The Fiber Cycle in Canada & the United States

metaFore

Introduction

This presentation explains how tree fiber for paper products is utilized and managed in Canada and the U.S.

In so doing, it will outline and explore the major components of the “fiber cycle”

The “fiber cycle” comprises of the sourcing, production, recovery, and subsequent recycling of fiber in paper products

Driving Questions

There are three driving questions that people typically ask when they want to know about the production of forest and paper products

1. **How are forests being managed?**

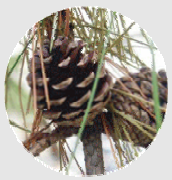
2. **How much paper gets recycled?**

3. **Can more be done to enhance recycling, recovery, and efficient use of the forest resource?**

The Forest Fiber Flow

Seedlings

Forest



Natural Regeneration

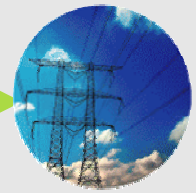
Wood

Byproducts

Pulp

Firewood

Wood products



Energy

Paper

Energy

Recovered Paper

The Three “R’s”

The most important three words to know about the fiber cycle are:

Recycling, **Recovery**, and **Regeneration**

- **Recycling** describes the re-utilization of paper products (or fiber)
- **Recovery** is the collection of paper products for re-utilization
- **Regeneration** is the practice of growing new trees to replace those that have been harvested

What’s Going on in the Forest?

Important questions about the forest:

- How large is the forest area in Canada? And in the United States?
- How is it used?
- Who owns these forests?
- What do forests produce?
- What measures have been taken to conserve and manage the forest resource properly?

Forests in Canada

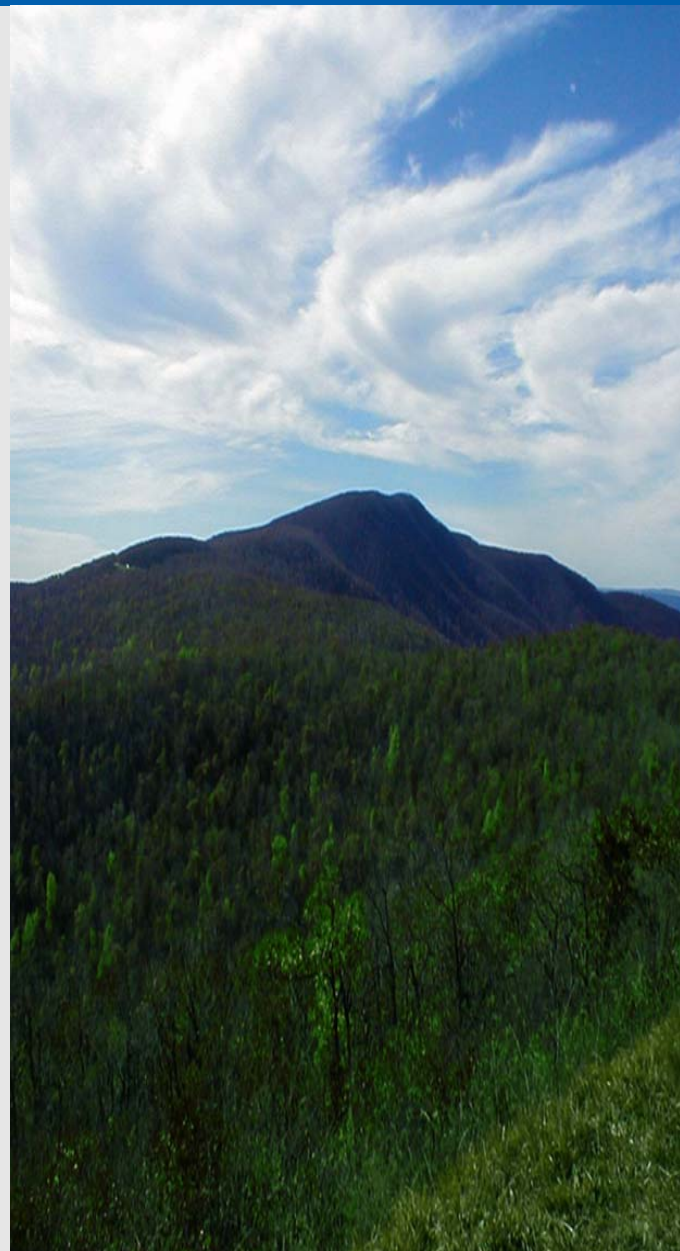
Canada has 993 million acres of forests

- 353 million acres are able to supply commercial timber products
- *That's twice the size of Texas*
- More than 99 million acres are set aside as protected areas
- Less than 2.5 million acres is harvested each year (less than one half of 1% of the total forest area in Canada)

Forests in the United States

US has 740 million acres of forest

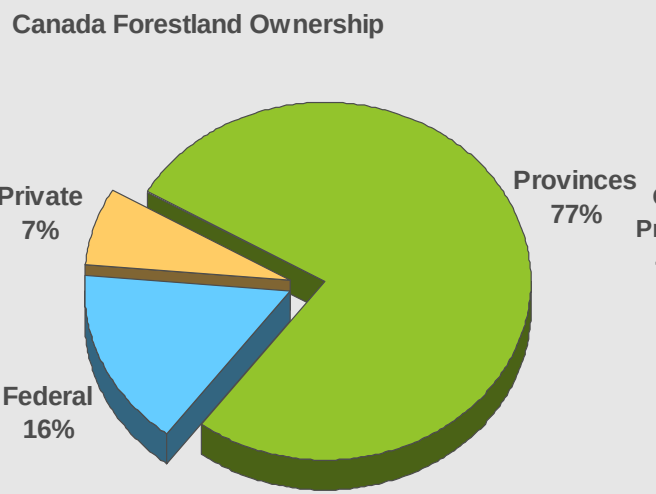
- About 520 million acres are able to generate commercial timber products
- *That's three times the size of Texas*
- More than 74 million acres are set aside as protected areas
- Less than 15 million acres are harvested each year

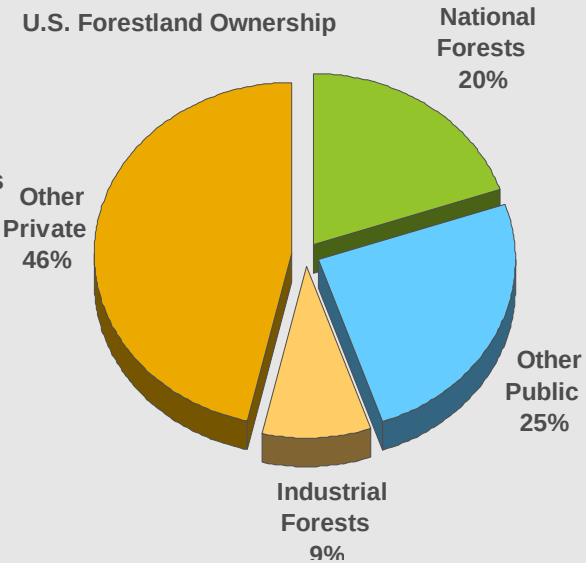


Forest Ownership

Forest Ownership differs significantly in Canada and the United States

- In the US, most commercial forests are privately owned
- In Canada, most commercial forests are owned by national or provincial governments





What Does a Forest Provide?

Many different economic, recreational and ecological goods and services, such as:

Lumber
Hiking
Wildlife and fish habitat
Fishing
Soil Retention
Hunting
Bird watching
Climate regulation
Water filtration
Non-wood forest products (mushrooms, berries, etc.)

Forests are managed to balance these different goods and services

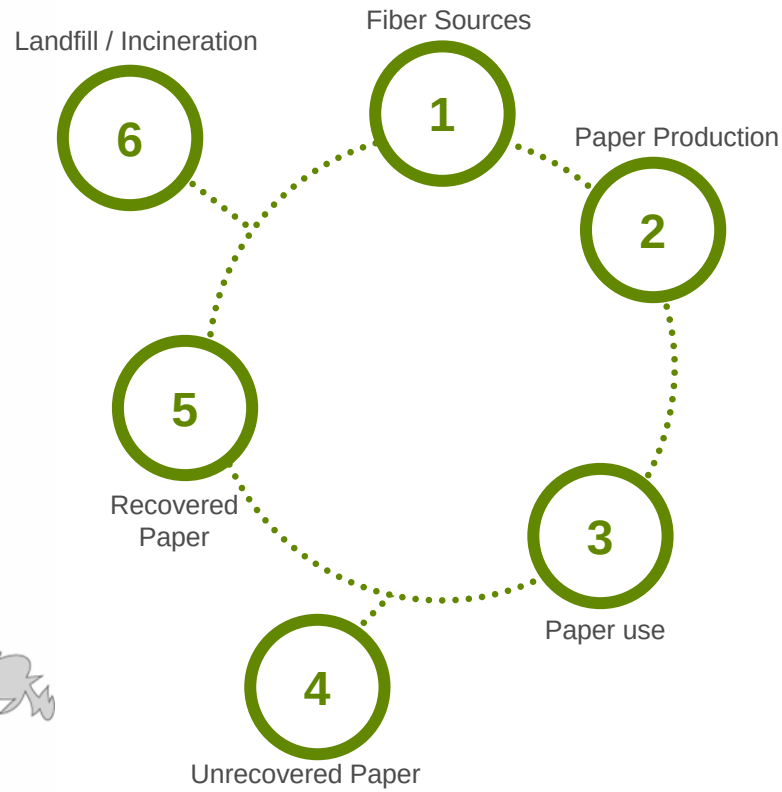
Key Facts about the Forest Cycle

Forests are managed to balance different needs

Forests in Canada and the United States are governed by measures that address the following:

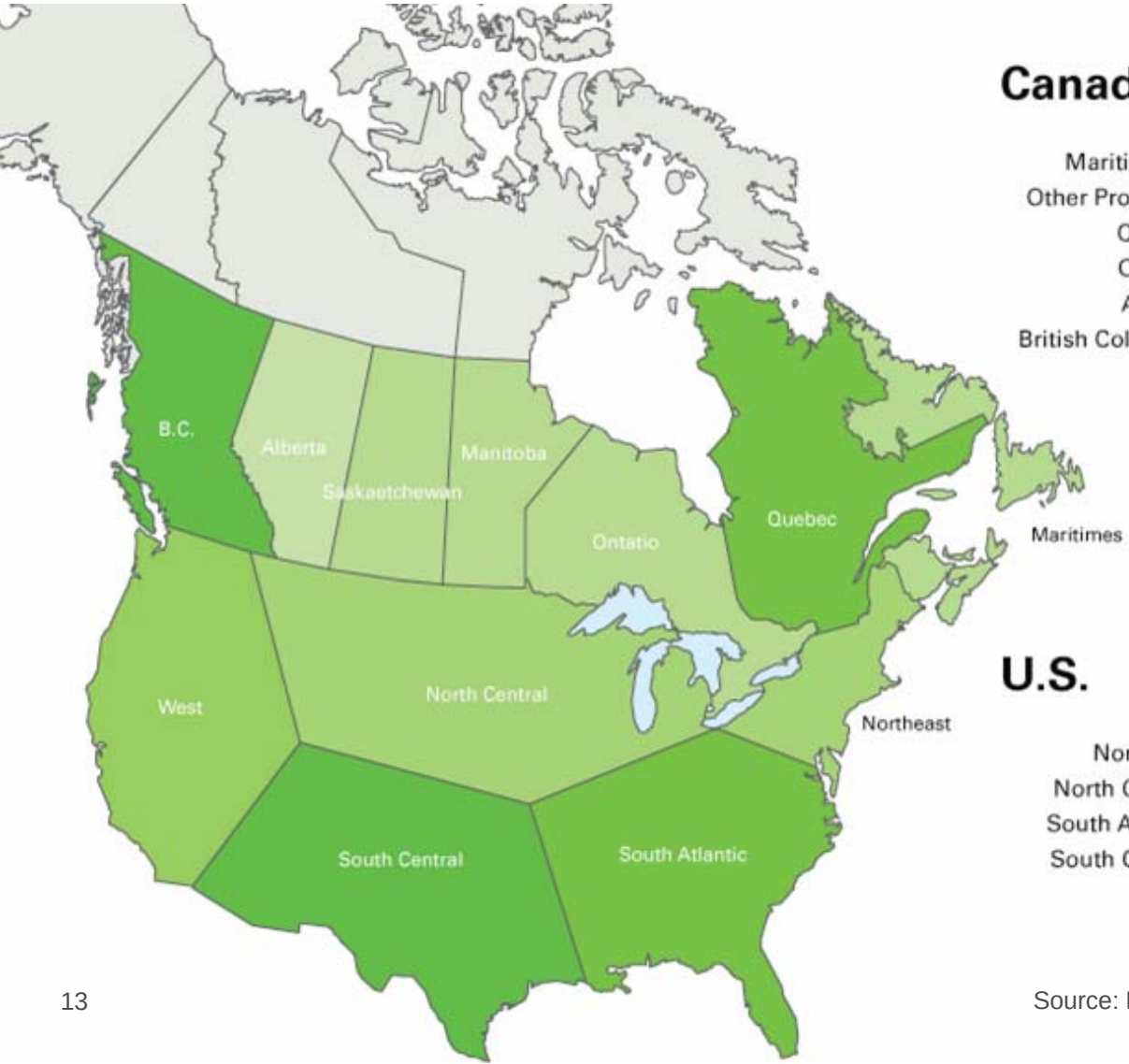
- Reforestation and regeneration, growing 3 to 4 trees for every one harvested
- Forest management practices that take into account ecological circumstances in the forest, such as the ability of natural forests to regenerate and impacts on wildlife
- Forest management practices that seek to ensure that forests help address climate change, through “carbon storage”
- Efforts to ensure that harvesting trees leaves a minimal footprint on the land

The Paper Fiber Cycle in North America



Forest Fiber Supply By Area

Fiber Supply by Area (pulp wood processed) Year 2000, in 000 short tons

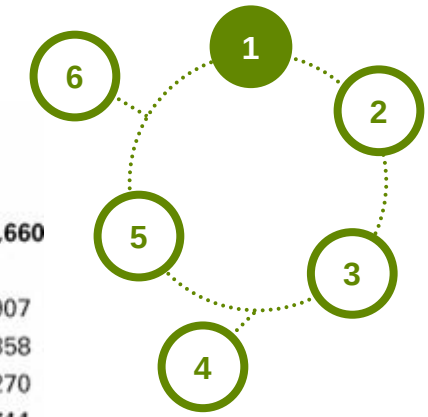


Canada

Total:	**254,660**
Maritimes & Other Provinces:	39,907
Quebec:	59,358
Ontario:	39,270
Alberta:	29,744
British Columbia:	86,984

U.S.

Total:	**707,396**
Northeast:	50,641
North Central:	51,695
South Atlantic:	234,012
South Central:	289,182
West:	81,848

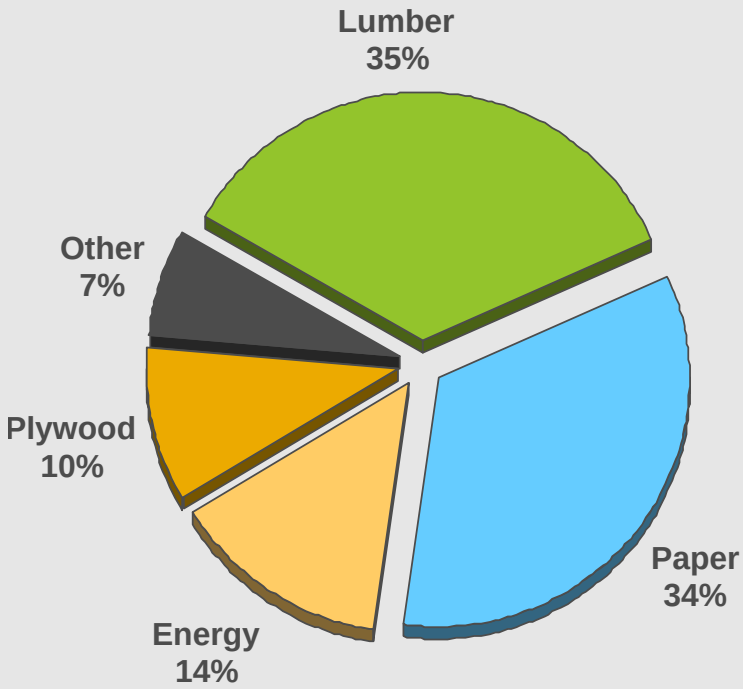


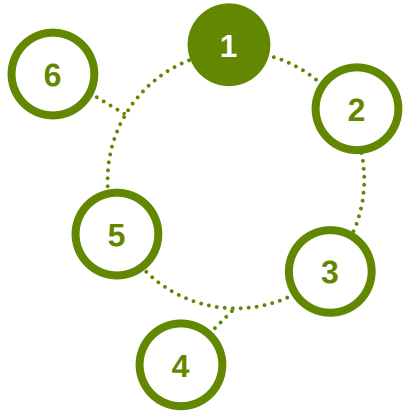
Source: Pulp & Paper North American Factbook 2001

Fiber Input Sources

Are fiber sources (trees) being used efficiently?

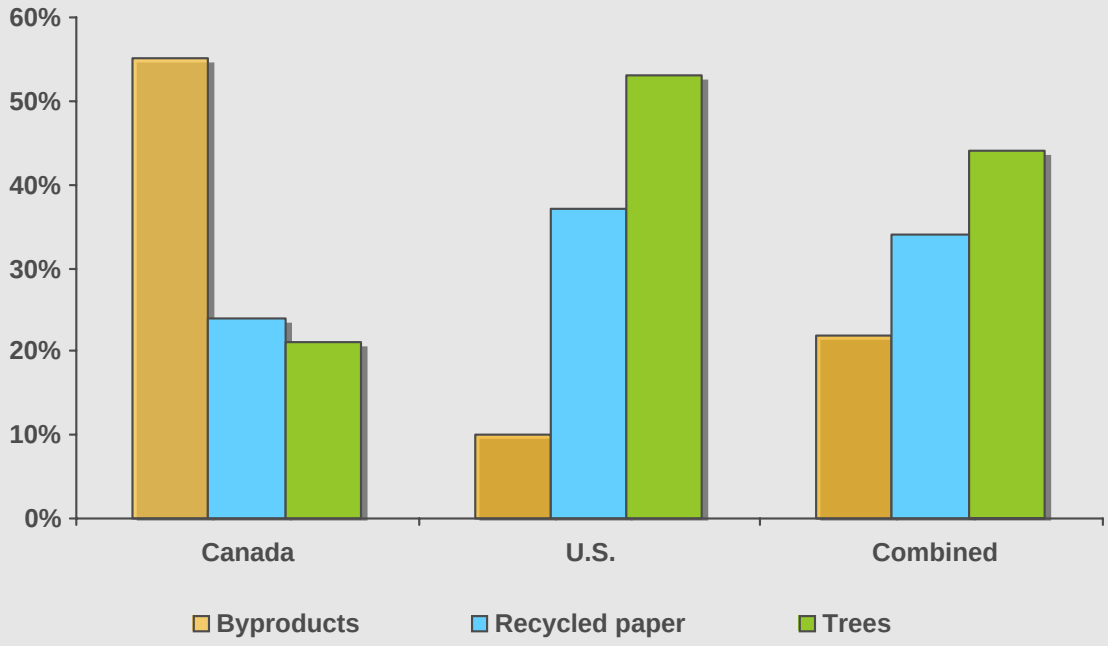
- More than 90% of every tree harvested in Canada and the United States is utilized
- And trees produce a wide range of products



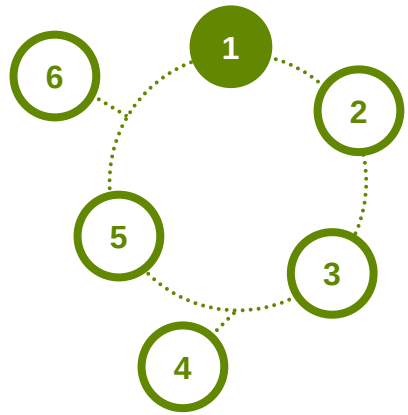


Fiber Input Sources

Pulp and paper product input sources differ significantly in the two countries



Byproducts - Materials such as bark, wood shavings and sawdust



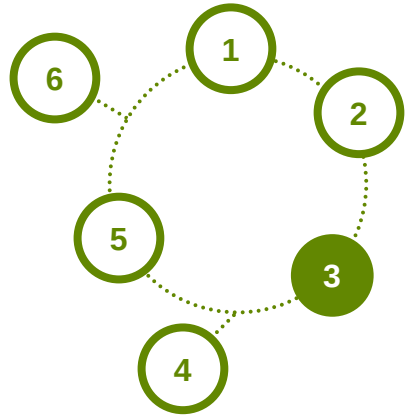
People and Paper

As we know, people use paper to meet many different needs:

Reading	**Communication**
Cleaning	**Archiving**
Sanitary	**Packaging**
Food	**Beverages**

- These distinct uses require specified fiber properties such as strength, brightness and absorbency

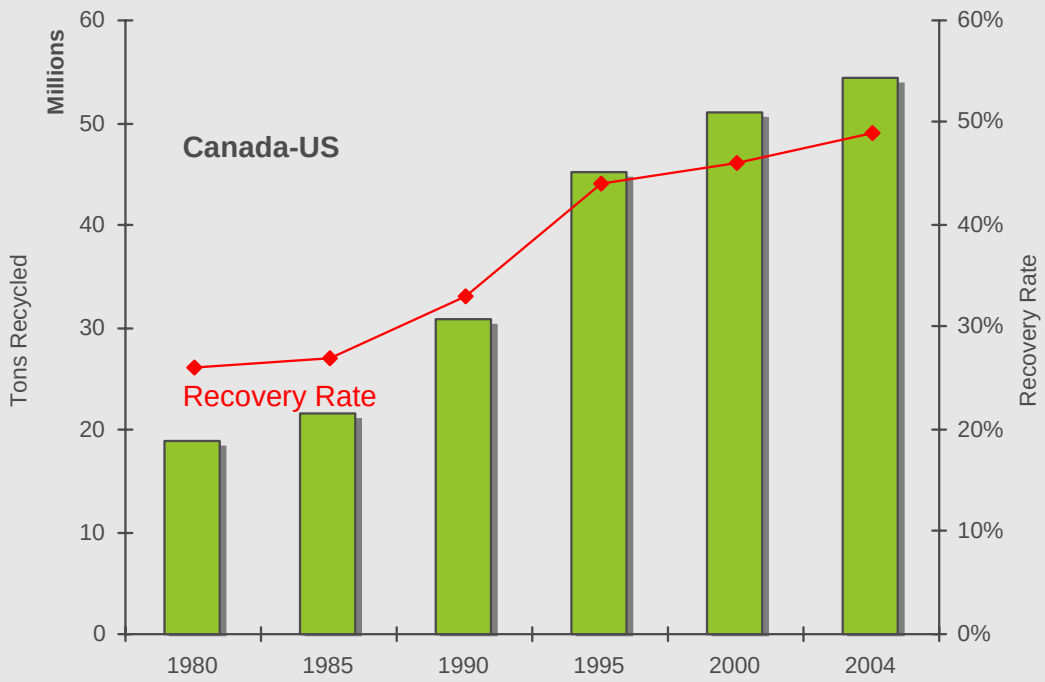
- New technologies are enabling recycled paper to have longer life, and have more durability than ever before

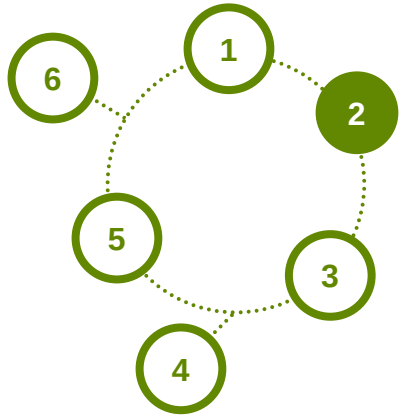


From Fiber to Paper

The average fiber blend in Canada and the United States today is 69% fresh and 31% recycled

As the chart below indicates, there has been a significant improvement in recycling over recent years, much of which has come since 1990

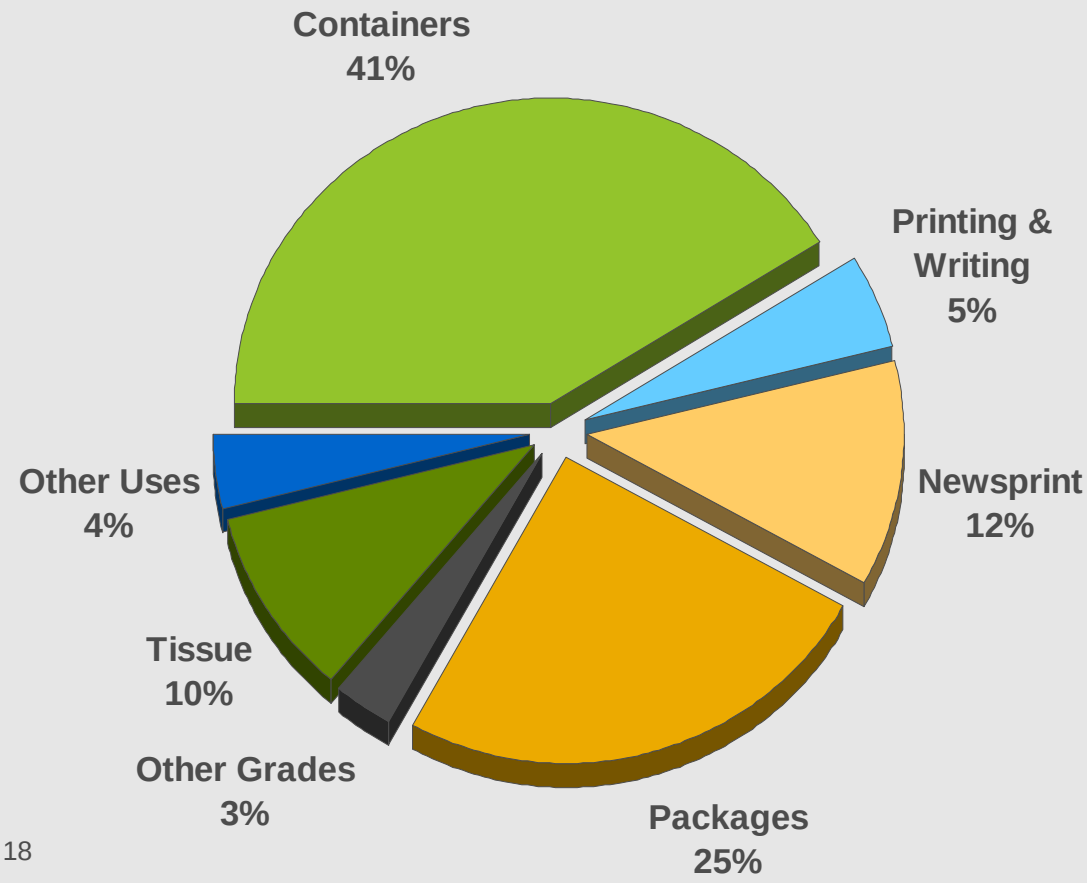


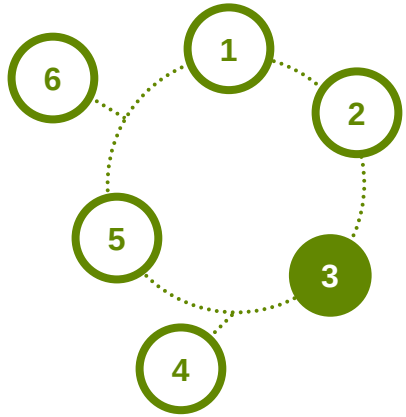


From Fiber to Paper

Key properties like strength and brightness dictate how recovered paper is used

- The graph shows the different uses for the paper that is recovered and recycled by mills in Canada and the U.S.

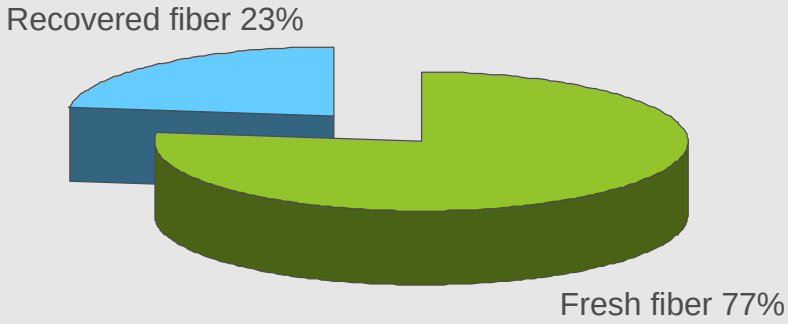




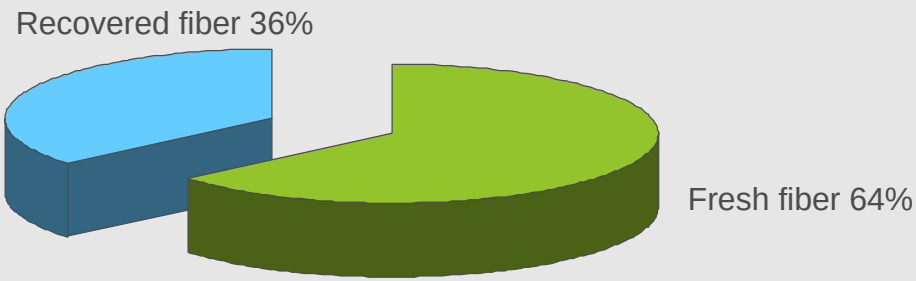
From Fiber to Paper

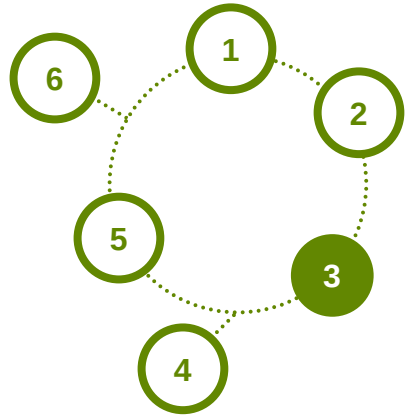
Fresh fiber is needed to replace fiber that falls out of the cycle

Fiber mix to maintain newsprint use, current recycling



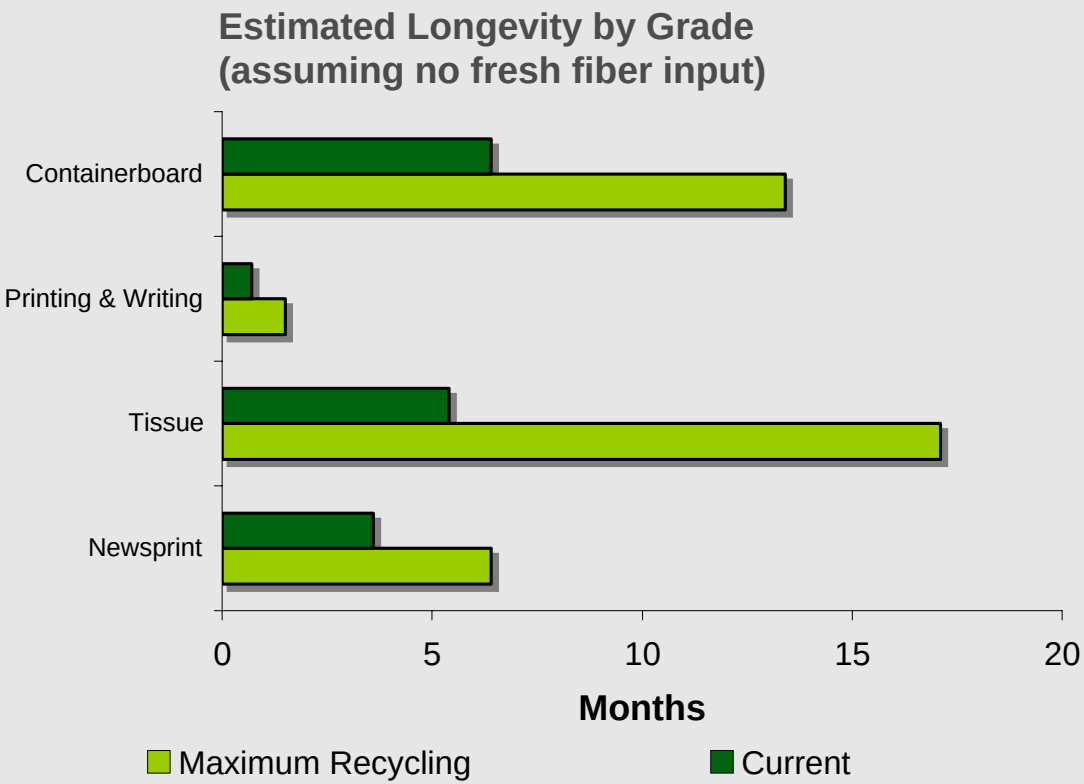
Fiber mix to maintain newsprint use, maximum recycling

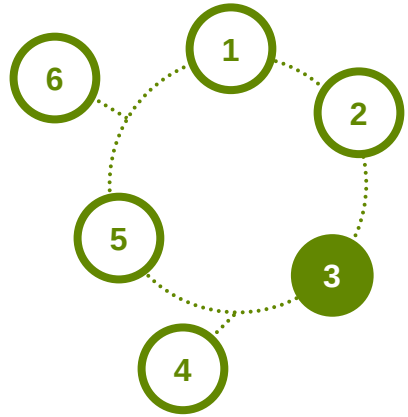




From Fiber to Paper

So even with maximum recycling, we would run out of fiber for making paper within a few months if fresh fiber were not added to the fiber cycle



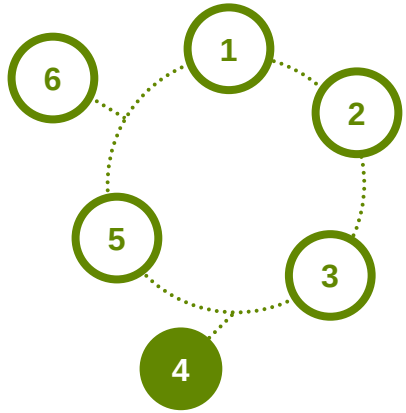


The Case of the Missing Fiber (1)

Complicating matters is that each year, roughly 29% of all paper products fall out of the fiber cycle

About half of this amount (15% in total) is lost

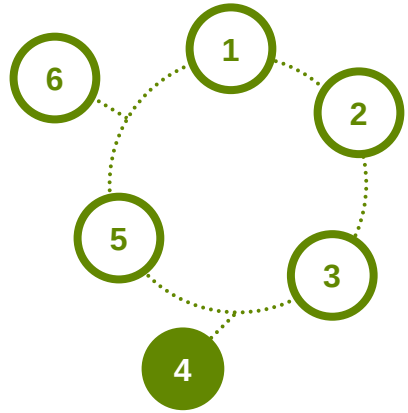
- Some ends up as books or files that are often stored for a long time
- Some, such as tissues, can only be used a single time
- This “lost” fiber has to be replaced in the fiber cycle by fresh fiber
- But this fiber could eventually make it back into the fiber cycle



The Case of the Missing Fiber (2)

The rest of the “missing” fiber (14% in total) enters the global fiber cycle in the form of exports

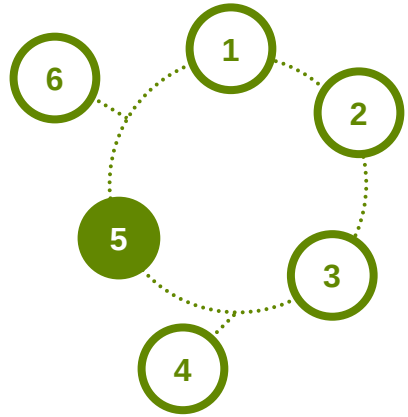
- A rapidly increasing volume of paper recovered in North America ends up in Asia, which places a high value on imports of recovered paper
- The US is the largest exporter of recovered paper (roughly 8 million tons) to China
- Some of this fiber eventually returns to Canada and the US in the form of packaging and other paper goods from Asia

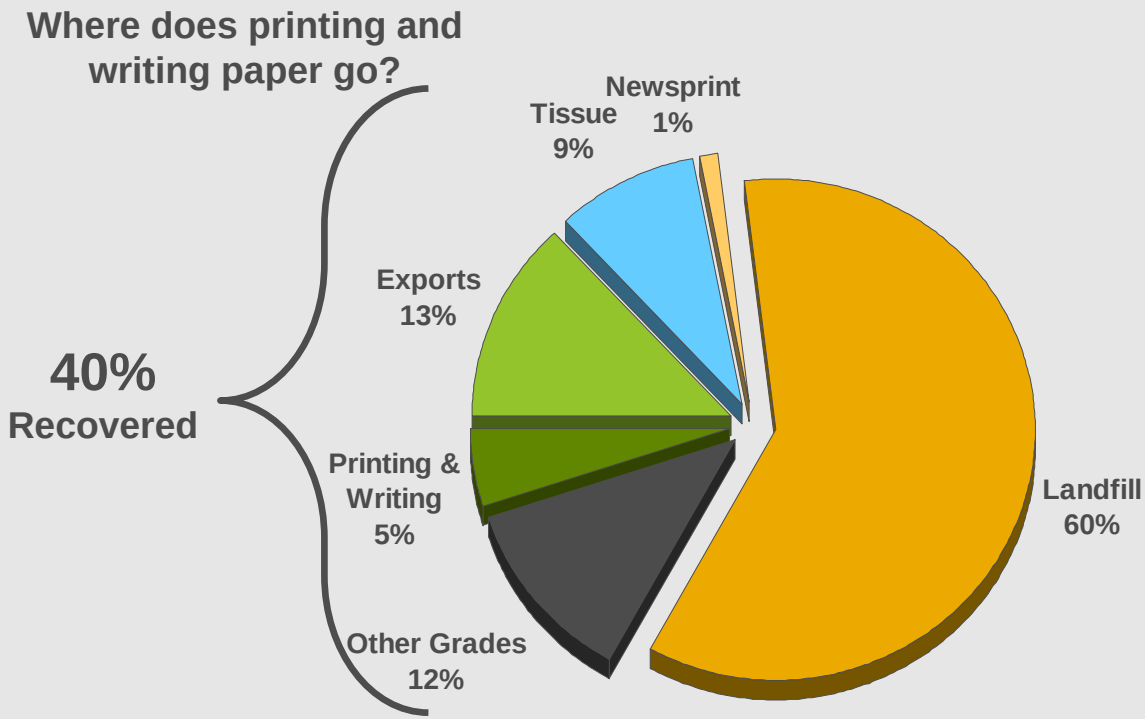


A New Life… Recovering Paper

Recovery is a crucial element of the fiber cycle, as it is the “enabler” of recycling

- Different types of paper are recovered and utilized in different ways, compare newsprint and printing and writing papers

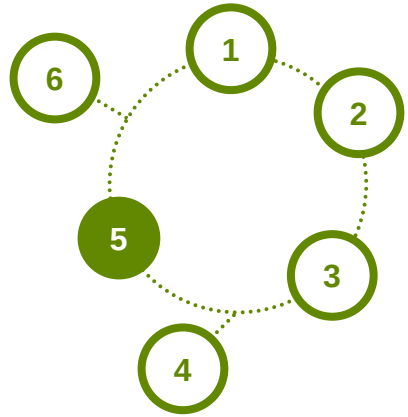


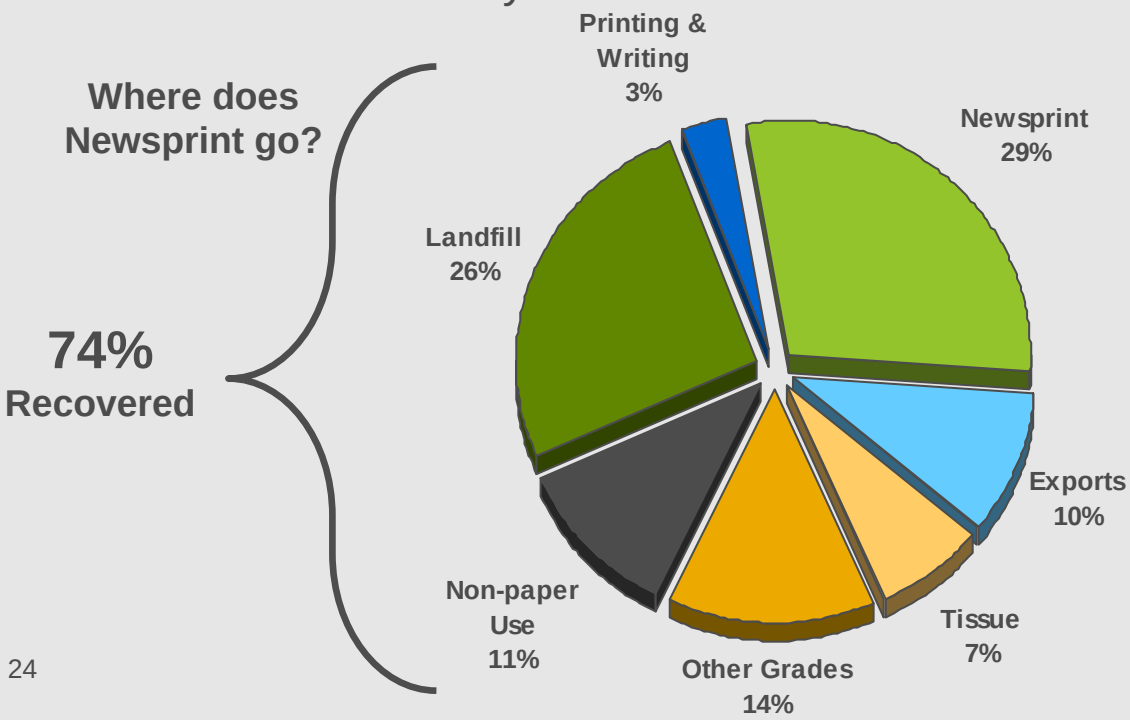


A New Life… Recovering Paper

It is important to understand that recovery and recycling are separate parts of the fiber cycle

- Because recycled paper can only produced if paper is recovered after it has been used
- And right now virtually all of the recovered paper in North America is recycled





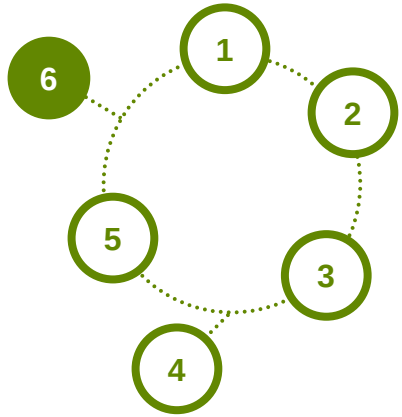
Disposing Paper

Each year, 37 million tons of reusable paper is thrown away due to end-user choice or because it is not currently feasible to recover

- This represents a pool of fiber that could be tapped to make paper

More can be done to expand paper recovery

- This requires action from individuals, governments and companies across North America



The Takeaways

- **The fiber cycle involves a complex web of elements, starting with good forest management**
- **Progress has been made over the past several years in recovering and recycling fiber**
- **Today, we have more recycled product than ever before**
- **Most paper that is recovered is recycled in paper mills in North America or overseas**
- **And technology is enabling the greater use of recycled inputs into modern paper products**

The Takeaways

More can be done

- **In terms of recycling, more investments can be made to utilize technology to increase recycled content**

- **And in terms of recovery, as more people and organizations come to recognize that they can make a positive difference by recovering paper, more product will be available for the paper industry to recycle**

Acknowledgement

Metafore would like to thank the members of the Forest Products Association of Canada (FPAC) for supporting this work examining the fiber cycle in Canada and the United States.

The contributions of FPAC and the Corporate Forum on Paper and the Environment (a forum of pulp and paper suppliers and buyers) have proved valuable in informing our work throughout this project.

Forest Products Association of Canada
fpac.ca

Association des produits forestiers du Canada
fpac.ca