

# **Food and Water Security Course Module 3: Climate Change and Food Security in the Future**

## **What is Climate Change and how does it affect local food security? Video Transcript**

I am going to talk a little bit about my own research in the Creston Valley of B.C. conducted in 2016 where I studied food security and food sovereignty during the renegotiation of the Columbia River Treaty which governs the flows of the Kootenay river on the Creston Valley Floodplain. This case study elucidates the impending climatic events that will add further stressors to food security in B.C. and indeed the World.

The Intergovernmental Panel on Climate Change (IPCC 2019) states that:

Destruction of forests for the purposes of industrial agriculture contribute to desertification which ultimately speeds climate change. Caught in a negative feedback loop, urbanization is the largest contributing factor to land degradation and desertification exacerbates climate change (Canadians for a Sustainable Society 2019; IPCC 2019b; Qualman 2019; Shiva 2002a).

While a generally ample supply of water bodes well for industrial farm production for Valley bottom farmers, in any given year, climate change induced drought can threaten the livelihoods of benchland and small market farmers. Undeniably, devastating environmental impacts are calamitous to ecosystem function, and ongoing expansionary tendencies and capital accumulation of hydro wealth continue to subordinate Indigenous People' and local food producers decision-making powers (Peery 2012).

The destruction of land and water systems in the Creston Valley due to dams on the Kootenay and Columbia Rivers is also compounded by diminishing glacial snow packs which supply the Kootenay River and the many other local creeks, rivers, and aquifers (Heikkila and Gerlak 2012). Decreased water supply due to global warming will undoubtedly force governments to become much more competitive in their negotiation for scarce water resources (Cosens 2012; Nolin et al. 2012, Postel 2001).

It is now estimated that by 2050, four billion people will experience chronic shortage of water because of population growth and per capita consumption (Evans 2009:7). Although population growth has slightly abated since the 1960s, world population is expected to peak at roughly ten billion people by the year 2200, increasing the number of people dependent on rapacious 'Western' diets rich in meat and dairy agriculture which depend in turn on animal feed crops and ultimately water (Evans 2009:8). These perilous circumstances will invariably impede the safety and viability of agricultural food production which currently accounts for 70 percent of global fresh-water use (Evans 2009:7). Canada will also not be spared the effects of global warming on food shortages and price shocks if climate change is not immediately addressed (UNIPCC 2019a, b).



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My study is particularly concerned with finding alternative food security policies and practices in the face of how unpredictable climate change will inevitably have a significant impact on agriculture in irrigation-dependent regions such as the Creston Valley where water is expected to decline because of growing water scarcities (Rajagopalan et al. 2018). Climate scientists are predicting further melting of glaciers will increase changes in weather and flood patterns (Nolin et al. 2012) creating erratic weather events that inarguably affect local agricultural production for farmers, First Nations, and other groups. Unless more inclusive and people centred agricultural policies and practices are designed and implemented, unpredictable flooding of the Valley bottom will continue to erode the fragile integrity of the Valley dike system and create a precarious situation for floodplain inhabitants and farmers. Ultimately, farmers will bear the negative consequences of state and local decisions, thus making their traditional systems of growing food an economic burden rather than a source of abundance and an opportunity for genuine food security for the Creston Valley.

The Creston Valley Food Action Coalition (CVFAC), a non-profit organization, as well as a network of local food producers, agricultural agencies and concerned citizens are “working to create awareness of how we can better feed ourselves through local resources in a sustainable, healthy, secure and environmentally sound way” (Creston Valley Food Action Coalition 2018). A large number of small farms exist in the Valley, and, arguably, many of them contribute to food security in the Creston Valley and the East Kootenays. Most of the food sold at the Saturday morning Farmers’ Market, along with farm-gate sales and shipments going to Nelson, B.C., a Central Kootenay hub for locally produced food, provide a sustainable solution to the ongoing degradation of soils, climate change, deteriorating infrastructure, and burgeoning food prices.

In 2006, 77 percent of B.C. farms were less than ten acres, and organic farms comprised 16 percent of B.C. agriculture, the most significant percentage of any province in Canada (Morton 2008) as analyzed by Wittman and Barbolet (2011). The rising demand for local and organic food is supported by neighborhood associations and several innovative municipal and provincial production initiatives who view food as inescapably linked to climate change, energy, and health and nutrition providing the impetus for food sovereignty conversations to take place (Wittman and Barbolet 2011).

As climate change exerts its devastating effects on B.C. food production, the import and export systems must also be addressed. In other words, we can no longer be so cavalier in our attitudes towards food security and food sovereignty when food production is being severely affected by calamitous, long term climate change, imported foods, and trade agreements and water treaties that are renegotiated at the behest of global nations and economies that do not take food security into consideration.

In the case of British Columbia, as Wittman and Barbolet (2011) explain, the agricultural land base is sufficient to allow for a transition to a sustainable food procurement system that could conserve ecological integrity while guaranteeing food security. The traditional knowledge



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of farmers combined with modern scientific applications, and support from NGOs, government, and educational agencies, can augment food security while conserving precious land and water resources, agrobiodiversity, and soil and water conservation.

Transforming conventional agriculture by transitioning to new sustainable food systems would decrease reliance on fossil fuels and petrochemical inputs, develop an agricultural production system that is capable of and resilient to future climatic flooding and drought while also adapting to climate change (Alemu et al. 2017; Gyander et al. 2017; Little et al. 2017), and encourage local forms of agricultural livelihood. This transition would not only revitalize rural communities but could also meet the region's food needs during unpredictable food price increases, growing populations, and climate change. These transitions will require considerable structural changes, technological innovations, and cooperation amongst farmers in any given region

Some of the farmers in the Creston Valley shared their concerns for farming. They said that Unprecedented changes in landscapes have also affected climate change and food security. Two farmers who live on the hillside commented on deforestation. CG12 talked about the forest fires in 2012. They stated that: “The forest fires really messed everything up. It was so smoky here. There was not enough light coming through for the crops.” They also stated that they can hear the logging trucks right above the hill behind their small farm night and day which in turn causes more deforestation, runoff, erosion, and wind. Although not well established, the link between deforestation and food insecurity can be made”. Logging is increasingly understood as a significant contribution to the food crisis as it degrades land that could otherwise be made food productive. The logging industry is also highly dependent on income from exported timber, lacks enforcement, and is known for weak regulation. The lack of trees also contributes to wind erosion, which decreases valuable soils for food production (Oldeman et al. 1991).

Land degradation, deforestation, soil erosion, climate change induced flooding due to global warming, pollution, and loss of biodiversity pose immediate threats to food security in the Creston Valley. Vague assumptions regarding the effects of catastrophic global climate change do not address the on-ground realities of flooding for Creston Valley food producers who in 2017 experienced floods worse than those in 2012. The symbiotic relationship between earth, the environment, and food security remains fractured and unsustainable under current food producing conditions.

Adopting strategies such as agroecological and permaculture principles which include a diversification of sustainable production systems including less water-intensive farming is therefore critical, urgent, and imperative during global warming induced climate change. Most of the small market gardeners practice some form of resilient farm systems compared to their industrial cohort.



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