

WORKING FOR WATERSHEDS

Opportunities for Growth in
BC's Watershed Sector

MAY 2021



DELPHI
GROUP

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Background and Acknowledgements

This report by The Delphi Group is a product of collaboration, with input from industry, government, Indigenous communities, and many non-profit organizations working to protect and restore healthy watersheds across British Columbia. The research was commissioned by the BC Water Funders Collaborative (a project of MakeWay), the BC Freshwater Legacy Initiative (a project of MakeWay), and the POLIS Water Sustainability Project (University of Victoria).



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We thank the many BC freshwater leaders and organizations who contributed to this research through surveys and interviews.

Disclaimer

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1. Introducing British Columbia's Water Sector

1.1 Overview

In Vancouver, an engineer is installing water-efficient fixtures and greywater recycling technologies in new buildings. Outside Williams Lake, a crew of forestry workers has brought in heavy equipment to decommission an obsolete logging road. Throughout the Great Bear Rainforest, Coastal Guardian Watchmen are monitoring the lands and waters in their territories to uphold Indigenous laws and ensure resources are sustainably managed.

While the link between these activities might not be immediately obvious, they have one thing in common: all involve jobs that directly support better outcomes for healthy watersheds. And, healthy watersheds in turn fuel British Columbia's economic engines. From agriculture, to tourism, to mining, to clean energy, the province's economy and wealth directly depend on clean fresh water and functioning watersheds.

British Columbia's watershed sector is already extensive and primed for growth. Over the next year alone, the \$27 million in provincial stimulus funding being invested in watershed initiatives will create 750 jobs in more than 60 projects across the province.¹ The provincial government has a unique opportunity to leverage existing investments and accelerate momentum, put British Columbians to work in meaningful watershed careers, support Indigenous employment, and position itself as a global leader in securing healthy watersheds.

This report daylights the watershed sector in BC and the significant opportunities for growth. It:

- 1. Maps and describes the current employment and economic impact of BC's watershed sector;**
- 2. Showcases stories of innovative watershed jobs in action; and,**
- 3. Highlights the watershed sector's growth potential.**

Watershed Sector vs Water-Reliant Economic Activity

The watershed sector encompasses activities that directly support the maintenance, restoration, or improvement of healthy watersheds. As characterized in this research, the watershed sector is distinct from, but foundational to, the range of reliant economic activities that depend on healthy watersheds, whether for growing food, generating hydropower, operating mines, managing forests, or supporting BC's world-renowned recreation and tourism opportunities.

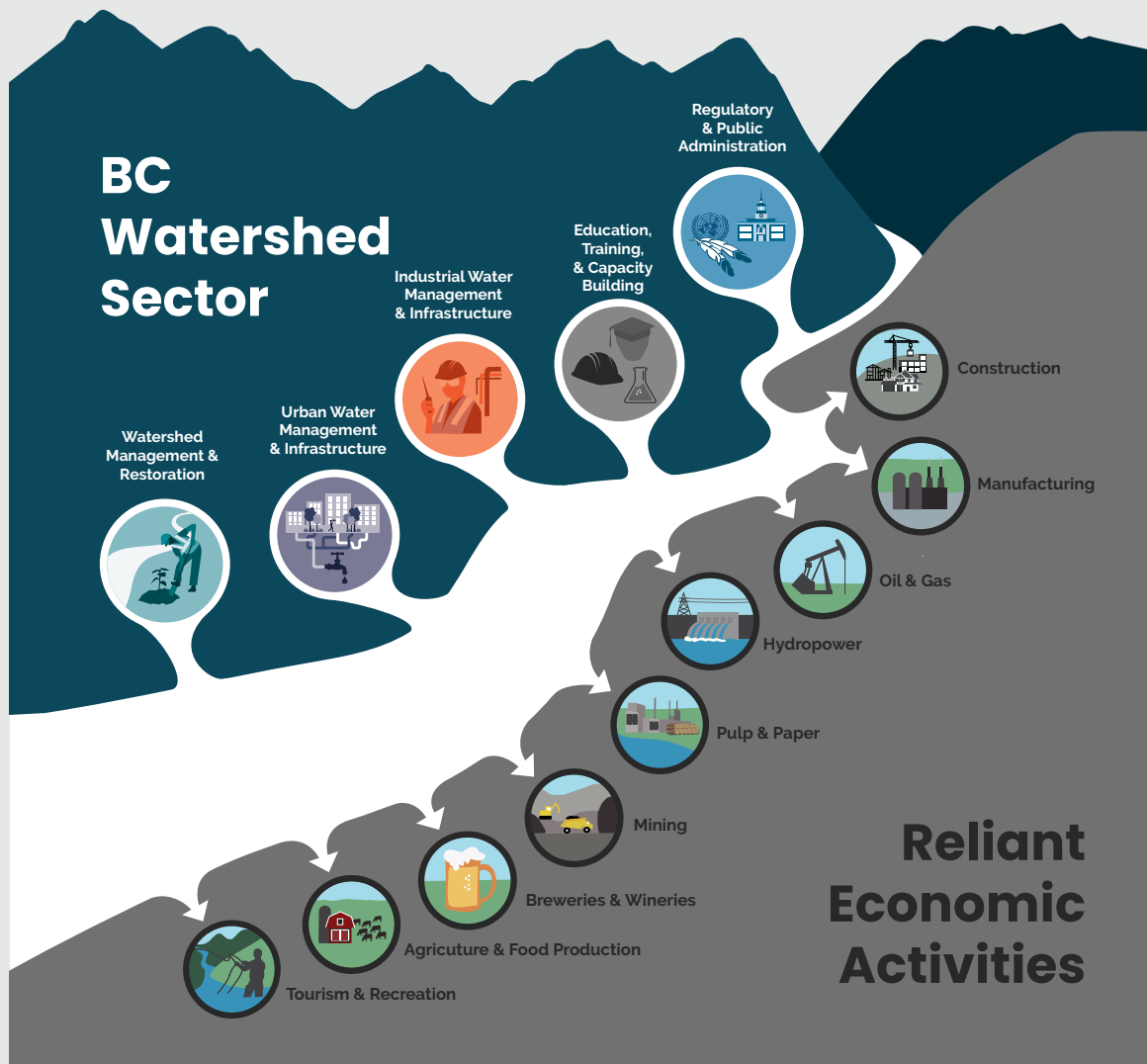


Figure 1: BC's Watershed Sector helps maintain and restore healthy watersheds, which in turn support diverse economic activities in the province

1.2 Approach and Project Process

The objective for this research was to develop an understanding and profile of the current economic and employment contribution of BC's watershed sector and its potential for growth. With the help of partners and a project advisory group, the project team:

- defined the scope of the watershed sector in BC;
- assessed the current economic impact of the sector;
- conducted Indigenous-focused research and engagement;
- estimated the growth potential of the sector; and,
- developed this summary report.

These activities involved a mix of secondary research, key informant interviews, surveys, and advisory group meetings to bring together a wide range of expertise. The supporting Appendices (provided in a separate document) provide further details on the methods and data.

A Note About Project Scope

This report quantifies the watershed sector: those jobs and activities that help sustain clean water and functioning watersheds. It does *not* attempt to quantify:

- the scope of BC's water-dependent industries;
- the economic losses *avoided* by investing in watershed health, mitigation, and nature-based solutions (e.g., costs associated with built infrastructure and disaster response and recovery);²
- the value of healthy watersheds and nature; or,
- the impacts of watershed use and damage on Indigenous cultural, economic, and social health and well-being.



2. The Surprising Scale of British Columbia's Existing Watershed Sector

2.1 Overview

This section describes BC's existing watershed sector, drawing primarily in 2019 data. It quantifies **direct, indirect, and induced jobs and GDP** (see Figure 2 below) for the watershed sector as a whole and for each of the identified five sub-sectors:



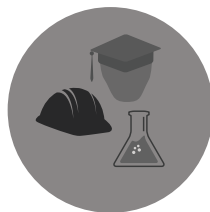
Watershed Management & Restoration



Urban Water Management & Infrastructure



Industrial Water Management & Infrastructure



Education, Training, & Capacity Building



Regulatory & Public Administration

See Appendices for further details on methodology and supporting data.

Direct, Indirect, and Induced Effects

Direct effects are the results of the initial spending in the sector.

Indirect effects are the results of business-to-business transactions indirectly caused by the direct effects. The positive impacts increase if investments flow to the *local* supply chain of goods and services. For instance, for a salmon habitat restoration project, indirect effects may include: sales from a local native plant nursery; supplies purchased at a local wholesaler of building materials and landscaping supplies; equipment rental for a specialized excavator; and repair and maintenance services for tools and equipment.³

Induced effects are the results of increased personal income caused by the direct and indirect effects. This measure reflects the change in household to business economic activity.

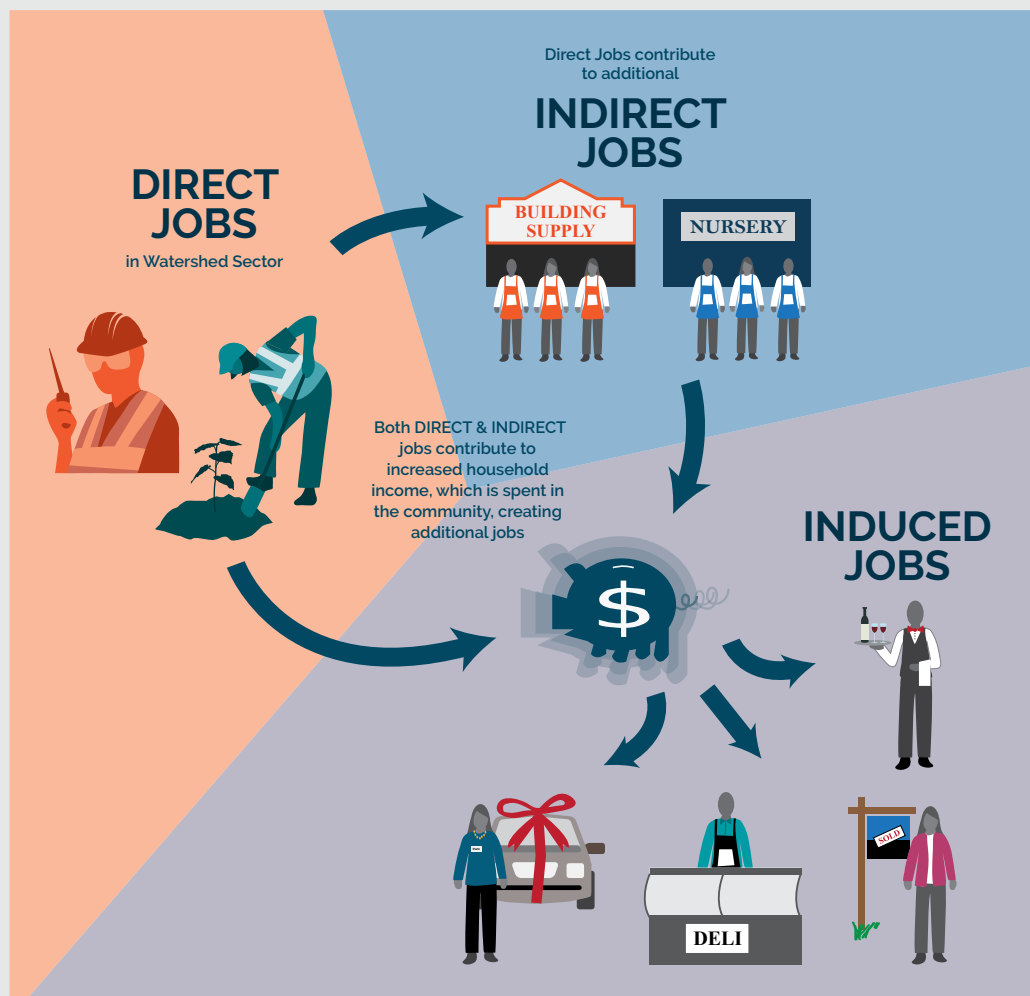


Figure 2: Direct, Indirect, and Induced Effects

2.2 The Overall Sector is Significant

To our knowledge, BC's watershed sector has never been quantified. The results of this research reveal a surprisingly large employment and economic sector.

In 2019, the watershed sector is estimated to have directly employed **27,200** people, more broadly supported jobs for **47,900⁴** British Columbians, and contributed an estimated **\$5 billion⁵** to the province's GDP.

BC's Overall Watershed Sector and Subsectors

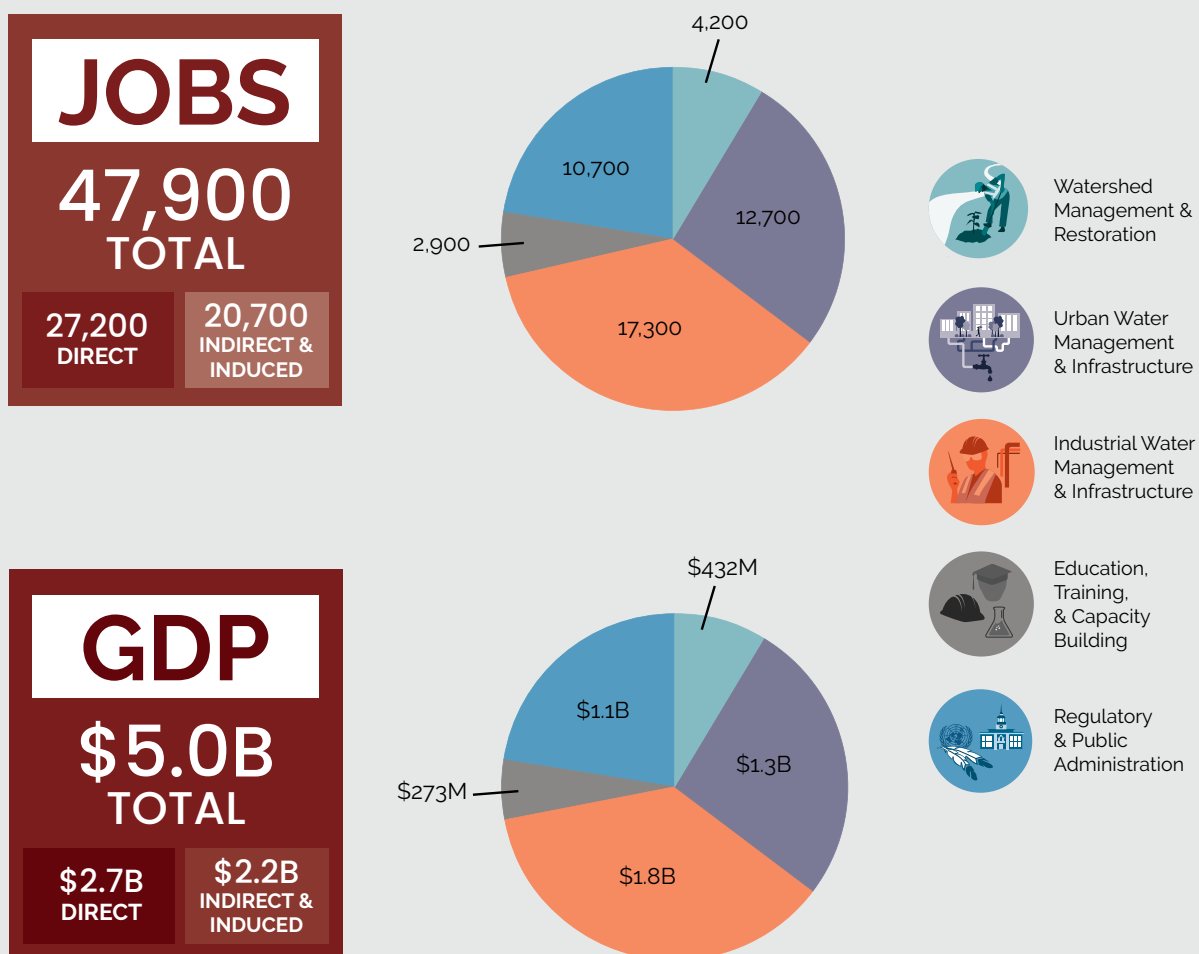


Figure 3: Total jobs and GDP for the watershed sector as a whole

Precise comparisons to other sectors are not included since methods to quantify employment vary. However, estimates show the watershed sector generates more jobs and GDP than agriculture⁶ (24,700 direct jobs; \$1.8 billion in GDP)⁷ and supports a similar level of employment as mining and oil and gas (26,500 direct jobs).⁸

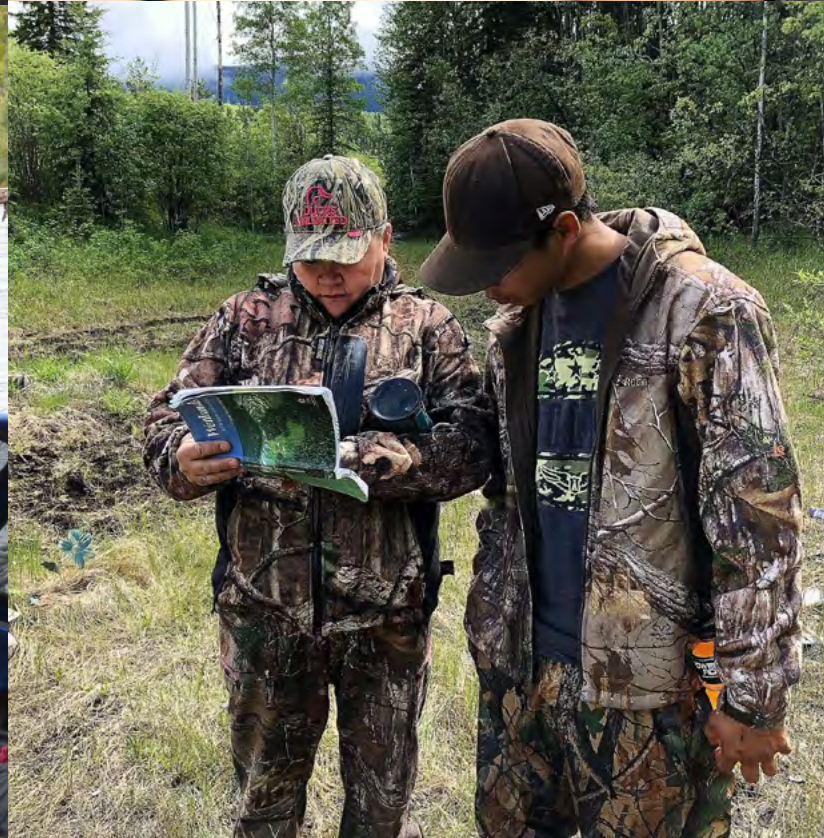
While this research did not quantify the extent of BC's water-dependent industries, a high-level scan signals how vital water is to BC's entire economy. For instance:

- Water is an essential aspect of the tourism equation: BC's abundant lakes, rivers, and streams are a large part of its 'supernatural' draw. In 2018, tourism contributed \$8.3 billion to BC's GDP, with 161,500 people employed in tourism-related businesses.⁹
- Growing food is simply not possible without clean and abundant fresh water. In 2019, agriculture generated 24,700 jobs and contributed \$1.8 billion in GDP.
- Fresh water is a vital ingredient fueling BC's booming high-value speciality beverage industries, such as wineries, distilleries, and craft breweries. Craft beer, for example, saw sales triple between 2013-17.¹⁰

*In 2019, the watershed sector is estimated to have directly employed **27,200** people, more broadly supported jobs for **47,900** British Columbians, and contributed an estimated **\$5 billion** to the province's GDP.*

The watershed sector supports a diverse spectrum of jobs: from entry-level to skilled; seasonal to permanent; technical to policy; and urban to rural. Whether it's a restoration worker replanting native wetland species, a planner developing an urban water conservation strategy, a laborer installing stormwater infrastructure, or a software engineer designing new water monitoring technology, the sector supports British Columbians at all career stages and specialization levels.



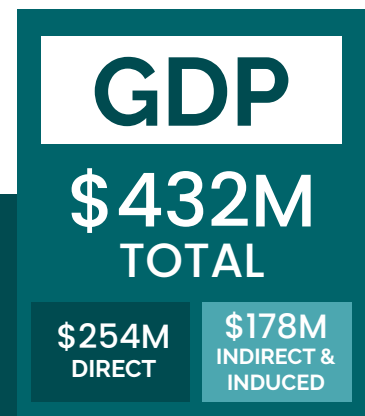


2.3 Watershed Sector Profiles





Water Management & Restoration



Who is Hiring?

Main industries and employers in this subsector include:

- Indigenous nations
- Stewardship groups
- Engineering firms
- Environmental consulting services
- Landscape services

Water Management & Restoration



The Watershed Management and Restoration subsector broadly encompasses activities that protect and restore healthy functioning ecosystems. This is the 'boots in streams' work of invasive species management, ecological restoration, and fisheries conservation. It is a diverse field: from Conservation Officers monitoring boats for invasive zebra mussels; to fisheries technicians revegetating eroding river banks; to heavy machinery operators restoring habitat structure in salmon spawning streams.

The jobs tally and GDP for this subsector only tell part of the story. They do not account for the countless hours that British Columbians provide in kind to streamkeepers and community organizations in service of restoring their home watersheds.¹¹ Nor do the numbers quantify the substantial economic savings from this type of work (e.g., for every \$1 invested in flood mitigation efforts, an estimated \$7 to \$10 is saved in post-disaster recovery costs).¹²

Watershed Management and Restoration is already a thriving sector in BC. Provincial funding can help 'mainstream' and further leverage the work that is currently community volunteered or sporadic in nature, provide jobs with a low barrier to entry that can lead to higher-skilled environmental careers, and reap significant returns on investment.

Sector Spotlight:

Hospitality Layoffs to Wetlands Workforce, An Early Stimulus Success Story

The BC Wildlife Federation is one of the recipients of provincial stimulus funding (\$5 million) for its "Wetlands Workforce" initiative. This project will employ an estimated 104 people and has already hired workers from the hospitality and tourism sectors. In collaboration with other conservation organizations and Indigenous nations, this project is deploying work pods to plant vegetation to stabilize wetland shorelines and create habitat for fish and wildlife.

This project—and the 60 other initiatives funded through the Healthy Watersheds Initiative¹³— illustrates the many opportunities within the Watershed Management and Restoration sector to support career transitions and create new employment opportunities for sectors and communities hard-hit by COVID-19 economic impacts and resource industry downturns.

Urban Water Management & Infrastructure

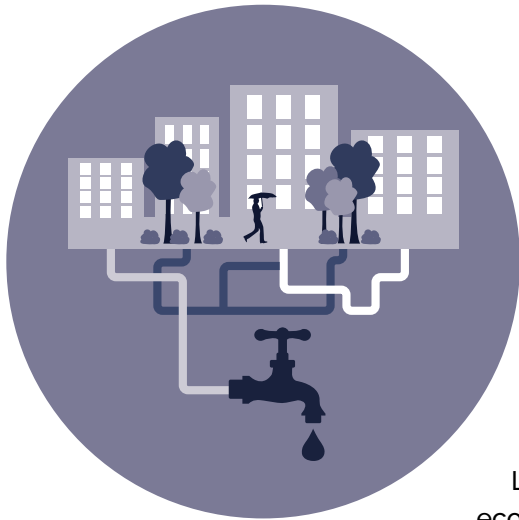


Who is Hiring?



Main industries and employers in this subsector include:

- Local governments
- Indigenous nations
- Water and sewer line-related construction
- Engineering and environmental consulting services
- Other scientific and technical consulting services



Urban Water Management & Infrastructure

The Urban Water Management and Infrastructure subsector includes jobs related to natural asset management and drinking water and wastewater management and infrastructure. Typical activities include maintenance workers servicing water mains, engineers designing state-of-the-art wastewater treatment plants, and site preparation contractors developing constructed wetlands for stormwater management.

Like the Watershed Restoration subsector, the economic figures for Urban Water Management and Infrastructure only partially capture the sector's value and potential. The numbers do not include the value of natural assets, such as wetlands and aquifers, which provide essential services at a fraction of the cost of engineered infrastructure solutions.

Local governments across the province are increasingly incorporating natural assets into asset management planning.¹⁴ This is a burgeoning field in BC with potential for significant job growth in a range of occupations and career paths, including accounting, data science and collection, planning, engagement, and education.

Sector Spotlight:

Safeguarding Natural Capital & Cost Savings

The Town of Gibsons uses natural settling ponds to manage storm runoff and create multiple co-benefits. Without these ponds, flooding would occur, requiring costly stormwater infrastructure.¹⁵ In 2020, Gibsons received funding to build an additional pond, which will bolster flood control, increase outdoor recreation spaces, and replant species culturally significant to the Skwxwu7mesh Nation.

A \$1 million investment in natural assets enables the Town of Gibsons to avoid a \$4 million built infrastructure price-tag: proof of the value and cost savings of a natural asset approach.

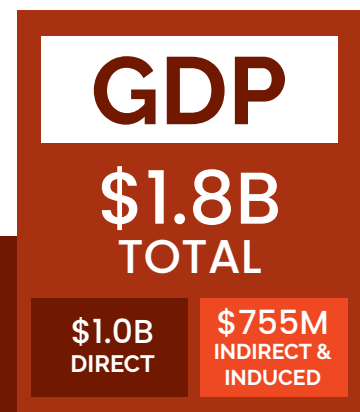
Recent built infrastructure solutions also demonstrate employment and innovation opportunities. More than 650 people worked on constructing the Victoria McLoughlin Point Wastewater Treatment Plant. A new residuals treatment facility will convert leftover sludge into biosolids that will fuel a cement plant and reduce reliance on fossil fuels.¹⁶

Urban water infrastructure projects generate significant employment and can achieve multiple gains alongside improved water management, including climate mitigation.

Industrial Water Management & Infrastructure



Who is Hiring?



Main industries and employers in this subsector include:

- Private sector resource companies
- Silviculture and support activities for forestry
- Engineering and environmental consulting services
- Other scientific and technical consulting services
- Industrial design and watertech development



Industrial Water Management & Infrastructure

Industrial Water Management and Infrastructure, currently the largest watershed subsector, encompasses activities by industry actors (e.g., forestry, mining, oil and gas, hydroelectric power, and agriculture) to mitigate impacts on water quality and quantity, meet regulated standards, and maintain watershed health. These activities are critical to achieve the dual goals of healthy watersheds and sustainable economic growth.

In the forestry context, for instance, the sector includes jobs replanting cutblocks and decommissioning and rehabilitating roads. In the mining sector, it includes jobs developing and installing wastewater treatment technologies and conducting landscape-level restoration. In the hydroelectric sector, it includes jobs constructing infrastructure upgrades for fish passage.

Many opportunities exist for the provincial government to amplify private sector innovations, catalyze advances in water technologies, and generate employment—including through regulation that drives innovations and efficiencies, and financing for commercialization of water technologies.

Sector Spotlight:

Growth Potential for BC's Watertech

BC is already home to several successful watertech enterprises, leading research institutions, and companies. With its growing emphasis on freshwater security and proximity to international markets and western US tech hubs, BC is an attractive home for watertech companies wanting to locate or launch and grow.¹⁷

By addressing identified barriers to watertech growth (including capital for commercialization), and implementing catalyzing programs and reforms (e.g., technology sandbox programs), BC can accelerate innovation and position itself as an attractive hub for a growing suite of watertech companies.

Education, Training, & Capacity Building



JOBS

2,900
TOTAL

2,100
DIRECT

800
INDIRECT &
INDUCED

GDP

\$273M
TOTAL

\$186M
DIRECT

\$87M
INDIRECT &
INDUCED

Who is Hiring?

Main industries and employers in this subsector include:

- Training and educational institutions
- Non-profit organizations
- Philanthropic organizations



Education, Training, & Capacity Building

British Columbia has an active hub of world-class watershed education, training, and capacity-building institutions and programs.¹⁸ Colleges, universities, and trade schools are equipping the next generation of watershed leaders and workers in the fields of restoration, fish and wildlife, science, enforcement, civil engineering, law, and beyond.

British Columbia also has a flourishing non-profit and philanthropic sector focused on water and healthy watersheds, with dozens of leading organizations and university programs that provide vital research, capacity supports, advocacy, and expertise across the sector and to all levels of governments and communities.

Though relatively small in direct economic contribution, this subsector underpins the success of the entire watershed sector and is critical to driving innovation and new solutions. It trains the skilled workforce needed across the range of industries,¹⁹ provides research and practical solutions to pressing problems, builds public awareness and water literacy, and develops an increasingly sophisticated and professional water field. This is an area where additional provincial government investment will leverage and amplify existing philanthropic investments and yield substantial cross-cutting benefits.

Sector Spotlight:

First Nations Stewardship Technicians Training Program

This training program is a partnership between Coastal First Nations-Great Bear Initiative and Vancouver Island University. It provides Indigenous community members with applied skills and knowledge to work in the field of resource stewardship, blending cultural awareness and leadership courses with industry-certified technical courses in environmental monitoring and archeological inventory. It also provides university credit courses on compliance communications and park administration.²⁰ Program alumni are working in diverse positions including Coastal Guardian Watchmen, fisheries technicians, heritage surveyors, and environmental monitors.²¹

Regulatory & Public Administration



JOBS

10,700
TOTAL

5,800
DIRECT

4,900
INDIRECT &
INDUCED

GDP

\$1.1B
TOTAL

\$651M
DIRECT

\$495M
INDIRECT &
INDUCED

Who is Hiring?

Main industries and employers in this subsector include:

- Federal government
- Indigenous nations and organizations
- Provincial government
- Local governments (municipal and regional)

Regulatory & Public Administration



This sector includes watershed-related jobs in federal, provincial and local governments, and in Indigenous nations and organizations. Each of these authorities has responsibilities for different aspects of watershed management and decision making. From land use planning and permitting, to regulating instream water use, to fisheries, policy development, and compliance and enforcement, the public sector is essential in governing and maintaining healthy watersheds.

Many opportunities exist to strengthen the public sector's role in advancing watershed security and to support new positions and competencies across all levels of government.

For instance, within the provincial government, bolstering the number of staff working in land use and water planning, compliance and enforcement, watershed science, and supporting governance tables will be critical to realizing success on commitments to watershed security, land use planning, reconciliation, and UNDRIP implementation. Local governments like the Regional District of Nanaimo demonstrate what is possible with strengthened local capacity for watershed programs, including hiring staff, achieving significant funding leverage,²² developing cutting-edge watershed science, reducing water consumption, building watershed security, and increasing public engagement.

The Spotlight box on the following page, highlights opportunities for supporting Indigenous-led initiatives, self-determination, and employment in the watershed sector, with an emphasis on addressing barriers in provincial and federal funding programs.



Sector Spotlight:

Addressing Funding Barriers to Indigenous-led Initiatives and Employment

Opportunity: Indigenous nations are at the leading edge of watershed governance, stewardship, and management in their territories: implementing watershed plans; revitalizing Indigenous laws and governance systems; and restoring fish habitat are just a few examples of the diverse activities underway. With the growth in Indigenomics and the national \$100 billion Indigenous economic agenda,²³ a significant opportunity exists to support Indigenous-led initiatives, economic activity, and employment opportunities across the watershed sector.

Current Funding Barriers: While there is significant opportunity, Indigenous nations continue to experience ongoing resourcing inequities and barriers to employment and trainings.²⁴ A number of fundamental issues with provincial and federal funding programs need to be addressed to fulfil commitments to Indigenous nation-building and self-determination, and to support the conditions for long-term employment. For instance:

- Short-term, intermittent funding programs are often difficult for Indigenous nations to access and generate limited (and precarious) employment opportunities.
- Funding applications and reporting requirements are often unnecessarily challenging and time consuming.
- Communities often have to 'react' and shape their work to fit provincial and federal funding interests and criteria, which do not always align with community needs and goals or consider Indigenous Knowledge.
- Provincial and federal governments predetermine funding allocations without input or decisions by Indigenous nations.

Key Actions to Help Address Current Funding Barriers

- 1 Shift to stable, dedicated funding.** A critical shift is needed away from short-term, one-off funding programs to long-term, stable, and predictable resourcing. This can enable Indigenous nations to direct funds to where they are needed most and support long-term employment, governance, and programs in line with community goals, priorities, and desired relationships with land and water.
- 2 Provide wraparound supports.** Funding for job training needs to take a holistic approach to preparing participants for success. Many Indigenous community members may face barriers to participate in training, such as transportation, child-care, housing, or food security. Addressing these barriers is essential so trainees can fully engage in their education and be set up for success when entering the workforce. Funding programs should directly embed these types of supports (or coordinate with other programs to do so).

3. A Wave of Opportunity: Growth Potential for the Watershed Sector

3.1 Future Scenarios

BC's watershed sector is already a significant employer, putting tens of thousands of British Columbians to work each year in jobs and projects that directly contribute to watershed health. However, the demand for watershed solutions is outpacing the supply of current services from the sector.

Pressures on water and watersheds are greater than ever and will only increase in the coming decade. Actions to accelerate watershed sector growth and expand employment opportunities over the next 10 years will be essential to get ahead of growing watershed issues, create sustainable career pathways, and avoid exorbitant costs from water-related crises and disasters.

This section looks to the future and provides a forecast for the watershed sector's growth potential to 2030 under two scenarios:

1 Business-as Usual

A scenario based on historical trends and current activity.

2 Watershed Security Fund Investment

A stretch growth scenario based on the additional economic impact of a \$100 million/year Watershed Security Fund.

Forecasting Assumptions and Limitations

The forecasting draws on the approximate allocation of the Watershed Security Fund highlighted in a 2019 Position Paper²⁵ to estimate direct, indirect, and induced impacts.

The forecasting model contains the most relevant industry codes by subsector, many of which are used as a proxy for a longer list of relevant industries. As such, this is a representative but not comprehensive model of the watershed sector.

Population growth of 1% annually is factored into the growth rates of both scenarios, with the exception of the Watershed Management and Restoration and Industrial Water Management and Infrastructure subsectors. Population is factored into the growth of these subsectors with a 0.5 multiplier to account for less impact of BC's population growth on the activities in these subsectors.

The model is designed to estimate the impact of the Watershed Security Fund and does not include many other potential policies and investments that may impact the sector.

See detailed methodology in the report appendices.

Scenario 1: Business-as-Usual

In this scenario, activities in the watershed sector continue to grow along their historical trajectory. This includes rates of investment and project activity in the past 5-15 years, trends in post-secondary enrollment, and forecast growth rates for key occupations in the sector.

Under Business-as-Usual conditions, the watershed sector will add 7,400 new jobs²⁶ and contribute an additional \$767 million to BC's GDP by 2030. (See Figures 4 and 5 on page 26.)

Scenario 2: Watershed Security Fund Investment

The provincial government has established a clear mandate to "protect clean water, including through the creation of a Watershed Security Strategy and the associated Watershed Security Fund."²⁷

This commitment reflects the recommendation²⁸ from a broad base of BC water leaders for the provincial government to create a dedicated, sustainable funding source for watershed partnerships and local initiatives.

The Budget 2020²⁹ and 2021³⁰ Consultation Reports also provide clear direction to create such a Fund, recommending that the Province "Advance water sustainability in British Columbia by providing a dedicated, sustainable, annual funding source for First Nations, local government, local watershed protection agencies, and community partnerships."

The Watershed Security Fund, along with other policy changes, will be pivotal in supporting growth in the watershed sector, attracting other investments, and achieving BC's commitments to UNDRIP, reconciliation, rural economic recovery, and climate mitigation.

For this scenario, we calculated the projected growth of the watershed sector based on an expenditure of \$100 million annually for the next ten years through the Watershed Security Fund, or a total contribution of \$1 billion. The \$100 million/year fund investment over 10 years will create 13,000 more jobs³¹ and contribute \$1.3 billion more to provincial GDP³² by 2030 than under a business-as-usual scenario.

As a point of comparison, the cost of replacing the Pattulo Bridge over the Fraser River in the Lower Mainland is estimated to be \$1.4 billion. So for less cost than building one major bridge,³³ the provincial government can create a legacy of long-term employment and healthy watersheds throughout the province of British Columbia.

Based on the forecasted impact of the Watershed Security Fund, potential growth is greatest in the areas of watershed management and restoration, and in education, training, and capacity building (see Figures 6 and 7 below). This reflects the impacts of much-needed investment in watershed planning, Indigenous-led initiatives and partnerships, natural asset management, and monitoring and restoration. It also reflects capacity building in skills training, public education, and community-based initiatives supporting hundreds of volunteer-run projects and initiatives across the province.

Forecasted Economic Impact of BC's Watershed Sector

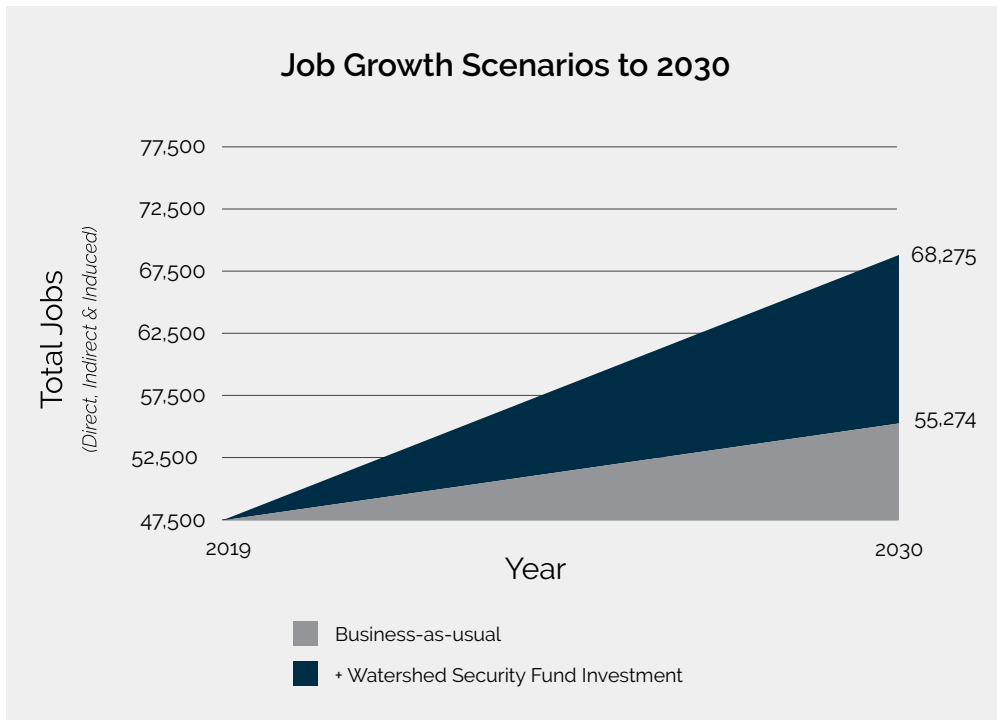


Figure 4:
Total projected job growth in the watershed sector to 2030

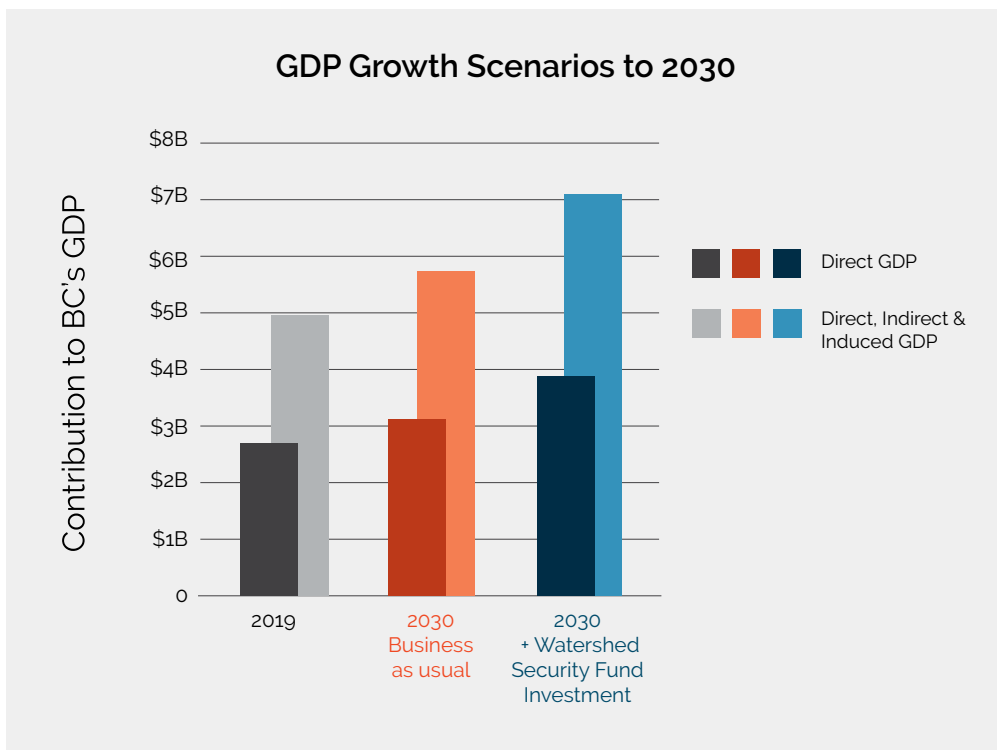


Figure 5:
Projected GDP growth in the watershed sector to 2030

Forecast for Individual Water Sectors

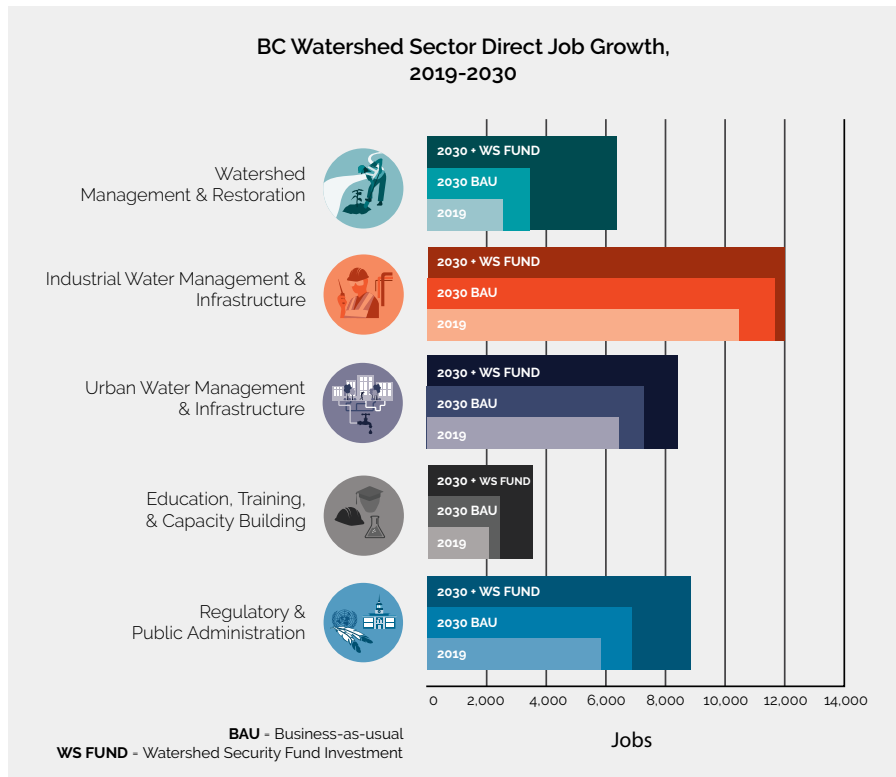


Figure 6:
Projected
Sub-sector Job
Growth to 2030

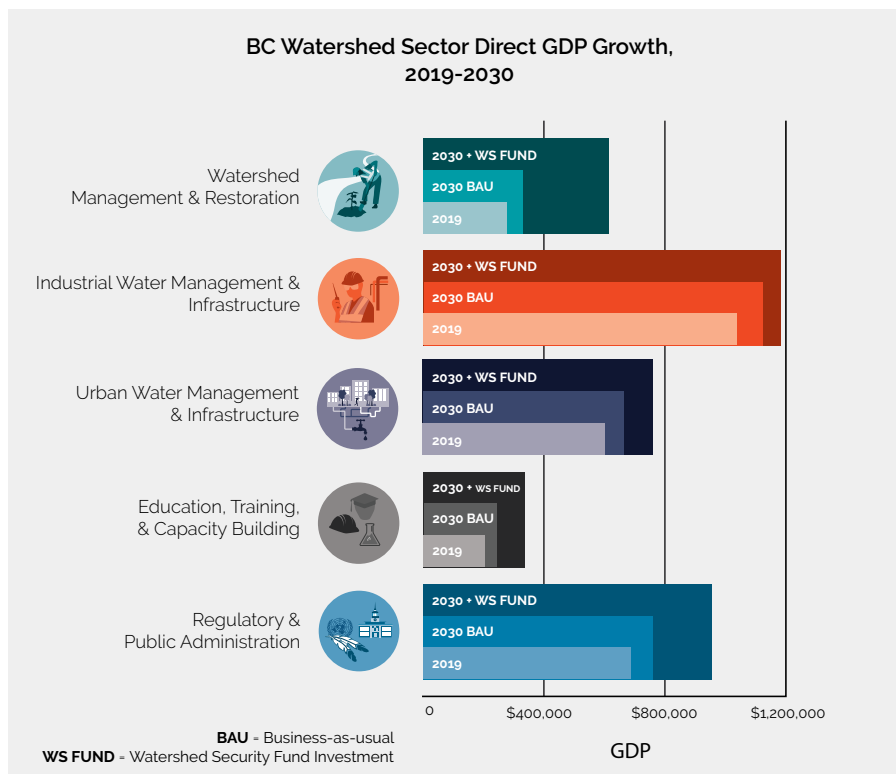


Figure 7:
Projected
Sub-sector GDP
Growth to 2030

The \$100 million/year fund investment over 10 years will create 13,000 more jobs and contribute \$1.3 billion more to provincial GDP by 2030 than under a business-as-usual scenario.



For less cost than building one major bridge, the provincial government can create a legacy of long-term employment and healthy watersheds throughout the province of British Columbia.



3.2 Leverage Opportunities

The Province is not the only agency with the power to support growth in the watershed sector. The Watershed Security Fund will play a key role in attracting other investments, including federal funding, private sector investments, and local government capacity and resources. For instance:

Private Sector: Greater private sector investment in clean water technologies and environmental stewardship can be catalyzed with the reduced risk and greater certainty that comes with government funding and policy commitments. The Fund can help accelerate the development and implementation of new technologies and practices, such as data management, IT and pollution abatement.

Federal Government: Multiple federal funding leverage opportunities are possible, including funding programs for nature, fish, Indigenous Guardians, and regional economic development.

Local Government: A handful of local governments have implemented their own sustainable funding mechanisms for watershed planning and management. However, others have expressed reluctance in implementing their own water and watershed funding mechanisms without a provincial government funding source.³⁴ The Watershed Security Fund can bridge this gap to create funding partnerships with local governments. Local governments that have developed watershed programs have proven very effective at leveraging additional funds from many different sources.

Additional Drivers of the Watershed Sector

While this research did not forecast the impact of other policy initiatives, many related provincial and federal programs will work alongside the Watershed Security Fund to drive employment and economic opportunities in the watershed sector in the next decade.³⁵

Maintaining healthy watersheds is also vital for BC to mitigate investor risks and remain attractive to corporations and global financial institutions. Investors are increasingly pushing corporations to measure and disclose water use and exposure to water risks, and the financial sector is now considering a wide range of business risks from nature loss, including water risks.³⁶

4. Conclusion: British Columbia's Opportunity To Grow A World-Class Watershed Sector

With its \$5 billion GDP contribution and 47,900 jobs, the watershed sector in BC is a significant driver of employment and economic activity in every corner of the province.

The sector is primed for further growth over the next decade as demand for watershed security solutions rises.

The Watershed Security Fund will be a critical catalyst to accelerate the sector's growth, leverage additional investments, and multiply impacts.

The forecasted benefits of a \$100 million/year Fund investment over the next decade are significant: approximately 13,000 more jobs and an increase of \$1.3 billion to provincial GDP.

With innovative design and implementation, the Fund will be a cornerstone of the Province's legacy in achieving economic recovery, supporting Indigenous economies and employment, and building a more prosperous future for all British Columbians.

When we work for our watersheds, our watersheds work for us.



5. References

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- 2 Across Canada, responding to and repairing the impacts of climate-related water disasters between 2000 and 2017 cost approximately \$28 billion. See: Global Water Futures et al. (2019). Water security for Canadians: solutions for Canada's emerging water crisis. https://gwfu.usask.ca/documents/meetings/water-security-for-canada/WaterSecurityForCanada_April-25-2019-2pg1.pdf
- 3 Nielsen-Pincus, M. & C. Moseley. (2010). Economic and employment impacts of forest and watershed restoration in Oregon. Ecosystem Workforce Program. <https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/10776/WP24.pdf?sequence=1>
- 4 27,200 direct jobs; 20,700 indirect and induced jobs
- 5 \$2.7 million direct GDP contribution; \$2.3 million indirect and induced GDP contribution
- 6 The agriculture sector includes primary production from farmers and ranchers; it does not include post-farm processing.
- 7 BC Ministry of Agriculture. (2020). Sector snapshot 2019: B.C. agriculture. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/statistics/industry-and-sector-profiles/sector-snapshots/sector_snapshot_2019_-_agriculture.pdf
- 8 Work BC. (2019). Mining and oil and gas extraction. <https://www.workbc.ca/labour-market-information/industry-information/industry-profiles/mining-and-oil-and-gas-extraction>
- 9 Destination British Columbia. (2019). 2018 Value of tourism: a snapshot of tourism in BC. https://www.destinationbc.ca/content/uploads/2020/03/2018-Value-of-Tourism_Feb-2020_Final.pdf
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- 11 Stable core funding for stewardship groups has a measurable effect on volunteer leverage. For instance, the Stewardship Works! pilot project found that with a small amount of core funding, 8 of 10 groups saw an increase in volunteers. See: Stewardship Center for British Columbia. (2012). Stewardship Works! A core funding program for stewardship and conservation organizations in British Columbia: Evaluation Report. https://stewardshipcentrebcc.ca/PDF_docs/SW/SW!_Summary_Report%20_Jan_11_2013.pdf
- 12 Public Safety Canada. (2019). Final Report: evaluation of the National Disaster Mitigation Program. <https://www.publicsafety.gc.ca/cnt/rsrscs/pblctns/vltn-ntnl-dsstr-mtgn-prgrm-2019/vltn-ntnl-dsstr-mtgn-prgrm-2019-en.pdf>
- 13 See list of funded projects here: <https://www.refbc.com/our-work/healthy-watersheds-initiative>. Another key example is the Kus-kus-sum project, which is dismantling a former sawmill site to its native estuary saltmarsh and forest, and creating 40 jobs. See: <https://www.mycampbellrivernow.com/54434/courtenays-kus-kus-sum-project-getting-funding-boost-from-province/>
- 14 See, for instance, the many case examples in the Municipal Natural Assets Initiative: <https://mnai.ca/pilot-communities/>
- 15 Town of Gibsons. (n.d.). White Tower Park Storm Water Ponds. <https://gibsons.ca/sustainability/natural-assets/white-tower-park-stormwater-ponds/>
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- 19 This training is particularly critical given forecasted estimates that 1 in 4 environmental professionals in Canada are set to retire in the next 10 years. See: <https://www.eco.ca/blog/nearly-1-in-4-environmental-professionals-are-set-to-retire-in-the-next-10-years/>
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- 21 Ministry of Indigenous Relations and Reconciliation. (2017). News Release: Stewardship training for a new generation. <https://news.gov.bc.ca/releases/2017ARR0008-000628>
- 22 This includes in-kind and financial contributions from more than 36 different entities. The project has saved an estimated in \$300,000 in new volunteer wells; invested more than \$535,000 in direct economic activity through rebates, and attracted a \$3 million Geological Survey of Canada investment for aquifer characterization. See Botelho, Z. & Morris, T. (2019). Case Studies: examining local government sustainable funding mechanisms in B.C. Watersheds BC. https://dad6ae4b-0a1b-46a7-927f-6ae8a681ea82.filesusr.com/ugd/470b79_23034065a8b842b7ae0a5dadabef0e2f.pdf
- 23 Indigenomics Institute. <http://indigenomicsinstitute.com/100-billion/>
- 24 In 2016, for instance, research by the First Nations Fisheries Council and Centre for Indigenous Environmental Resources revealed widespread challenges (financial, human, technical) for First Nations to engage in water governance, planning and management activities, with the majority of survey participants indicating an annual budget of less than \$30 000 to participate or engage in water governance, planning and management activities. See: https://www.fnfisheriescouncil.ca/wp-content/uploads/2015/09/BC-Systematic-Review-Project-Report_Sept-15-2016.pdf
- 25 See appendix in: BC Freshwater Legacy Initiative, BC Wildlife Federation, First Nations Fisheries Council & POLIS. (2019). A watershed security fund for BC: building resilience and advancing reconciliation. <https://poliswaterproject.org/polis-research-publication/a-watershed-security-fund-for-british-columbia-building-resilience-and-advancing-reconciliation/>
- 26 4,200 direct jobs, 3,200 indirect and induced jobs
- 27 See mandate letter for Minister of Environment and Climate Change Strategy: https://www2.gov.bc.ca/assets/gov/government/ministries-organizations/premier-cabinet-mlas/minister-letter/heyman_mandate_2020.pdf
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- 29 Select Standing Committee on Finance and Government Services. (2019). Report on the 2020 Budget Consultation. https://www.leg.bc.ca/content/CommitteeDocuments/41st-parliament/4th-session/fgs/reports/FGS_41-2-2_Budget-2020-Consultation-Report_2019-08-07.pdf
- 30 Select Standing Committee on Finance and Government Services. (2020). Report on the 2021 Budget Consultation. https://www.leg.bc.ca/content/CommitteeDocuments/41st-parliament/5th-session/fgs/Reports/Budget%202021%20Consultation%20Report_Volume%201.pdf
- 31 7,600 direct jobs, 5,400 indirect and induced jobs
- 32 \$758 million direct GDP contribution, \$542 million indirect and induced GDP contribution
- 33 The estimated project cost of the Pallulo bridge is \$1.4 billion <https://www.partnershipsbc.ca/projects/projects-under-construction/pattullo-bridge-replacement-project/>
- 34 Botelho, Z. & Morris, T. (2019). Lessons Learned: the sustainable funding for watershed governance initiative. Watersheds BC. https://dad6ae4b-0a1b-46a7-927f-6ae8a681ea82.filesusr.com/ugd/470b79_18a3144f97944df29f3d30b98d636cf2.pdf
- 35 This includes the suite of initiatives under CleanBC and the Climate Adaption and Preparedness Strategy, commitments to UNDRIP and DRIPA, implementation of the Mining Task Force recommendations regarding Indigenous stewardship and monitoring initiatives, and the Growing Canada's Forests Program commitment to plan 2 billion trees across Canada by 2030.
- 36 Taskforce on Nature-Related Financial Disasters. (n.d.) Why as taskforce is needed. <https://tnfd.info/why-a-task-force-is-needed/>

Photo Credits

Forest Ministry staff and the BCWF Wetlands Education Program field training for Forest and Range Evaluation Program, Fort St James, B.C. June 2018. Pg. iv. Photo by BCWF Wetlands Education Program.

Wood Frog. Pg. 4. Photo credit BCWF Wetlands Education Program.

Khaylish Fraser, Aquatics Program Coordinator of the Central Kootenay Invasive Species Society at a map our marshes Workshop in Salmo, B.C. Pg. 9 (Top). Photo credit BCWF Wetlands Education Program

Wetlands Institute 2019 at King George V1 Provincial Park near Rossland, B.C. Pg. 9 (Bottom left). Photo credit: BCWF Wetlands Education Program.

Fisheries staff collect baseline inventory throughout Haisla territory on species including salmon, eulachon, and crab. Pg. 9 (Bottom right). Photo by Mike Jacobs, Haisla Fisheries Commission. Courtesy Coast Funds.

The sector supports diverse career in urban water management and infrastructure. Pg.10 (Top left). Photo credit iStock.com

Watertech research and development is a growing field in BC. Pg. 10 (Top right). Photo credit pexels.com

COS Cam Hill - Conservation Officer by BC Government. Pg. 10 (Middle left). Photos is licensed under CC BY-NC-ND

Kwadacha Nation Wetland Training 2019 Pg. 10 (Middle right). Photo credit: BCWF Wetlands Education Program

BC Parks Student Rangers, part of a program that provides young adults skills and knowledge that can be applied towards future employment in the fields of conservation, recreation and community engagement. Pg. 10 (Bottom left). Credit: Province of British Columbia - <https://www.flickr.com/photos/bcgovphotos/31084036538/in/album-72157686374290736/>

Celebrating the official opening of the Centre of Excellence in Sustainability at the Nicola Valley Institute of Technology. Credit Province of British Columbia. Pg. 10 (Bottom right). <https://www.flickr.com/photos/bcgovphotos/44791520061/in/photolist-2bf5fpg-2Wwg4-2Wwg3-2Wwg5-2WFew-2WFet-MubBxH-2WFeu-7tgyAr-25sdiEA-njQx7H-22L4ssY-2WE8P-nhN5Fo-Ab8gHt-2bf5eCM-nqiVu7-DCg7Eg-ovy8gk-oeky7T-ovJPdD-2a6ZVPt-oway13-xi1iFu-2j3mi1G-nXyeEV-qLGgWU-ouvnex-MubyeD-MubwD4-nf7qbG-oeAuom-owrx6z-qrUab2-LMQpFb-qLGgnC-zSCPdE-2WFer-2WE8L-qLPXgZ-wgztwy-zSABHw-r4aVqy-Ag2Rss-r1Xxpg-A7UCXS-AbaR7P-AadoYv-AbbjKp-zdjBFk>

Haisla Fisheries staff operate a beach seine while monitoring and enumerating marine species. Pg. 21. Photo by Mike Jacobs, Haisla Fisheries Commission. Courtesy Coast Funds.

2019 Earl Ranch planting event, 8.8 hectare wetland restoration near Newgate, B.C. Pg. 28. Photo credit BCWF Wetland Education Department.

Pattulo Bridge. Pg 29. Province of BC

