



A Natural Step Case Study

Saskatchewan Flax Development
Commission (SaskFlax)



GROWING SUSTAINABILITY IN THE PRAIRIES

BACKGROUND

The Saskatchewan Flax Development Commission (SaskFlax) is a producer organization that represents more than 15,000 flax producers in Saskatchewan. The Commission invests in research, advocacy, communications, and market development activities to improve flax management, increase farmers' revenue, and further develop the flax industry in the province.

Farmers pay a mandatory but refundable fee for each tonne of seed and straw they sell, which gives them the right to participate in elections to the SaskFlax board, stand for election as a director, and bring forward resolutions. The organization is governed by a six-member board of directors and has an annual operating budget of \$500,000.

Flax was introduced to North America 400 years ago, and it became the first oilseed to be widely grown in Western Canada. Today, Canada is the world's largest producer of oilseed flax, representing about 40% of global production. Other major flax seed producers include China, the United States, India, Germany, the United Kingdom, and France. Saskatchewan produces over 70% of Canada's flax seed, with one in every four farms in Saskatchewan cultivating flax as part of their crop rotation.

Although most flax grown in China and India is consumed locally, North American flax seed has long been exported to Europe where the oil has been used primarily as an industrial stock (used in linoleum flooring and oil-based coatings) and the meal for animal feed. Over the past decade, North Americans have greatly increased their consumption of flax seed largely because of its high fibre and omega-3 fatty acid content.

In 2009, SaskFlax completed a visioning exercise with The Natural Step Canada that helped the organization formally incorporate sustainability into their day-to-day decisions and long-term planning.

Flax straw contains strong, light-weight bast fibres and shive material, both of which can be transformed into higher-value products. Recognizing the opportunity to market both the seed and the straw, SaskFlax is supporting the development of new breed varieties and crop harvesting techniques. They are also helping to develop new technologies to efficiently separate the straw into high-value bast fibres and shives to be used in fibre-based products, such as green building materials, insulation, and plastic composites. By moving toward utilizing the entire flax plant, SaskFlax is aiming to derive more value from its crop, reduce straw waste, and increase the market potential of flax seed and straw in Canada.



BAST FIBRES: The plant fibre collected from the inner bark or skin surrounding the stem of the flax plant.

SHIVE MATERIAL: When flax fibres are extracted from flax straw, the non-fibre parts of the stem, not including the seed, are normally referred to as shives. In oilseed flax, shives make up from 70 to 85% of the total straw weight and in fibre flax varieties the shives make up from 50 to 75% of the total straw weight.

Saskatchewan Flax Development Commission (SaskFlax)

FOCUS ON SUSTAINABILITY

Over the last century, flax oil has experienced major shifts in demand. In the 1950s, technological developments of petroleum-based floor coverings reduced the demand for linoleum. However, by the late 1990s, interest in environmentally-safer and -healthier products led to a resurgence in demand for non-allergenic and biodegradable linoleum made with flax oil (linseed oil), particularly in Europe.

In December 2006, Agriculture and Agri-Food Canada announced the Agricultural Bioproducts Innovation Program, a \$145 million initiative aimed at supporting research to advance Canadian bio-based economies. The program funds nine research and development networks including the Natural Fibres for the Green Economy Network (NAFGEN).

One of NAFGEN's seven platforms is to develop sustainable bio-based systems in Canada. Maria Wellisch, Research Advisor for the Sustainable Conversion of Bioresources at Natural Resources Canada, approached SaskFlax to ask if the organization would be interested in piloting The Natural Step Framework as a process to develop a vision for a sustainable flax industry.

“I had worked with The Natural Step before. I believed it could be a really powerful tool for developing new, sustainable value chains based on agricultural crops, but I had to show that it could work for an agro-industrial application first. The approach had to be relatively straightforward—one that could be applied within a very short time frame and within a limited budget. Backcasting from fundamental sustainability principles—the core concept of The Natural Step Framework—provided a common starting point people could use to discuss the sustainable design of the whole flax value chain.”

MARIA WELLISCH
RESEARCH ADVISOR, SUSTAINABLE CONVERSION OF
BIORESOURCES, NATURAL RESOURCES CANADA

SaskFlax has been working on the concept of complete plant utilization since the organization's inception. The tough straw is difficult to handle, especially when it is still green. Work on finding alternatives to burning was therefore a priority of the Commission. Given the industry's needs of diversifying into newer markets and moving towards full plant utilization in an environmentally-sound way, SaskFlax Executive Director Linda Braun saw the sustainability initiative as a unique opportunity to showcase its work to date, improve the industry's resiliency, and position it for continued success.

Sustainability matters to farmers intuitively, Braun said. “Taking care of the land is the foundation of crop production. SaskFlax recognized that we could be a leader for these kinds of efforts in the industry.”

SaskFlax agreed to sponsor the project, and began by identifying key stakeholders to participate in the process. Braun recruited 17 people from all parts of the flax value chain, including farmers, members of the SaskFlax Board of Directors, processors, consumers, and provincial and federal government representatives.

“Linda has a lot of experience with the flax industry and really knew the people well,” Wellisch said. “We were looking for people who could commit the time, were open to new ideas, and were unafraid to state their opinion, while respecting those of others. That's absolutely what we found in this group.”

The project was entirely voluntary for the stakeholders, with each participant contributing between seven and eight days of their time in the first year.



Various forms of processed flax: whole, milled, oil, and capsules

Saskatchewan Flax Development Commission (SaskFlax)

THE NATURAL STEP TO A SUSTAINABLE VALUE CHAIN

The Natural Step provides a scientific definition of sustainable development based on four fundamental principles. These state that, in a sustainable society we will reduce and eventually eliminate our contribution to:



... the systematic accumulation of material from the earth's crust



... the systematic accumulation of substances produced by society



... the ongoing physical degradation of nature



... conditions that systematically undermine peoples' ability to meet their basic needs

Learn more about The Natural Step's principles for sustainability, by visiting: www.thenaturalstep.org/en/canada/our-approach.

In order to understand what sustainability looks like for a given organization, industry, or value chain, The Natural Step approach uses a method known as backcasting from sustainability principles. Essentially, this means beginning with the end in mind. We start by developing a vision of success where we are sustainable (defined as alignment with all four sustainability principles). We then take strategic steps to close the gap between the sustainability vision and our current reality, while maintaining flexibility and a good return on investment throughout the process.

An Industrial Technology Advisor with the Industrial Research Assistance Program of the National Research Council in Winnipeg, Allen Sturko was a member of the NAFGEN Steering Committee and one of the project participants.



Flax plant in bloom

"We often talk about forecasting and ask: 'If we keep doing what we do, how big can we be?' But we rarely ask what we want to be. When you think about this backcasting process, it really makes sense. We first have to agree about what our vision for the future is, and then decide how we will work towards that."

ALLEN STURKO

INDUSTRIAL TECHNOLOGY ADVISOR, INDUSTRIAL RESEARCH ASSISTANCE PROGRAM, NATIONAL RESEARCH COUNCIL

BUILDING AWARENESS

At the outset of the SaskFlax Sustainability Visioning Project, each of the 17 participants was interviewed to help facilitators gain insight into the diverse perspectives and levels of knowledge about sustainability within the group. This also helped the facilitators gain a better understanding of the history of the flax industry and how it wants to evolve.

To build a shared language for sustainability, all participants completed an eLearning course on sustainability and The Natural Step Framework. This was accompanied by four dialogue sessions held via teleconference in early 2009 to help participants deepen their understanding of the key concepts in the eLearning course. Compared with in-person meetings, this minimized the program's carbon footprint and reduced project costs by significantly reducing travel. When they eventually met in person, the thorough preparation allowed them to accomplish a great deal within a short period of time.

"The conference calls allowed us to listen and dialogue with other people about how we each interpreted the material," Sturko recalls. "So by the time we got to the workshop, we already knew each other better and were ready to take our work further."

To get the word out to other stakeholders in the industry, SaskFlax created a sustainability visioning page on its web site, complete with background information on the project, a resource section, and a blog by one of the participants. Check out Lee Pengilly's series of articles about SaskFlax's Sustainability Visioning Project by visiting: www.saskflax.com/sustvision.html.

BASELINE ANALYSIS

Despite the recent surge in demand for flax oil, the industry continues to face a number of challenges. Some are endemic to Canadian agriculture as a whole, such as transportation, the lack of domestic infrastructure for secondary (value-added) processing, and competition from lower-cost producers. The impacts of climate change on agricultural production remain uncertain. They are location-specific and will depend on the rate of change, as well as the ability of the crop to adapt to the new conditions.

Canadian flax production has typically focused on the oilseed component of flax. In the past, the tough straw that was difficult to work back into the soil compelled farmers to burn the straw in order to be able to plant next year's crop. One of SaskFlax's early sustainability accomplishments was preparing a guidance document for farmers that introduced more environmentally-beneficial options to straw management, such as chop and spread, straw retting, and harvesting the straw for its valuable fibre content. Read the report—which was distributed to all flax farmers in Saskatchewan—by visiting: www.saskflax.com/flaxstraw_BMPs.html.

The industry is now moving toward complete plant utilization, which will mean reliable uses for both the seed and the straw, and will allow farmers to increase their net returns. The bast fibre and shive components of flax straw can be used for textiles, composite materials, insulation, building materials, to control soil erosion, as livestock bedding, in horticulture, and many other ways. But its use in Canada has not been widely explored until recently. SaskFlax is actively exploring technologies and tools required to develop higher-value uses of flax straw and its fibre and shive components.

DEVELOPING THE VISION

A two-day visioning workshop was held in Saskatoon, facilitated by The Natural Step Canada's Principal Advisor Chad Park and Associate Dr. Mary Beckie. The group discussed their current reality, their vision for the future, and brainstormed ways to close the gap between the two. Participants identified the potential opportunities and challenges of pursuing sustainability, and discussed the assets they already had to build from. By the end of the second day, the group had developed a draft vision for sustainability, and identified action items for each stage of a generic flax value chain.

“In many ways, it was more a common language issue than common vision. Once we knew we were all aiming for the same goal, it became easier to determine what was important and what wasn't.”

LINDA BRAUN
EXECUTIVE DIRECTOR, SASKFLAX



VISION FOR SUSTAINABILITY

In December 2009, SaskFlax adopted a new vision for sustainability:

Through example of our practices, the impact of our products, and through the regional development opportunities we create, the Canadian flax industry is recognized as a contributor to healthy, vibrant, and sustainable communities.

By leading the production and promotion of flax and flax-based products to the world, SaskFlax is recognized as a leader in the development of a sustainable society. Our sustainability vision describes a state where the flax value chain is aligned with the four basic sustainability principles of The Natural Step Framework.

With the new vision, SaskFlax is committed to realizing the following strategic goals:

- Complete plant utilization
- Flax and flax products are solutions for sustainability
- Flax is considered by producers to be a “crop of choice”
- Production and transformation have a net positive impact on natural and social systems
- Regional transformation of flax seed and straw
- Development of necessary human capital and leadership

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NEXT STEPS

In the winter of 2009, SaskFlax was hit with a major sustainability crisis.

Canadian flax seed was shut out of European markets after traces of Triffid, a genetically modified (GM) form of the crop, was found in shipments. The European Union has a zero-tolerance approach to genetically modified materials. This came as a complete surprise to Canadian flax producers who to their knowledge had been growing a GM-free crop.

Canadian and European industry officials have responded with a new testing protocol for all levels of the supply chain: from the farm to the point of delivery. The protocol will remain in place for several years until Canadian flax consistently meets European standards again.

“It is imperative for us to work together to clean the system and re-establish this market. This is a challenge and a real case of sustainability in motion.”

LINDA BRAUN
EXECUTIVE DIRECTOR, SASKFLAX

Meanwhile, SaskFlax is continuing to move forward with the implementation of its sustainability vision and strategic goals. Early in 2010, the sustainability visioning group reconvened for a half-day workshop. The group reviewed their past work in light of the GM issue—which had emerged since their initial visioning exercise. They are exploring three value chains: the use of seed in functional food and nutraceutical applications; the use of fibre in insulation products; and the use of shive mixed with wood residue in a particleboard application. This work will allow the industry to deepen their sustainability commitment even further, and really “walk the talk.”

“The board will have to figure out how to communicate this to the wider industry in the future. That’s one of the major factors in seeing how we will go forward. There’s a lot of interest out there.”

ERWIN HANLEY
FLAX FARMER & MEMBER OF THE BOARD, SASKFLAX



SaskFlax workshop participants

DOWN TO ACTION

During the workshop, participants brainstormed the key areas for innovation that would help the industry move toward its vision. The actions were prioritized into short-, medium- and long-term initiatives using a set of strategic prioritization questions:

- Will the initiative move us toward our sustainability vision?
- Will the initiative move us toward alignment with the sustainability principles?
- Will the initiative serve as a flexible platform or stepping stone toward future moves (versus being a “dead end”)?
- Will the initiative generate an adequate return on investment necessary—either financially or in terms of the engagement of stakeholders—to continue our sustainability journey?

A draft list of actions was prepared at the workshop. Since then, the list was reviewed by a variety of stakeholders, as well as by a third-party expert: Alan Barton, who championed The Natural Step Framework with Rohm and Haas in his former role as Executive Vice-President of the large, multi-national chemical company. In addition, the action items have since been further elaborated upon and prioritized, and the actors required for effective implementation are currently being identified.

Reflecting on the project, Braun recalls how impressed she was that the participants dedicated as much time and energy to the initiative as they did.

“When participants are really interested, they find the time,” Braun said. “We knew we were dealing with people with time constraints, but they clearly felt it was very important.”

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ADDITIONAL INFORMATION

- www.saskflax.com/sustainability.html
- www.thenaturalstep.org/canada
- www.thenaturalstep.org/sites/all/files/ExperienceUsingTheNaturalStepFramework-CanadaFlaxIndustry-Paper-Jul2009.pdf
- www.thenaturalstep.org/sites/all/files/ExperienceUsingTheNaturalStepFramework-CanadaFlaxIndustry-Presentation-Nov2009.pdf
- www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1247590628963&lang=eng

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