Competing trajectories for digital technologies and skills among Atlantic Canadian wood product companies

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Smart specialization framework

**smart specialization**: a place-based approach that takes a broad view of innovation, builds on local assets, and focuses investments onto competitive strengths, with public sector and a broad set of stakeholders supporting a private sector approach of entrepreneurial discovery (European Commission, Smart specialization platform).

Smart specialization **policy prescriptions** suggest

- privileging investments into higher growth companies using more innovative technologies and higher level skills.
- They extract more value from resources and can tap better into global value chains.
- They show more interest developing high value back end technologies, systems and platforms.
Atlantic Canadian forestry case study

site visits and interviews

"Older" forestry
- Products: pulp, paper, lumber, furniture, finishings
- Capital: $150k harvesters, P&P and lumber mills
- $15-20/hr mechanical skills, manual labour, weeks of training, turnover (varies w/ oil prices)
- Profits from volume (vs margins) of low VA commodity

"Newer" forestry
- Traditional products + new streams, ex. Bioenergy (biomass CHP + green diesel), fibre for MedTech + adv materials, higher VA mfg / constr (eg corrugated wood)
- $500k harvesters, CHP plants, product and supply chain diversity
- Human-assisted robotization of harvesting, measurement, inventory geotagging and management, ERP use, remote sensing (eg moisture)
- $30-40/hr, months of training, little turnover, premium on digital and general skills, not industry-specific (more in-house training)
- Lower volume, low (traditional products) and high (new products) VA
Competing trajectories

Smart specialization would suggest ‘new forestry’ as favored trajectory
- High growth + high skill
- Higher value add in global value chains (GVCs)
- Back end technology and platform opportunities

- However, no clear Shumpeterian path. Incumbents and upstarts both innovate, with varied impact on skills and employment. Incumbents...
  - invest in skill- and job-displacement vs skill- and job-enhancing technologies (eg autonomous machinery, vehicles)
  - show less interest in back end tech and platform development
  - successfully resist disruption; use state to raise market entry barriers, both financial (e.g. subsidized training) and non-financial (access to feedstock), stifling innovation, diversification and value capture
Can policy push trajectory?

Smart specialization and digital prosperity requires vision, alignment, patience, particularly in seizing cleantech, medtech, buildtech
• This requires policy bench strength which smaller jurisdictions may lack

Territorial context matters

Prince Edward Island
• policy priority to challengers (energy diversification, value capture)

New Brunswick
• policy priority to dominant incumbent (land mgt, access to markets, monoculture, spraying, no FITs, subsidized training programs)
Generalizations

• Competing trajectories are not unique to resource sectors (eg mfg, FIRE)
• Digital technologies may both upskill (human-assisted robotization, industrial design) or deskill / displace workers (autonomous harvesters, vehicles).
• While incumbents may not resist technological innovations, they may very well choose ‘job-less’ trajectories
• Territorial governments have an interest to favor smart spec trajectories, but they need
  • policy capacity
  • wherewithal to shift resources away from incumbents
  • patience to look beyond booms and towards higher value-added and back end tech development opportunities
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