



NATURAL RESOURCES CANADA - INVENTIVE BY NATURE

# BIOECONOMY

## *A place for forests*

**John Kozij**  
Canadian Forest Service  
Natural Resources Canada

*Biocleantech Forum*  
*November 3rd, 2016*



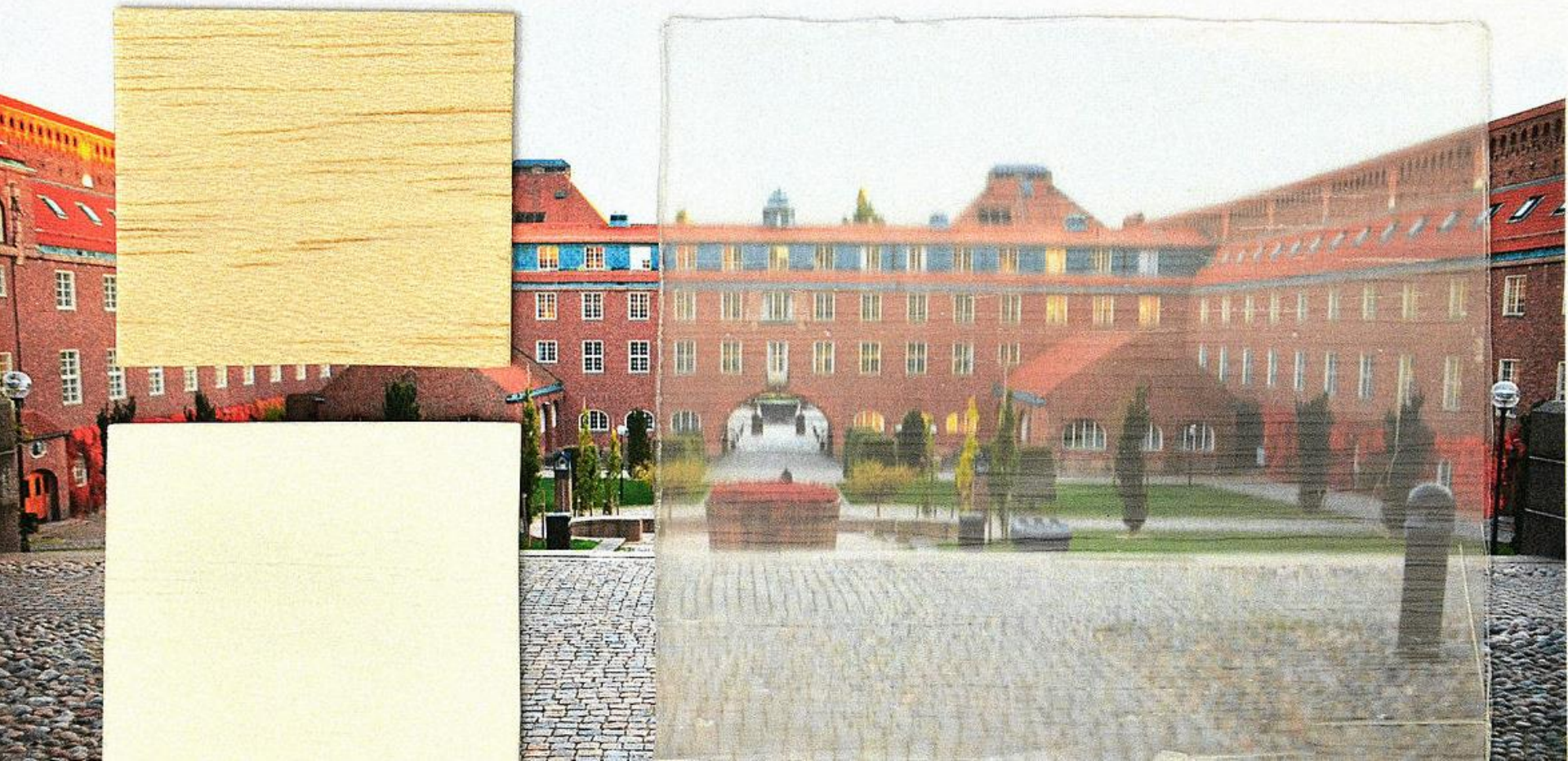
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Canada

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Canada

Canada



# Ouvrir la fenêtre sur un nouveau paysage: les biotechnologies propres du bois



Source: [www.fastcodesign.com](http://www.fastcodesign.com)



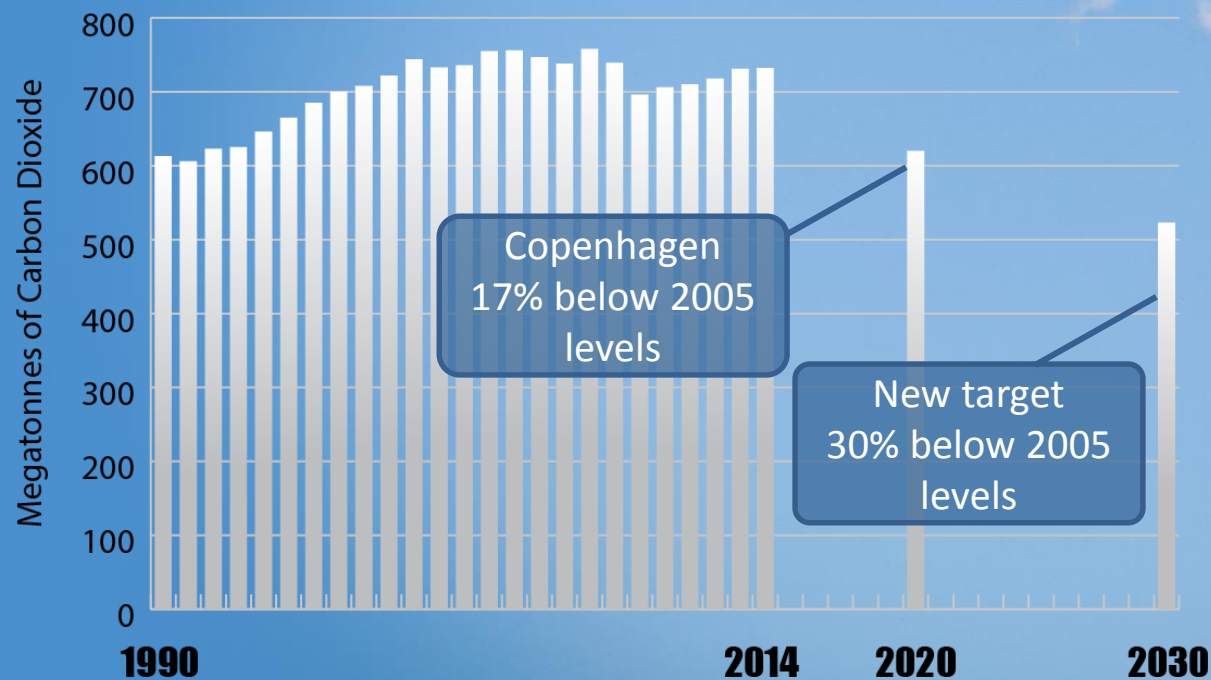
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# Canada's commitment to a low carbon economy: a place for forests

## Carbon emissions in Canada





# Canada's commitment to growing the economy: a place for forests

The forest sector creates more jobs and contributes more to the balance of trade for every dollar of value added than any other natural resources sectors

## Canada's forest industry is trade oriented:

- Exports: \$32.7 billion (2015)
- Over 70% of most forest industry products are exported
- Canada is the world's largest exporter of lumber, NBSK, and newsprint

Product and market diversification is key

### GROSS DOMESTIC PRODUCT

**\$22.1 billion**

from the forest industry  
in 2015

### FOREST INDUSTRY EMPLOYMENT

**201,645 jobs**

including

**9,500 jobs**

in Indigenous communities  
in 2015

### EXPORTS

Nearly **7%** of all Canadian exports are from the forest industry.

**top 3** forest product export destinations  
(billion \$ in 2015)



USA  
\$22.1



China  
\$5



Japan  
\$1.4



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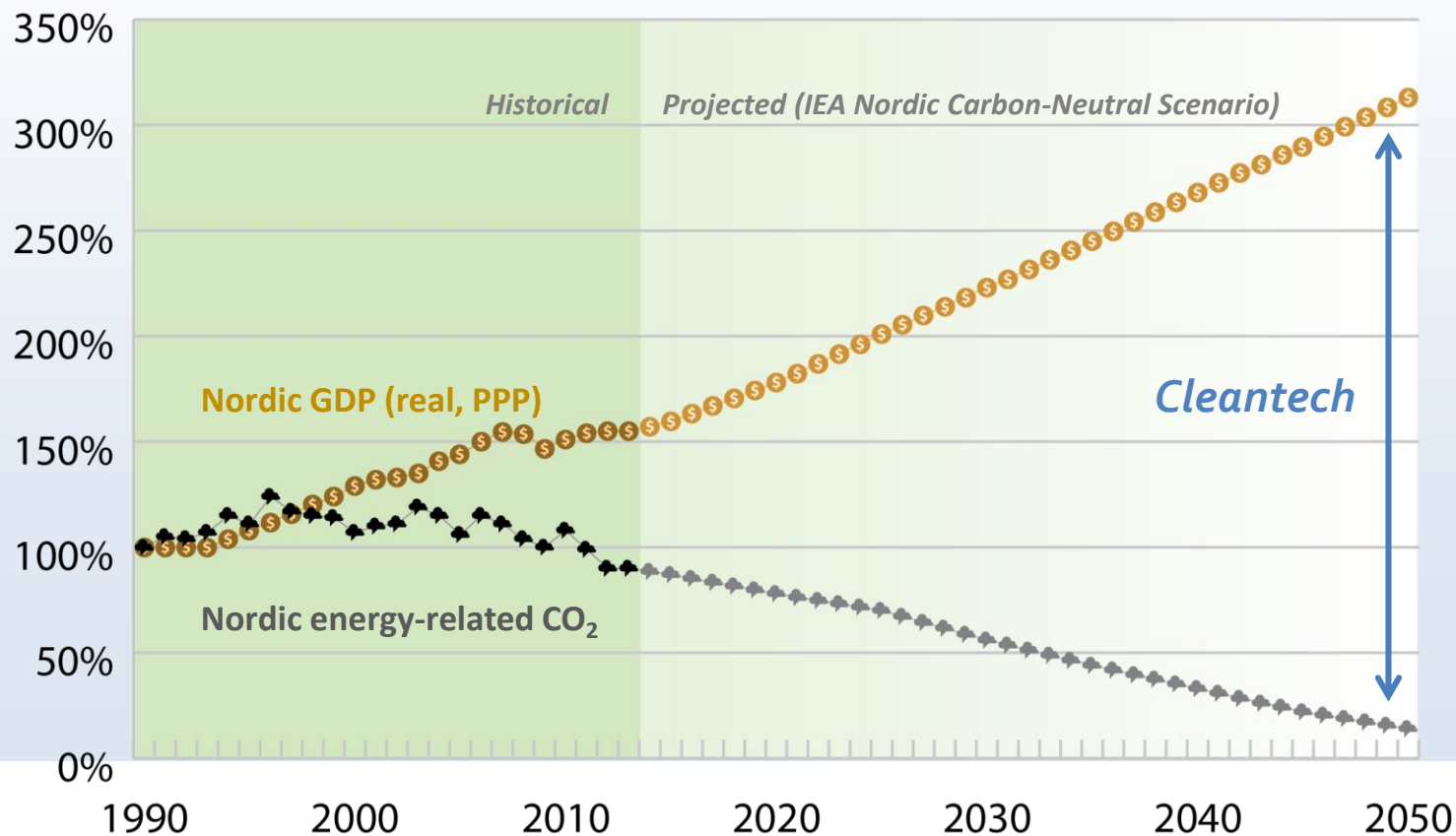
# Bioeconomy: part of the solution to a green low-carbon economy



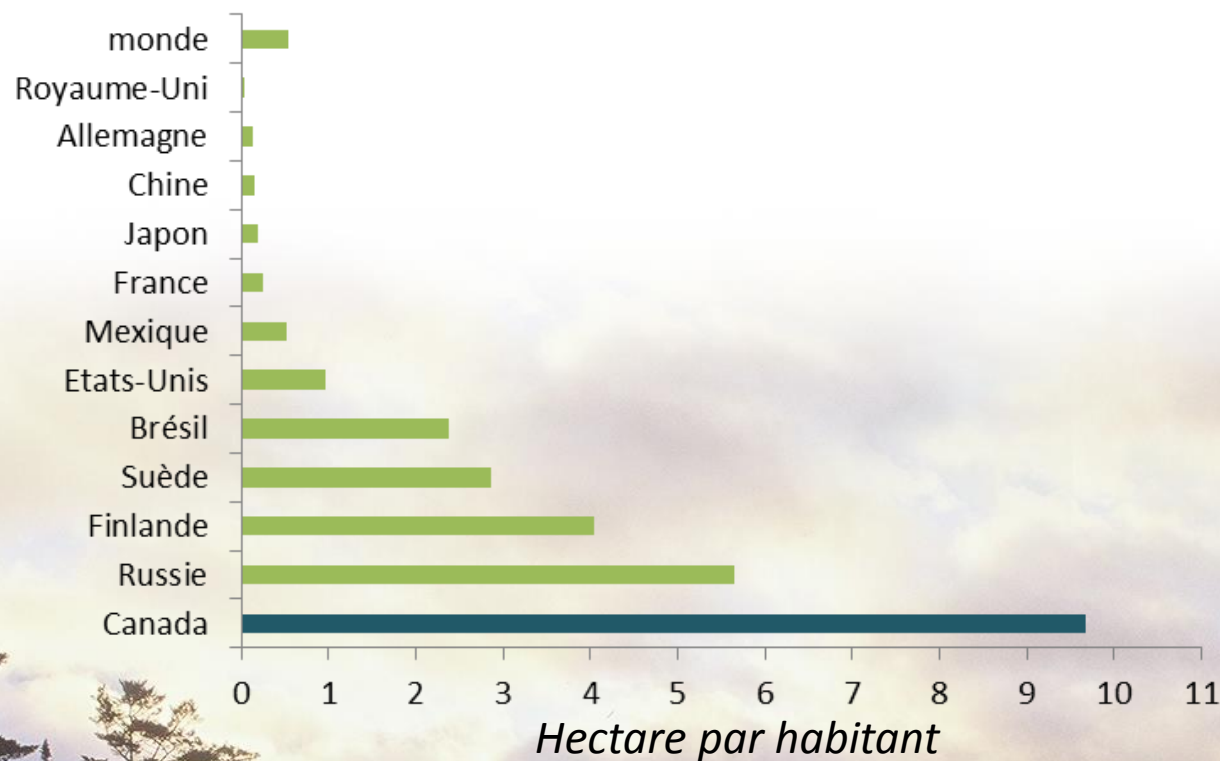
*"It looks like we found  
a bit of a gold vein."*

*Dr. John Pierce, Dupont, 2008  
describing new biochemical from corn*

# Biocleantech: bridging the gap between clean economies and growing economies



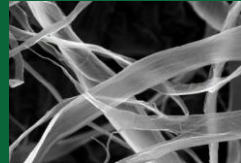
# Biotechnologies propres: l'avantage forestier du Canada



# Biocleantech: it's here now!



**Cellulose nanomaterials** for pigments, inks, coatings, biosensors, reinforcement



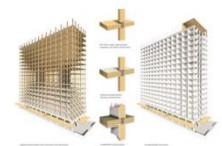
**Lignin** for glues, resins, rubber additives, thermoplastics, pharmaceuticals and insulating foams



**Bioenergy** for heating or aviation fuel

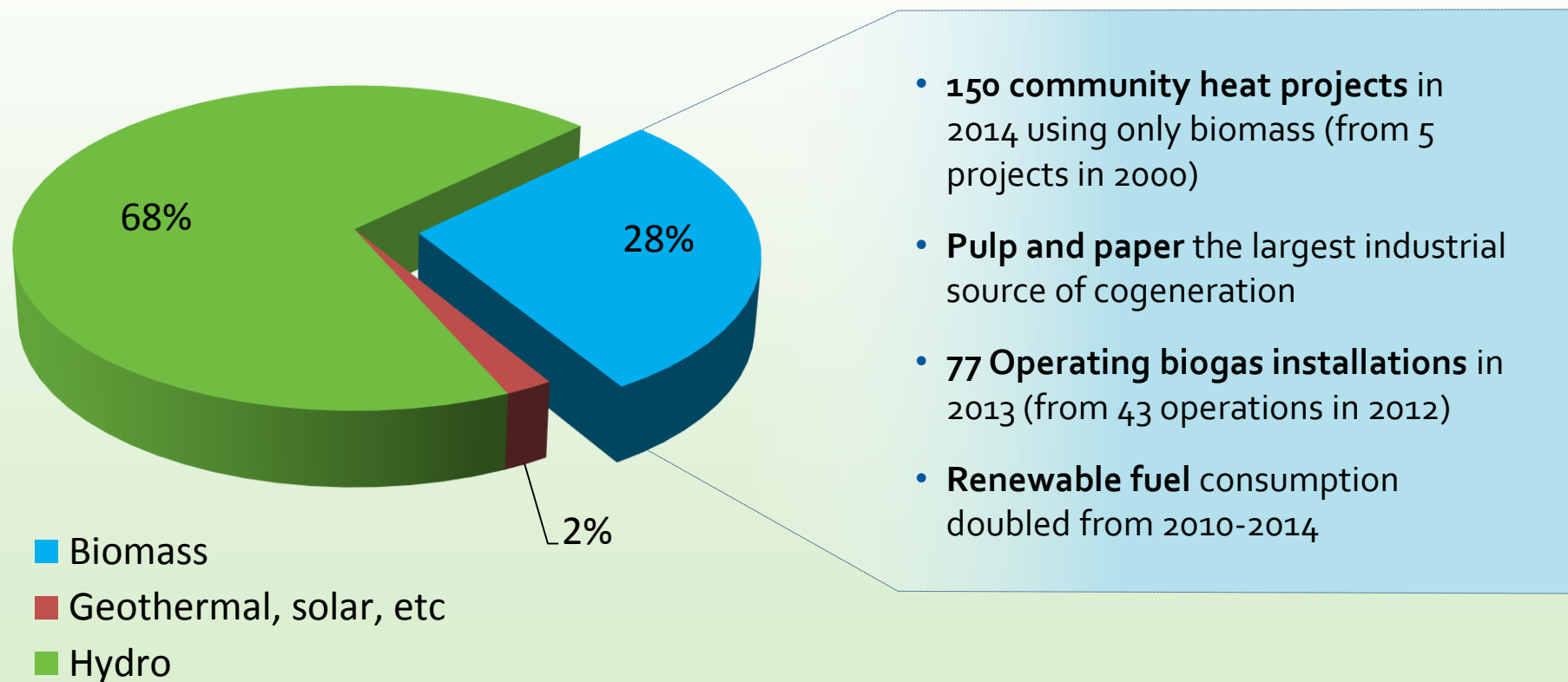


**Advanced Building Systems** for tall wood buildings, bridges, arenas etc.



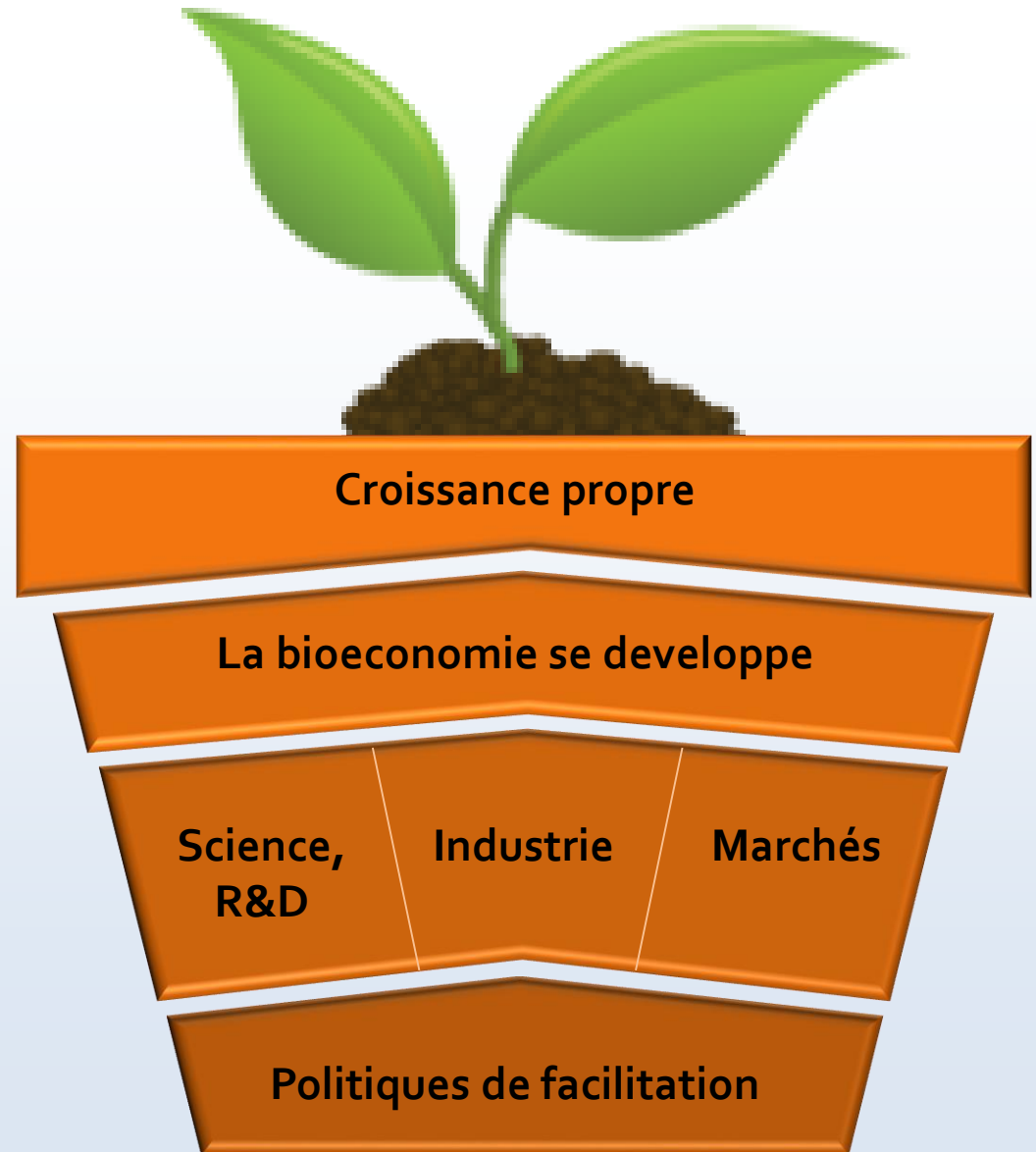


# Biocleantech: bioenergy leads the way



Canada's total renewable energy production in 2014

# S'assurer que la biotechnologie propre livre ses bienfaits



# The forest sector: a pioneer supporter of the bioeconomy

Constantly improving the sustainability of biomass supply & supply chain



Advancing the economic and environmental competitiveness of bioenergy and bioproducts



Better understanding and communicating the eco-credentials of bioenergy and bioproducts



Forest and forest products generate environmental and socio-economic benefits





# Strategies: how Canada measures up



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