CIRCULAR ECONOMY
IN PERSPECTIVE OF FIBER FLOW BETWEEN US AND CHINA

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NOVEMBER 5, 2019
FORET 2019 – WORLD BANK SIDE EVENT
CONCEPT OF CIRCULAR ECONOMY

A regenerative system by design in which innovative business model, social participation, and activities promoting reuse, reduce, recycling and recovery all contribute to close system-wide resource loops.

- Decouple economic activities from excessive levels of resource consumption and environmental damage.

Moreau et al., JIE (2017) 21, 497
Why Paper Recycling?

Common policy towards a circular economy
- Increase recycled content in a product
- Increase recovery of waste paper

Expected Impact in paper recycling
- More carbon sequestration in forest
- Less GHG emission from the production
- Less GHG emission from waste paper in landfills
The Impact of Increased Recycled Content in US Containerboard – Scenario Analysis

J.C. Chang et al. *J. Cleaner Production* 241 (2019) 118133

Based on 2015 US fiber flow data.
Red color - Additional recovery is cheaper than Blue and green
US Recovered Paper in 2015

Domestic Consumption of Recovered Paper in US
- Copy paper mill
- Newsprint 2%
- Tissue Mill 13%
- Paperboard Mill 24%
- Containerboard Mill 57%

Total 27 million t consumed

Recovered Paper Export
- Exported to China 67%
- Export to Other 33%

Total 19 million t exported
Total 13 million t exported to China

13 million t of exported recovered paper to China is mostly old corrugated cardboard and mixed paper (poorly sorted)
PAPER RECYCLING IN US VS CHINA

US

• Both virgin and recycled paper
• High domestic collection
• High cost of sorting for high quality grade

China

• High recycled content paper made of imported waste paper
• No virgin pulping capacity
• Low domestic collection (poor infrastructure)
TAKE AWAY

• Both US and China do not have a full circle of resource flow.

• A policy promoting a circular economy in one country influence another country depends on its resources.

• GHG emission reduction benefits from a circular economy policy may not be as much as expected due to unintentional consequences in other countries.

• To achieve benefits of a circular economy, making an investment decision should be based on a comprehensive approach with consideration of the impact on the relevant system.