



**NEXTFOR FOREST INNOVATION
WORKSHOP
SUMMARY & NEXT STEPS**

December 3, 2019

Ontario Investment & Trade Centre

250 Yonge Street, 35th Floor

Toronto, ON

OVERVIEW

On December 3, 2019 NEXTFOR (a program of the Centre for Research and Innovation in the Bio-Economy) held a Forest Innovation Workshop in Toronto to solicit feedback and input from stakeholders on opportunities for the incorporation of new technologies and innovation into forest management planning and operations. It is envisioned that through the strategic pursuit of these opportunities, Ontario's forest sector will be able to reduce costs, improve efficiencies, and capitalize on new economic development opportunities.

The following provides a summary of the ideas, recommendations and priorities forwarded by participants at the workshop and provides some initial thought with respect to next steps and opportunities for NEXTFOR to pursue.

NEXTFOR would like to thank the 40+ participants who contributed to the success of the workshop.

For more information on NEXTFOR please visit our website at www.nextfor.ca.

OPENING PRESENTATIONS

The opening presentations provided participants with insight into current research, development and implementation efforts in Ontario and abroad. NEXTFOR would like to thank our opening speakers for their contributions in setting the tone and advancing the objectives of the workshop.

Francis Charette (FPInnovations), Forestry 4.0

Dr. John Kettle (LUKE), Opportunities & Successes – A Finnish Perspective

Both presentations can be accessed at www.nextfor.ca.

WORKSHOP OUTCOMES - KEY THEMES AND OPPORTUNITIES

The various plenary and breakout discussions throughout the day resulted in the identification of four priority themes and associated opportunities with respect to application of technology and innovation in the province. These include improved data/information related to wood supply; the development of new markets for unutilized fibre; the development of communication materials/strategies and identification of collaborative opportunities, and; the implementation of new technologies/machinery in forestry operations.

Theme 1: Data/Information - Wood Supply

Summary

Improving data/information capture and utilization with respect to wood supply was recognized as a top priority among workshop participants. Discussions identified the following sub-themes related to this topic:

Data capture and optimization – developing/implementing new and better data capture and optimization techniques that provide more accurate and/or timely information related to forest cover (e.g. tree species, volumes) and other operational considerations (e.g. terrain/elevation, presence of water bodies). Identified opportunities included:

- Accessing and utilizing the provincial single photon LiDAR (SPL) data (the Ministry of Natural Resources and Forestry is investing \$84 million over the next 8 years) was identified as a priority. Some specific SPL related considerations raised by participants were:
 - Additional insight into the format of the data and specific timelines for completion is needed
 - Ability to link this data to other data sets/information to optimize utilization and effectiveness is required
 - Creating easy access to this data is needed
- Optimizing the use of existing data sets with specific consideration for:
 - Access to existing enhanced forest resources inventory data (eFRI) in places like southeastern Ontario
 - Wood properties mapping using eFRI and elevation models (as per Lakehead University research).
 - Utilize data (i.e. TREES database) to:
 - enhance value chain optimization
 - growth & yield model calibration
 - single Photon LiDAR (SPL) data calibration and refinement
 - chain of custody verification
- Utilizing data/information to support a zonation/ TRIAD approach to optimize annual work schedules and or ten-year allocations based upon market criteria and or market signals (e.g. Forestry 4.0)

Training – providing training to ensure the workforce is properly trained and able to maximize the opportunities available

Role for NEXTFOR

Identified opportunities for NEXTFOR include:

- Providing updates on the development of new data sets (e.g. MNRF SPL)
- Identifying and promoting methodologies to maximize the benefits/usefulness of existing and future data sets

Theme 2: New Markets

Summary

The need to identify, develop and optimize new markets – specifically for low-quality and underutilized species, as well as for harvest residuals – was identified as a priority/theme. Currently, the absence of markets for this fibre creates operational bottlenecks (e.g. access to high-quality stands/fibre) and/or represents a missed economic opportunity at the local, regional and provincial levels. Key opportunities associated with the development of new markets include:

- Identifying (e.g. where is the wood supply, what quality) and maximizing (e.g. linking private landowners to manufacturers) the opportunities
- Identifying and developing all elements of the value chain for new products or markets (e.g. policy barriers, supply and quality needs, cost)
- Identifying carbon market opportunities for new products/markets as applicable
- Creating promotional and operational hubs at the appropriate scale (e.g. local, regional), this could support the development of scale-appropriate fibre markets to capture smaller operators/wood supplies that could not access markets on their own

- Communicating the opportunities to investors and entrepreneurs

Role for NEXTFOR

An identified role for NEXTFOR is to research and investigate how other jurisdictions are addressing their low-end or residual fibre issues (e.g. what markets have they developed, barriers they needed to overcome). In the Ontario context, identifying available wood supplies (including information on species and quality) and identifying and developing value chains for new products were viewed as priorities.

Theme 3: Communication & Collaboration

Summary

Communication tools were identified as critical to the adoption/implementation of new technologies and innovation on a number of fronts. The identified opportunities/areas for communications included the general public (social licence and acceptance), government representatives (identification of policy barriers), consumers and end users (benefits of wood-based products), existing industry (promote awareness and opportunities), municipalities and Indigenous communities (local economic development), and educational institutions/teachers (promote benefits and attract youth into the sector) among others. While it was recognized that NEXTFOR can serve as a platform and catalyst for many of these objectives and activities, it was acknowledged that collaboration among organizations is critical and that, when properly executed, all the above audiences could become collaborators.

Role for NEXTFOR

With respect to communication and collaboration NEXTFOR's core role was viewed as an advocate for new technology and innovation (as opposed to a lobbyist/policy organization). Specific opportunities for NEXTFOR to fulfill this role include:

- Provide a platform for discussion and priority setting within the forest sector (e.g. forums, workshops)
- Promote existing tools and success stories
- Identify and promote opportunities for investors and entrepreneurs, including financial institutions
- Collaborate with other sectors (e.g. mining) to pilot test and/or de-risk the implementation of new technologies)

Theme 4: New Technologies & Machinery - Operations

Summary

The potential for new technologies and machinery as a means to reduce costs and/or improve efficiencies, most notably related to transportation and harvesting operations, was recognized. Some key opportunities identified include:

- Automated trucks
- Platooning technology (transportation)
- Modular design (reduce downtime associated with repair or maintenance, particularly in remote operations)
- Remote operations (e.g. harvesting)
- Ribbon-less block boundaries
- Remote sensing or using drones for monitoring and reporting (e.g. free-to-grow surveys)
- In situ (bush) drying of roundwood and residuals

- Cut-to-length systems
- Alternative tree marking technologies (reduce reliance on direct visibility for nighttime operations)
- Logistics (e.g. concentration points/landings near highways – keep new drivers out of the bush, merchandising yards)
- Consortium of truck drivers (e.g. Uber for transportation), central dispatch
- New technologies for renewal and silviculture (e.g. seeding with drones)

Role for NEXTFOR

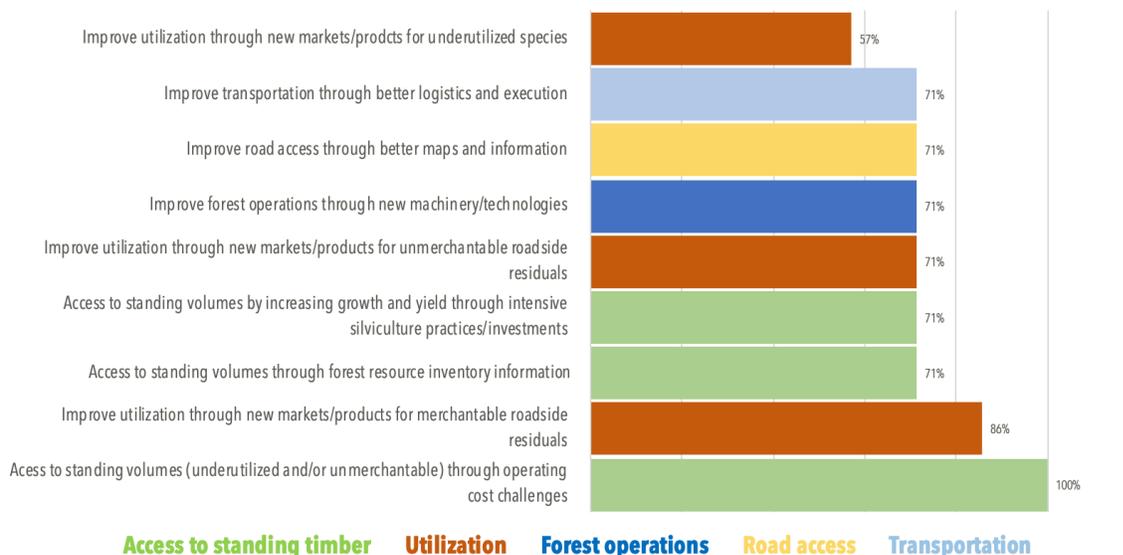
It was recognized that in many cases new technologies or machinery (e.g. platooning) is being pursued or investigated in other jurisdictions, however, that trials in Ontario could significantly advance development or adoption in the local context (e.g. demonstrate feasibility). In other cases, it was noted that some technologies (e.g. ribbon-less boundaries) are being implemented/permitted in some areas of the province and not permitted in others. The sharing of information and/or trials in select locations could facilitate the acceptance/allowance of such practices on a more provincial scale. Lastly, for some technologies/machinery which are readily implementable (e.g. cut-to-length systems) obtaining and sharing a better understanding of the efficiencies was identified as the appropriate focal point for NEXTFOR.

PRE-WORKSHOP SURVEY RESULTS

Leading up to the workshop, NEXTFOR circulated a survey to solicit initial input and to help focus discussions. As part of the commitment to openness and transparency the results from this survey, which were instrumental in focusing the workshop discussions, are available on the NEXTFOR website at www.nextfor.ca.

Thank you to everyone who participated in the survey.

FOREST INNOVATION RESULTS - PRIORITY ACTIVITIES



NEXT WORKSHOP

The next Forest Innovation Workshop is scheduled for February 27, 2020, 8:30 am to 4:30 pm at the Sheraton Centre Hotel downtown Toronto. An agenda will be posted shortly on the Nextfor website.

JOIN NEXTFOR

NEXTFOR member benefits include access to future forum meetings, proceedings, and calls for proposals. Individuals and organizations can register at www.nextfor.ca/register.

WORKSHOP PARTICIPANTS

#	Name	Organization
1	Al Foley	First Resource Management Group
2	Alex Bylik	Lakehead University
3	Anne Waddell	CRIBE Board
4	Astrid Nielsen	Eastern Ontario Model Forest
5	Barry Davidson	Westwind Forest Stewardship
6	Benjamin Kuttner	University of Toronto
7	Carmelo Notarbartolo	Nawiinginokiima Forest Management
8	Chris Walton	CRIBE
9	Craig Crawford	CRIBE Board
10	Craig Robinson	Forsite
11	Dan Rouillard	Forsite
12	Dave Johnson	CRIBE
13	Dennis McCormac	Ontario Genomics
14	Eleanor Reed	Ontario Woodlot Association
15	Francis Charette	FPInnovations
16	Gavin Pearce	Haliburton
17	Ian de la Roche	CRIBE Board
18	Louise Lacroix	Economic Development - Hearst
19	Jarno Valkeapää	MFA Finnish Embassy
20	Jason Koivisto	Ministry of Natural Resources and Forestry
21	Jason Linkewich	LinksEdge Ltd.
22	Jeff Passmore	Passmore Group
23	John Kettle	Natural Resources Institute Finland
24	Kevin Lim	Lim Genomatics
25	Laird VanDamme	CRIBE
26	Lasse Turunen	Blom Karta
27	Laura Riley	Ontario Genomics
28	Marcin Lewandowski	Ecostrat
29	Mark Lockhart	Nipissing Forest Resource Management
30	Matt Leitch	Lakehead University
31	Matt Wilkie	Weyerhaeuser
32	Matti Karjula	PrimeR
33	Mike Willick	CRIBE Board
34	Pascal Rety	Logset
35	Patricia Mohr	CRIBE Board
36	Phil Green	First Resource Management Group
37	Robert Fucci	Mastercom
38	Scott Jackson	Forests Ontario
39	Steve Pawlett	Working Forest
40	Svetlana Zeran	Bancroft Minden
41	Tapani Stjernvall	Bitcomp

42	Todd Eastman	Ministry of Energy, Northern Development
43	Todd Lewis	Wikwemikong Forest Management
44	Yves Vivier	Timiskaming Forest Alliance Inc.