sticks but could not huff enough for bricks.

Some brief Internet searches on straw-bale homes will put the Three Little Pigs to shame. Straw bale homes are considered "seismic innovations" that withstand earthquakes and other natural disasters. Because the outer walls are the width of an 18-inch hay bale, they are much more sturdy than the thin walls of conventional builds.
The hay is mechanically compressed and the walls are then covered in local natural clay so these homes are fire resistant too.

I believe that Appleseed Homes and the intentional Knowlesville community is a stellar example of sustainable materialism. In their book by that name, authors Schlosberg and Craven argue that alternative living movements are a form of

Leland & Tegan, homeowners in Knowlesville & owners of Appleseed Homes

Knowlesville Art & Nature School (KAN)

activism and resistance against mainstream industrial systems. In this sense, Knowlesville residents are truly activists, as they are living against the grain of contemporary society, which often values convenience and urbanization above food and energy self-reliance.

The Knowlesville landshare community hearkens back to the New Alchemists' project of the 1970s. Scientists and artists set up the New Alchemy Institute on a 12-acre farm in Cape Cod, Massachusetts to "completely rethink how [food, water and shelter] systems were designed." Just like the New Alchemist's project, Appleseed Homes is an effort to re-envision living. It works to disillusion us of industrial capitalist fables that a simpler way of life is not viable or desireable.

At the heart of Appleseed Homes is Leland's guiding philosophy that access to land and a home is a human right, and therefore must be affordable and of high quality.

He states that with "every purchase or choice of material I make, I ask myself- is this the best I can do for the environment - nothing is perfect, but we can try our best." This is a stark contrast to the developers clearcutting my once rural neighbourhood to build charm-less homes at prices my wallet will never meet in a lifetime. In fact, Leland keeps the cost of building a 625 square foot Appleseed Home in the range $25,000 to $50,000 depending on the preferences of the owner. This makes these homes more affordable than many of the local tiny house companies I've scouted out in New Brunswick. As someone who worries about the housing crisis forcing me to live with my parents forever, the Knowlesville landshare community and Appleseed are my beacon of hope.

Appleseed's natural aesthetic is also important. I have an ongoing dissatisfaction with the quality of everyday materials available to me. Observing the incredible artistry, warmth, and craftsmanship in the

Appleseed projects have been using hay bales for over 25 years.

Embracing local, natural, materials, Appleseed homes have warmth and character unlike typical builder-grade houses.

Wong-Daugherty home - something sorely lacking in even the most expensive homes on the market today - was inspiring. Sitting at their table, I noted the local natural curves on the clay walls, the bright wooden windows that draw in passive solar energy and illuminate and highlight each individual sweep of trowel on the walls, and the locally-milled timber ceiling beams. In a world of factory-made uniformity, I've come to realize hints of humaneness in everyday objects are true blessings. Endeavours like Appleseed keep us aesthetically connected and appreciative of the natural world and our surroundings, a feat no machine could dare try to replicate.

Every purchase or choice of material I make, I ask myself- is this the best I can do for the environment - nothing is perfect, but we can try our best.

The Knowlesville landshare community brings me so much hope for truly sustainable, intermingling communities in New Brunswick, where we work with nature rather than against it. Leeland, an artist, did not always have the skills for construction. He reasssured us that it is quite easy to build a home once you get to the gist of it. Perhaps it is time we pick up our tools and learn to create more resilient homes and communities. That is a future I'd be happy to greet.

Findhorn Foundation

The Findhorn Ecovillage, Scotland

What will it take?

Insights from an Ecovillage

Jenna Polchies

Left to right: David Spangler, Eileen Caddy, Peter Caddy, Dorothy Maclean

What will it take to build a sustainable future? The most important place to start is with a vision that establishes the values (worldview) and goals of that future. From there, we can design systems that reflect our goals.

The term 'sustainability' is used frequently in everyday language, but the message has become ambiguous. Despite the prominence of 'sustainability' in sttements and policies of corporations, and government institutions, Earth's systems continue to degrade each year. Because of the uncertainty about what constitutes a sustainable community at the definitional level and having few mature models to draw on, what we need is imagination and a vision..

To explore a vision of what a sustainable community might look like, I looked at the community of Findhorn located in northeast Scotland. Findhorn is one of global network of ecovillages, communities formed intentionally by groups of people with a common vision to enjoy life without undermining natural systems. So-called intentional communities typically form to

"You are living in the new where no books of knowledge have been written, where there is no pattern to follow. There is nothing hard or fast or cut and dried about this life. You can not tell from one day to the next what is going to happen. This is the most thrilling and exciting time; whole new vistas keep opening up. The unknown is becoming known."

— Eileen Caddy

address social and ecological injustices uniquely and holistically.

The Findhorn Ecovillage is centered around three core principles: inner listening, co-creation with nature, and love in action. These principles have shaped how they have structured their community and their interactions with each other and nature.

Their food production, energy systems, built environment, biodiversity remediation, and re-localized economy follow regenerative design principles. The community values cooperation and co-creation with nature and its residents. The ecovillage encapsulates the idea of living in harmony with nature while maintaining a fulfilling life. The founders have called this relationship "listening within". This is a process of listening to each other and the intelligences of nature.

Established in 1985, the Findhorn Ecovillage in Moray, Scotland is one of the oldest ecovillages. That year, the founders, Peter Caddy, Eileen Caddy and Dorothy Maclean, moved to a caravan park near Moray and start a garden to feed the small group of six. Over time the group grew into a small community committed to a

The Caddys' Caravan

T*he original garden in at Findhorn Bay Caravan Park with Dorothy Maclean, Eileen and Peter Caddy*

a spiritual path and food self-sufficiency. The Findhorn community now has over 500 residents. Since the community buy-out in 2024, residents now own their land and assets.

Their governance process is built on cooperation and mutual support. Through a participatory a decision-making process, residents work together to solve problems. Some of its key features are a maximum 20-minute walk to required amenities, sustainable architecture, and a biological wastewater treatment plant or what is known as a 'living machine.' This living machine

The Findhorn community market

Whisky Barrel houses

treats wastewater using whole systems biological processes. The once small garden started by Peter Caddy is now a 10-hectare garden that uses biodynamic farming methods to produce organic vegetables for the community. Cohousing clusters have shared gardens, and many residents grow food around their homes.

The ecovillage has become known for its recycled whisky barrel houses, passive solar design of new buildings, and the community-owned wind park that supplies their energy needs. Through community cooperation, the residents of Findhorn have found a way to live together sustainably. Expanding these practices beyond a small community level seems impossible, but the heart of the problem lies within our current beliefs and understanding of how the world operates and our place within it. To achieve sustainable communities, it will take a shift in our worldview to understand that our social and economic systems are embedded within and solely dependent upon the earth's systems. Without the health of the earth's systems, society's systems will collapse. We must shift our mindsets to what true prosperity means without the fallacy of continued economic growth.

It is communities like Findhorn that give us bearings to build what we and nature so badly need. Intentional communities like the Ecovillage Findhorn are not a "one-size-fits-all". The message here is that we can shape our communities to be sustainable by collaborating with each other and with nature based on a reciprocal worldview.

"It's likely you'll have less stuff, but you'll have much more of what you really need. A sense of security, for example, a sense of connection and a sense of purpose"

Gaya Herrington, sustainability researcher and well-being economist

THE RENEWABLE REVOLUTION IS UNDERWAY

Floating on a lake over a collapsed coal mine, the power station in Anhui province in China can produce 40 megawatts of energy. (Smithsonian Magazine).

DHRUV MANISH

Following their commitment in the 2015 Paris Agreement to dramatically reduce greenhouse gas emissions, many nations have committed to transition away from carbon intensive fossil fuel energy systems to renewable energy. Some countries are trailblazers for others wishing to transition to sustainable energy production. In 2024, 47 percent of all power generated in Europe was from renewable energy sources, Eurostat reported. This shows that there is a boost in dependency on renewable energy which is real proof that entirely renewable energy systems are an achievable target.

China

China has been one of the biggest investors in solar and other renewable energy in recent years.

The Asian giant is rapidly transitioning to renewable energy, aiming to achieve peak carbon emissions by 2030 and get to net-zero emissions by 2060 with 80 percent of its energy mix from non-fossil fuel sources by that time. While this is not in line with climate science targets of zero-emissions by 2050, so far China has exceeded its timelines. China is doing this with significant investments in solar and wind power. It is the world's largest investor in renewable energy.

Solar power. China leads the world in solar technology production and deployment, with vast solar farms like the Tengger Desert Solar Park.

Wind power. The country has the largest installed wind capacity, both onshore and offshore.

Hydro power. China remains the world's largest producer of hydroelectric power, with mega projects like the Three Gorges Dam.

China is also a leader in zero-emission transportation (ZEVs). It is the largest producer and consumer of electric vehicles (EVs), with companies like BYD and NIO leading the market. The government provides subsidies and incentives for EV purchases and has set targets for phasing out gasoline-powered cars. With strategic investments in high-speed rail networks, the government plans to reduce dependence on fossil fuel-powered transportation.

Although China still relies heavily on coal, the government plans to phase out coal and has been closing inefficient coal plants. Significant investments are being made in clean coal technology such as carbon capture, and storage (CCS), although these are not proven at scale.

China has also been focusing on the circular economy, encouraging recycling and urban mining (extracting valuable materials from electronic waste) to reduce raw material dependency. There are also strict policies on plastic waste reduction and bans the import of foreign waste.

While China is still the world's largest producer of climate-changing greenhouse gases, government investment in renewable energy technologies is driving down the global price of these technologies, making the more affordable for other countries.

Chile

Chile has been making significant strides toward sustainability, focusing on renewable energy, green hydrogen, reforestation, and eco-friendly policies. Powered by its significant geothermal, solar and wind energy resources and very limited dependence on fossil fuels, Chile has been described as a world leader in renewable energy development encouraging clean energy investments through public-private partnerships and strengthening carbon pricing policies and emission reduction commitments.

In 2024, 47 percent of all power generated in Europe was from renewable energy sources.

Wind and solar farms in the Atacama Desert with the Andes in the background.

Chile is a comparatively small economy in South America, and its transition should be a motivation to other small economies looking to transition to clean energy. Chile has emerged as a leader in renewable energy in South America, with a goal of 70 percent of electricity supplied by renewable sources by 2030, and 100 percent by 2050.

Solar power. The Atacama Desert, one of the sunniest places on Earth, hosts some of the world's largest solar farms, such as the Cerro Dominador Solar Complex.

Wind power. Coastal and mountain regions provide ideal conditions for wind farms, helping reduce reliance on fossil fuels.

Hydro power & geothermal. Chile harnesses its rivers and volcanic activity to generate clean energy.

Chile is actively reducing its reliance on coal by shutting down coal plants, with a complete phase-out planned by 2040. Chile also strives to do sustainable mining as its economy depends upon it. A top producer of copper and lithium which is key for batteries in electric vehicles, Chile is making mining more sustainable by investing in reducing water usage and increasing recycling in mining operations. It also plans to develop eco-friendly lithium extraction to minimize environmental damage. It is also encouraging electric mining trucks to cut emissions. The capital, Santiago, boasts one of the biggest bus fleets in South America and plans on having a 100% electric bus fleet by 2040.

Denmark

Denmark has been a beacon for sustainable development globally and has also been consistently in the top ranks of the world's happiest countries. Denmark is a leader in renewable energy, aiming for a 100 percent renewable energy supply and achieving carbon neutrality by 2050, with strict carbon pricing and emissions reduction policies. Denmark also banned new oil and gas exploration in the North Sea in 2020 which is a massive commitment to a fossil-free future. Consequently, the country has made significant strides in reducing reliance on fossil fuel.

Wind energy is Denmark's strength, producing nearly 50 percent of its electricity from wind turbines. The country is home to some of the world's largest offshore wind farms, like Horns Rev and Kriegers Flak. Danish companies like Ørsted and Vestas are leading global wind energy innovation. The government plans to reach 100% renewable electricity by 2030.

Denmark is also investing in an Energy Islands Project, which will construct the world's first artificial energy islands in the North Sea and Baltic Sea. These islands will generate and distribute wind power to Denmark and neighboring countries. The North Sea Energy Island alone will have 10-gigawatt capacity, enough to power 10 million homes.

Denmark is also committed to sustainable transport. This includes electric buses and trains across cities, incentives to use public transit, and disincentives for personal vehicles. The country has a goal for all new cars to be electric by 2030. They also have an extensive cycling infrastructure.

FUN FACT: COPENHAGEN IS THE WORLD'S MOST BIKE-FRIENDLY CITY, WITH MORE BICYCLES THAN CARS!

Conclusion

There are very real resource implications for the transition from fossil fuels to renewable energy systems. All the new technologies and infrastructure require energy to produce and new mines to extract minerals. Nevertheless, they are less than the current devastation being wrought by fossil fuel extraction in the tar sands and the climate-altering impacts of combustion of fossil fuels. The top priority must be to ensure that the energy transition benefits everyone and is not just another version of the exploitative extraction industries that are devastating rural and Indigenous communities worldwide.

Horns Rev offshore wind farm in Denmark.

Advancing the Renewable Energy Transition in NB

Shediac Community Energy Project

TYLER DUPUIS

New Brunswickers are familiar with ice storms that cause blackouts during the cold winter months. However, one small town is becoming the shining light on the hill for keeping the power on while the rest of the province is left in the dark.

Shediac, NB, a small Acadian coastal town of 7,500 residents, is no stranger to the climate-related events that are becoming ever-more frequent. In the aftermath of post-tropical storm Arthur in July 2014, NB Power was approached by the federal government to build and study a smart energy community pilot project. Shortly after, Shediac was selected as its testing grounds.

In partnership with the National Research Council of Canada, researchers are using the project to study how to integrate renewable energy into the power grid, measure cost savings of smart energy technologies, and test time-of-day electricity rates for customers.

Over 400 Shediac homeowners were selected to participate in the project. Various smart energy technologies were installed in their homes, including smart meters, energy-saving thermostats, heat-pumps, rooftop solar, and battery storage. Participating residents were provided with a smartphone app which allows them to track their solar energy production and consumption at any hour of the day.

Shediac has also partnered with Solaire Homes and Progeny Modern Homes to build a new neighborhood of off-grid homes for interested homebuyers. These homes will be interconnected to supply energy to neighbors and the community using the new integrated power grid, which allows for locally produced renewable energy to go onto the existing grid.

Rooftop solar in Pointe-du-Chêne, Shediac

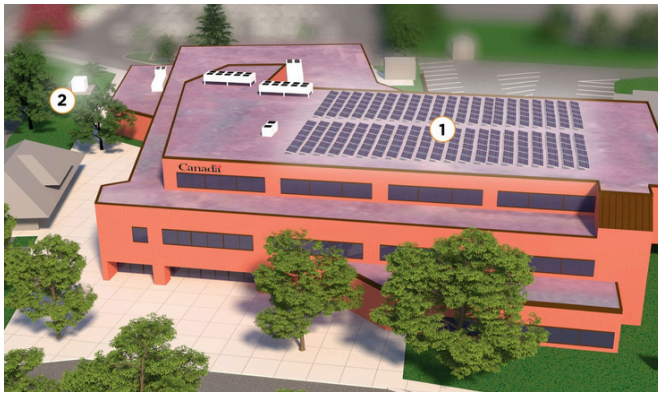
Two of the town's largest buildings got an upgrade. The Canada Pension Centre, which employs over 1,150 people, and the Shediac Multipurpose Centre, were retrofitted to be the first net-zero carbon commercial buildings in the province. The two buildings are now completely self-sufficient with their rooftop solar panels and smart energy technologies.

The main addition to the town is its new 1.63-megawatt community solar farm and large-scale energy storage facility. The solar farm provides clean electricity to two net-zero commercial buildings, with excess renewable energy going into Shediac's distribution grid. For its efforts, Shediac was recognized with the Jean-Jacques Roy Award for Excellence in Municipal Innovation

1.63-megawatt solar farm in Shediac, NB

Workers installing the Shediac solar farm

Shediac's Multipurpose Centre



Renovation plans for the Canada Pension Centre

Even before the community energy pilot project is completed, government, residents, and NB Power are hailing the project as a massive success. During the 2024 winter storm that left half of the province without electricity, participating Shediac residents still had power from their solar installations and batteries. For non-participating residents, the Shediac Multipurpose Centre became a shelter, providing heat, water, and electricity.

Once the study is finished, the National Research Council will release the final report to the federal Department of Innovation, Science and Economic Development. It seems very likely that the NRC will recommend replicating the Shediac Smart Energy Community projects across New Brunswick and beyond.

But there is no need to wait. Aspiring sustainable communities can learn from Shediac and form partnerships with developers, government, and residents to advance their vision of a sustainable community. Thus, we can transition NB to a renewable future, one community at a time.

Saving Walden's World

Jim Merkel's inspiring journey to discover sustainable communities in Kerala, Slovenia, and Cuba

Jim Merkel and his son, Walden

TYLER DUPUIS

Jim Merkel is no stranger to the devasting impacts of global problems. After graduating as an electrical engineer, Merkel went to work in the US defense industry. In his own words, he was a 'desk killer' and an arms dealer, designing and selling weapons systems to CIA-backed groups undermining governments and pushing US business interests in developing countries.

After a series of life events, and following the 1989 Exxon Valdez oil spill in Alaska, he concluded that he could no longer work in this immoral 'offense' industry. To right some of these wrongs, he quit his job and started a new life journey as an educator and environmental activist. His quest was to explore what a life would look like with an ecological footprint that aligns with the renewable productive capacity of the finite Earth - in other words, the one-planet principle. For sixteen years, Merkel experimented with living off the land in British Columbia on $5,000 a year. Eventually, he bought land in Belfast Maine, where he built his off-grid homestead with his partner Susan Cutting. In 2003, he released his book, *Radical Simplicity, Small Footprints on a Finite Planet* which outlines his philosophy of one-planet living and his mission to discover what that looks like. A 2006 film, *Radically Simple*, was inspired by his book. In the film, he discusses ecological footprints, permaculture, money, and other topics related to sustainability. Shortly after, Jim and Susan welcomed their child Walden to the world.

1989 Exxon Valdez Oil Spill

Raising their son in a world impacted by climate change, conflict, and economic inequality, Merkel's interest was in lifestyles that everyone on Earth could live, while staying within the Earth's productive capacity. This launched him on his most ambitious project, the film *Saving Walden's World*.

Merkel set out to document communities that in many ways are aligned with one-planet living. Ironically, these turn out to be regions that were targeted by the CIA during his time working in the US military-industrial complex. Released in 2024, *Saving Walden's World* follows Merkel to three regions as he seeks to uncover the driving forces behind their achievement of low ecological footprint, high quality of life for everyone, and small families.

Poverty reduction and women's empowerment in Kerala

The first stop is Kerala, India, which is a significant and empowering moment for Merkel. He describes the CIA's history of inciting mob violence to prevent land reform and education programs, and his own visits there as an arms dealer. He points to declassified documents that highlight how land reform would "have far-reaching effects over the next few years in other states," foiling US business interests in India.

In Kerala, Merkel sees first-hand how poverty eradication and women's empowerment programs have resulted in a flourishing local economy. He meets with Minister of Finance Dr Thomas Isaac, who discusses how the government has been focused on policies that eradicate poverty, benefit the local economy and allows for wealth to remain in the community through women's empowerment.

Filming in Kerala, India

Kerala's Minister of Finance Dr. Thomas Isaac

Kudumbashree is an economic development program which provide microloans to women to set up small businesses to provide the material needs for their community. Merkel meets Sindhu, a Kudumbashree organic farmerwho grows food for the local community. Jim, Walden and Susan visit a local shop that produces affordable and sustainable clothing with locally produced silk and cotton fabrics.

Universal healthcare, childcare, and education in Slovenia

From Kerala, *Saving Walden's World* takes us to Slovenia in Eastern Europe. Formerly part of the Soviet-era Yugoslavia, Slovenia declared independence and established its own constitution in 1992. The country has a culture of civic activism against corruption and in defense of a strong welfare state.

In, Merkel explores how the country's commitment to universal access to healthcare, childcare, and healthcare contributes to a smaller families, sustainable lifestyles, and a lower ecological footprint. This becomes clear when speaking with Ziva Kavka Gobbo, president of the Slovenian Association for Sustainable Development.

"There is no such thing"

Ziva Kavka Gobbo, president of the Slovenian Association for Sustainable Development on homelessness, gangs, and slums

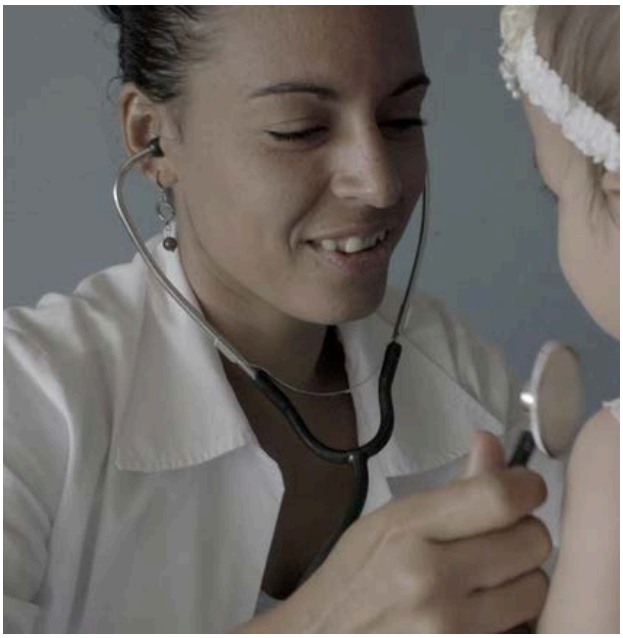
While in Slovenia, Merkel takes advantage of cycling-friendly, car-free streets and country-wide bike paths to move within cities and to take a weekend-long journey to the Adriatic coast. Travelling between cities on bicycle is just as common as travelling by car.

Ljubljana, Slovenia, known for it's cycling-friendly cities with extensive networks of cycle paths,

Agrarian land reform and reproductive freedom in Cuba

Saving Walden's World ends its journey in the Caribbean island of Cuba, where he learns from doctors, farmers, and residents about reproductive freedom and sustainable agriculture.

Cuba's free post-secondary education system ensures there are doctors in rural communities. When meeting with family doctor Lusay Anrade Mirande, Merkel learns how universal access to maternal and reproductive health care results in lower infant and maternal mortality rates. Medical clinics offer free contraceptives such as patches, IUD's and condoms and sex education is widespread. As a result, Cuba has smaller families and lower household ecological footprints.



Rural family-doctor Lusay Anrade Mirande

Merkel also profiles how agrarian land reform and American economic sanctions have influenced Cuban farmers and their practices. Agrarian land reform provided farmers with their own land to grow food. In the Soviet era, the Soviet Union provided Cuba with the inputs needed for an industrialized cash crop model of farming, including oil, pesticides and chemical fertilizers.

When the Soviet Union collapsed in the early 1990s, because of US economic sanctions, Cuba's food production capacity rapidly declined and shortages were widespread. Out of necessity, Cuban farmers responded by adopting adopting permaculture growing methods, working with nature rather than against it. When talking to organic farmer Irismey Santiesteban Garce, Merkel learns that mimicking natural patterns have proven as an efficient solution to feeding communities in the face of international sanctions.

Organic permaculture farmer Irismey Santiesteban Garce in her community food forest

A common theme: poverty reduction, healthcare, education, women's empowerment and reproductive freedom

By the end of Merkel's journey, a common trend emerges. In Kerala, poverty reduction and women's empowerment resulted in a flourishing local economy and smaller families. Slovenia's universal healthcare, childcare, and education allows for smaller families and lower ecological footprints. Lastly, Cuba's agrarian land reform, sustainable agriculture, and reproductive freedom has contributed to less harm to the environment and smaller families.

Kerala, Slovenia, and Cuba experience lower rates of infant and maternal mortality, homelessness and poverty per capita compared to the United States, Sweden, and whole of India. These communities are more resilient, self-sustaining, and less reliant on U.S business interests and global trade than their neighbours. This has resulted in ideal circumstances that allow these communities to adhere to the one planet principle, which states that resource consumption shouldn't exceed the limits of our finite planet.

Walden, Susan, and Jim Merkel.

For Walden and all children, sustainable communities and lifestyles are essential in the face of climate change. Aspiring sustainability advocates and communities can learn from Jim Merkel journey in *Saving Walden's World*.

To the big screen—recognition and film screenings

Saving Walden's World has been recognized with numerous awards, including the Global Health Award, Spirit of Action Award, audience's choice and best documentary awards from numerous international film festivals. His film is being screened in theatres, classrooms, and university campuses across the world.

Fast forward to March 19th, 2025, when author, filmmaker, engineer, and sustainability advocate Jim Merkel spent the day with St. Thomas University students. The audience included students, professors and community members. It is clear that those in attendance were inspired by Jim Merkel and his film, Saving Walden's World. His remarkable and inspiring life journey has revealed many of the ingredients for creating a sustainable world, not only for Walden, but for everyone.

We don't have to engage in grand, heroic actions to participate in change. Small acts, when multiplied by millions of people, can transform the world.

-Howard Zinn

Consciously Clean

Refilleries Revolutionizing Low-Waste Living & Community Wellbeing

EMMA FACKENTHALL

The next time you walk through the aisles of your nearby grocery store, take note of the packaging of products around you. So often we are caught up in the product and less so on the plastic that envelops them. Once you step back and see the vast pool of single-use packaging in most stores, the world becomes a little more foreboding.

Single-use packaging waste is an exponentially growing epidemic that has plagued the Earth since the advent of plastics in the 1950s. Packaging ends up in our landfills once they have met their singular purpose. Indeed, much of the packaging we see in stores today has disposability in mind, rendering them serious forms of pollution. Since most of our packaging waste takes plastic form, we are contributing to ecologically destructive plastic and micro-plastic pollution. The rise in single-use packaging has grown as convenience has become more mainstream, but that also means that the quality of plastics has worsened, creating more unintended wastes.

We are now in a boundless sea of convenience waste. We are so deeply reliant on plastic packaging in most Western cultures. Yet, hope can be found in the smallest of nooks. Enter refilleries, like Consciouly Clean.

Consciously Clean Refillery, established in 2021 and opened in 2022 in Fredericton, is part of a growing trend for brick-and-mortar stores where customers can shop local goods, participate in social events, learn about their community's resources, and refill essential home products bring bringing their own containers. Products are priced by weight.

Owner and operator of Consciously Clean, Carolyn Gibbons, did not originally see this path for herself. With a background in Early Childhood Education, Gibbons was unfamiliar with the environmental field but regularly found herself frequenting refilleries as a customer in her home province of Ontario. She soon grew enamoured with the idea and decided to open her own store during her relocation to Fredericton in 2021.

Consciously Clean carries almost exclusively items from local businesses in New Brunswick and wholesale businesses across Canada. As the Trump Administration slaps tariffs on Canadian products, Gibbons is strongly favouring Canadian brands. Gibbons reports 98 percentof her stock is Canadian.

In the store, customers are met with a warm and bright atmosphere. The main wall is

lined with shelves holding large bulk product dispensers with cleaning products for the bathroom, and kitchen, laundry detergent and personal care items.

The back area houses Heights Cold Brew and tables featuring wares from local small businesses ranging from wood crafters, to soap makers and textile artists. The back room also serves as a space for In Nature Wellness.

In a world where the quality of experience is defined quite often by convenience - a convenience that kills or pollutes - Consciously Clean offers another kind of experience altogether. While most might think convenience is throwing away plastic containers once done with them, it is actually inconveniencing us all in the long-run. Real ease is being able to reuse what you already have.

Gibbons is not only motivated to keep a retail space. She takes joy in finding ways to foster community in her space. Gibbons partners with organizations like the Fredericton Community Climate Hub and local realtors. Consciously Clean regularly hosts sustainability workshops, yoga sessions, DIYs, baking classes, book readings, and community events.

Refilleries like Consciously Clean are examples of multi-modal commercial centres, and third-spaces in action. Essentials can be refilled, people can congregate and educate themselves, and connections can be brewed just like the coffee.

What concerns many about Consciously Clean and other refilleries, is that they do still use plastic containers. To mitigate this, the store is also home to a "jarbrary" where people can drop off clean glass jars that are then washed and sanitized professionally in the back of the store. These surrendered jars are free, so people can use them instead of buying the new refillable plastic or glass bottles in the store.

Gibbons has also started a Terracycle program and collects for Circular Materials Atlantic. She accepts complicated wastes that are left out of local recycling programs such as flexible plastics, beauty care, and oral care wastes.

One might think that in an era of Amazon Prime deliveries, the effort required to clean and carry your containers for recycling and refill would be too much of a hassle. However, the success of Consciously Clean's programs is impressive. Gibbons reports 2600 returning customers, over 1000 litres of liquid refills a month, thousands of jarbrary and redemption centre donations, and nine Terracycle shipments filled.

"We need to prioritize people and planet over profit, period. I believe every town should have a local refillery in order to service those community members and support the local makers."

Carolyn Gibbons

It is evident that Frederictonians are motivated to reduce, reuse, refill, and recycle.

Consciously Clean actively works to reduce our production of waste which is causing widespread pollution, and ecological ceiling overshoots. Refilleries foster room to educate and engage local community, improve our social connections and keep us content and active in the world around us.

When we are all so bogged down from bad news, so swept up in harsh realities beyond our direct control, small actions and intentions can help bring joy and instill true change. Take a walk or bike ride over to 414 York Street to become a part of collective betterment.

The Jarbrary (pictured above) is a library of free donated containers that can be used to refill products. Gibbons has had a lot of success with this program and has a dishwasher in the back of the store that she uses to sterilize containers.

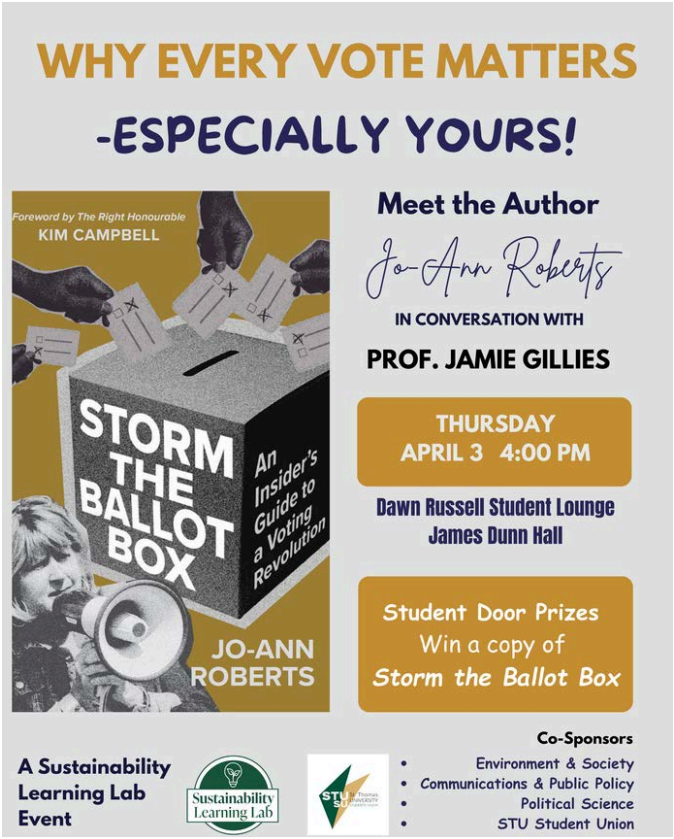
Owner and operator Carolyn Gibbons (pictured left), opened Consciously Clean Refillery in 2022 after relocating to New Brunswick. Her favourite part of the job is the people she meets and building community. She recounts: "On any given day we are telling stories, high- fiving, laughing, connecting, inspiring, encouraging, cheering each other on, sometimes crying and picking each other up."

An image (below) of one of Consciously Clean's unique waste recycling bins. Through Terracycle and Circular Materials Atlantic, Gibbons works to find new lives for packaging that cannot be refilled or added to the Jarbrary.

Gibbons reports over 1000 litres of liquids refilled each month. Quebec-based brand, Pure®, is one of her popular sellers.

Rooted in STU's commitment to Indigenous reconciliation, climate action and social justice, the mission of the Sustainability Learning Lab is to encourage shared learning and action across campus through curricular, extra-curricular and research activities, and community partnerships.

Sustainability Learning Lab Events 2024-25



Sources

Reclaiming Food Systems: Indigenous Food Sovereignty on Wotstak First Nation
Jenna Polchies

Blake, E. (2023, July 21). *Greenhouses aim to bring fresh produce to north, putting a dent in food insecurity | CBC News*. CBCnews. https://www.cbc.ca/news/canada/north/greenhouses-aim-to-bring-fresh-produce-to-north-putting-a-dent-in-food-insecurity-1.6913730

Flying Dust Market Garden. (n.d.). *Order online*. Flying Dust Market Garden Ltd. Retrieved March 23, 2025, from https://www.fdmg.ca/s/order?location=11ee1c39ab27f7b588b53cecef6d5b2a&menu=#2

La Via Campesina. (2024, July 16). *What is food sovereignty?*. La Via Campesina - EN. https://viacampesina.org/en/what-is-food-sovereignty/

Murtoff, J. (2025, March 23). *Food insecurity*. Encyclopædia Britannica. https://www.britannica.com/topic/food-insecurity

Msora-Kasago, C. (2023, March 28). *Food swamps: Definition, examples, health impacts, solutions*. Healthline. https://www.healthline.com/nutrition/food-swamps

Ponace, D. (2024, November 30). *Northern Sask. communities using gardening to improve food sovereignty - and they're involving youth | CBC News*. CBCnews. https://www.cbc.ca/news/canada/saskatchewan/saskatchewan-first-nations-food-sovereignty-youth-1.7396018

Schlosberg, D., & Craven, L. (2022). *Sustainable materialism: Environmental movements and the politics of Everyday Life*. Oxford University Press.

The Worldwatch Institute, T. W. (2016). *Can a City Be Sustainable?*. Island Press. https://public.ebookcentral.proquest.com/choice/publicfullrecord.aspx?p=5448454

Permaculture: Regenerating the Future
Kayla Lemay

Gauri, Shankar Gupta. (2019). Land Degradation and Challenges of Food Security. Review of European Studies. 11. 63-63. 10.5539/res.v11n1p63.

Grayson, R. (2008). Bill Mollison and David Holmgren at APC9 in Sydney, 2008. [Photograph].https://permacultureprinciples.com/post/holmgren-farewells-bill-mollison/

Merriem-Webster. (n.d) Regeneration. In *Merriam-Webster.com dictionary*. Retrieved March 29, 2025 from https://www.merriam-webster.com/dictionary/regeneration

Sources

Nyftote, S. L. J. & Henriksen, B. C. (2019).Sustainable Food Production in a Temperate Climate – A Case Study Analysis of the Nutritional Yield in a Peri-Urban Food Forest. *Urban Forestry & Urban Greening*, *45*. (n.d).https://doi.org/10.1016/j.ufug.2019.04.009.

Unknown. (2025) *Permaculture Ethics*. Permaculture Principles. https://permacultureprinciples.com/ethics/

Unknown. (n.d) *"For developing and promoting the theory and practice of permaculture."*. Right Livelyhood. https://rightlivelihood.org/the-change-makers/find-a-laureate/bill-mollison/

Unknown. (n.d) *Hepburn Permaculture Gardens: Melliodora*. Holmgren Design. https://holmgren.com.au/melliodora/property/

The Ark: What's Old is New Again
Dhruv Manish

Living Lightly on the Earth: Building an Ark for Prince Edward Island, 1974-76. Confederation Centre of the Arts. March 5, 2024. https://confederationcentre.com/exhibition/living-lightly-on-the-earth-building-an-ark-for-prince-edward-island-1974-76

Sol. 2023. The PEI Ark by SolSearch Architects and the New Alchemy Institute. Canadian Real Estate Housing and Home. June 12, 2023. https://canadianrealestatehousingandhome.ca/architecture/article/the_pei_ark_by_solsearch_architects_and_the_institute_of_new_alchemy/

The PEI Ark Catalogue. Introduction. https://peiark.com/introduction/.

Wikipedia. The Ark (Prince Edward Island). https://en.wikipedia.org/wiki/The_Ark_(Prince_Edward_Island)

Finding Hope in Knowlesville : Sustainable, Reciprocal and Aesthetic Living in Rural NB
Emma Fackenthall

Donovan, Darcey. (n.d.). *Seismic Performance of Innovative Straw Bale Wall Systems*. University of Nevada Center for Civil Engineering Earthquake Research. Retrieved March 18, 2025, from https://www.unr.edu/cceer/projects/straw-house.

Doughnut Economics. (n.d.). Doughnut Economics Action Lab. Retrieved March 20, 2025, from https://doughnuteconomics.org/about-doughnut-economics.

Greetings from Knowlesville, New Brunswick!. (n.d.). Appleseed Homes. Retrieved March 19, 2025, from https://www.appleseedhomes.ca.

Sources

Jacques, Kiley. (n.d.) The Case for Straw-Bale Houses. *Fine Homebuilding*. Retrieved March 19, 2025, from https://www.finehomebuilding.com/2018/10/10/houses-design-case-straw-bale-houses.

Schlosberg, D. & Craven, L. (2019). *Sustainable Materialism: Environmental Movements and the Politics of Everyday Life*. Oxford University Press.

St. Thomas University. (n.d.). *Ten STUdents Participated in an Interdisciplinary and Intercultural Development Trip to Costa Rica*. Retrieved March 17, 2025, from https://www.stu.ca/news/all-news/2024/ten-students-participated-in-an-interdisciplinary-and-intercultural-development-trip-to-costa-rica.php.

Weldon, Carolyne. (2016, July 28). *The New Alchemists: Growing Food Without Fuel or Toxins*. National Film Board. https://blog.nfb.ca/blog/2016/07/28/the-new-alchemists/.

What Will It Take? Insights from an Ecovillage

Jenna Polchies

Burca, J. D. (2025, February 2). *Findhorn eco-village: A pioneering example of Community*. Constructive Voices. https://constructive-voices.com/findhorn-eco-village-a-pioneering-example/

Ecovillage Findhorn. (n.d.). *Organic Food Production*. Retrieved March 29, 2025, from https://www.ecovillagefindhorn.com/index.php/food

Farley, H.M., & Smith, Z.A. (2020). *Sustainability: If It's Everything, Is It Nothing?* (2nd ed.). Routledge. https://doi.org/10.4324/9781351124928

Findhorn Foundation. (2024, April 28). A*fter 60 years, what's new?*. Findhorn Foundation. https://www.findhorn.org/blog/after-60-years-whats-new/

Findhorn Foundation. (n.d.). *Our history*. Findhorn Foundation. Retrieved March 29, 2025, from https://www.findhorn.org/history

Findhorn Foundation. (n.d.). W*elcome to the Findhorn Foundation*. Findhorn Foundation. Retrieved March 29, 2025, from https://www.findhorn.org/about-us

Foundation for Intentional Community. (2024, December 3). *The foundation for intentional community - about FIC*. https://www.ic.org/foundation-for-intentional-community/

Limbu, S. (2024, May 14). *What is an ecovillage and how does it work?*. Earth.Org. https://earth.org/ecovillages-from-around-the-world-for-sustainable-living/

Sources

The Renewable Revolution is Underway
Dhruv Manish

AEA, 2025. https://ammoniaenergy.org/articles/hyex-ammonia-from-the-chilean-desert/
Eurostat. https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20250319-1

International Energy Agency, 2024. https://www.iea.org/countries/chile

REGlobal. 2025. Chile's Energy Transition: Focus on accelerating transmission development, https://reglobal.org/chiles-energy-transition-focus-on-accelerating-transmission-development/

Smithsonian Magazine. https://www.smithsonianmag.com/smart-news/china-launches-largest-floating-solar-farm-180963587/