

Cascading of woody biomass – principles, policies & market effects

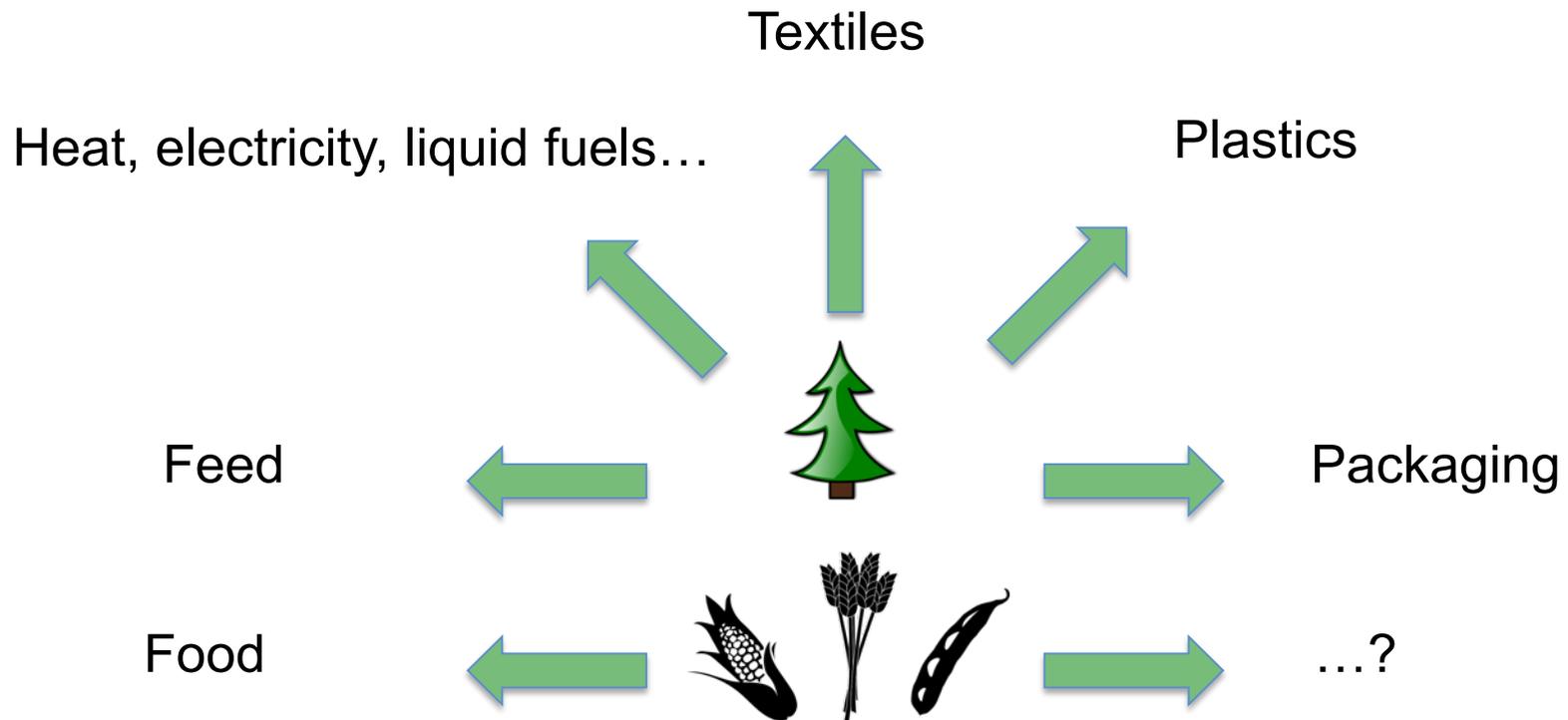
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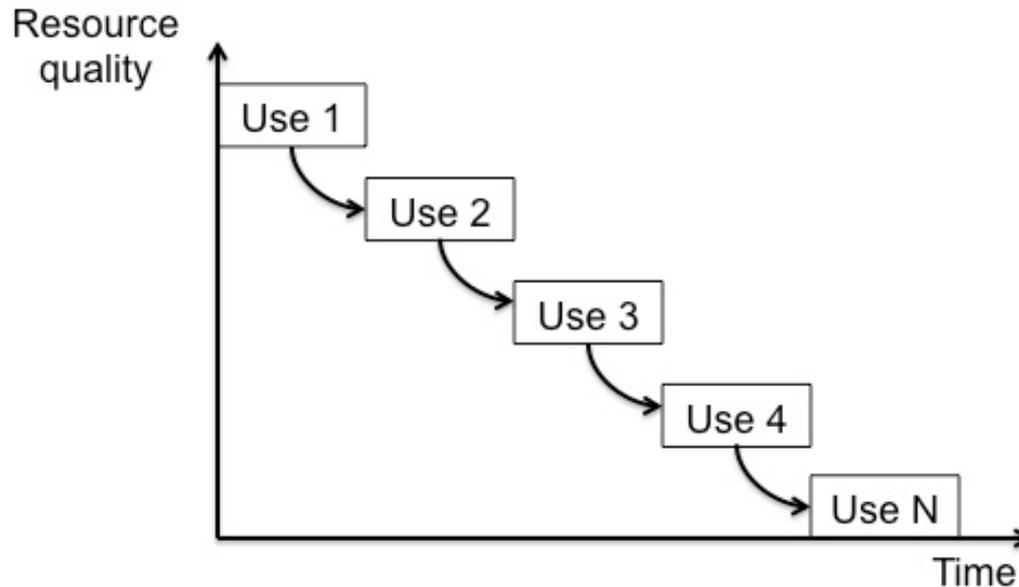
Outline

1. “Cascading”: history & terminology
2. Policy implementation: lessons from history
3. Discussion points & paths forward

Background: the bioeconomy



Cascading: origins



(Sirkin & Ten Houten, 1994)

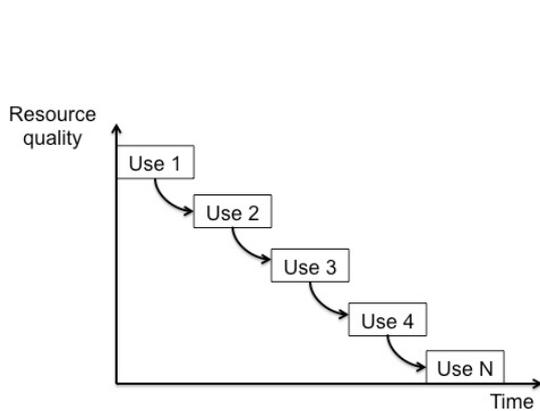
Aim is to maximize

Utility Effect = Resource Quality x Time

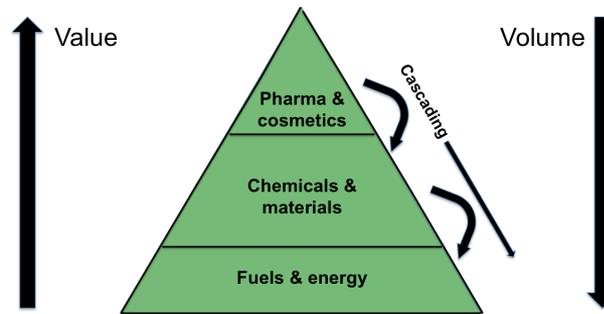
How to measure Resource Quality?

- Market value?
- Utilization value?
- Energy content?
- Invested effort?
- Replacement equivalency?
- ...?

Terminology development



“Cascading-in-time”



“Cascading-in-value”



“Cascading-in-function”

Cascading in EU policy

Policy document	Bioeconomy Strategy	Forest Strategy	Circular Economy Package	iLUC Directive
Key terms associated with cascading	<ul style="list-style-type: none"> • Value added • Resource Efficiency • Re-use • GHG emission reduction 	<ul style="list-style-type: none"> • Value added • Job creation • Carbon storage 	<ul style="list-style-type: none"> • Resource Efficiency 	-
Role of bioenergy	<ul style="list-style-type: none"> • Other uses of biomass than bioenergy should be prioritized 	<ul style="list-style-type: none"> • Bioenergy second lowest priority 	-	Other uses of biomass than bioenergy should be prioritized

Bioenergy in the cascading debate

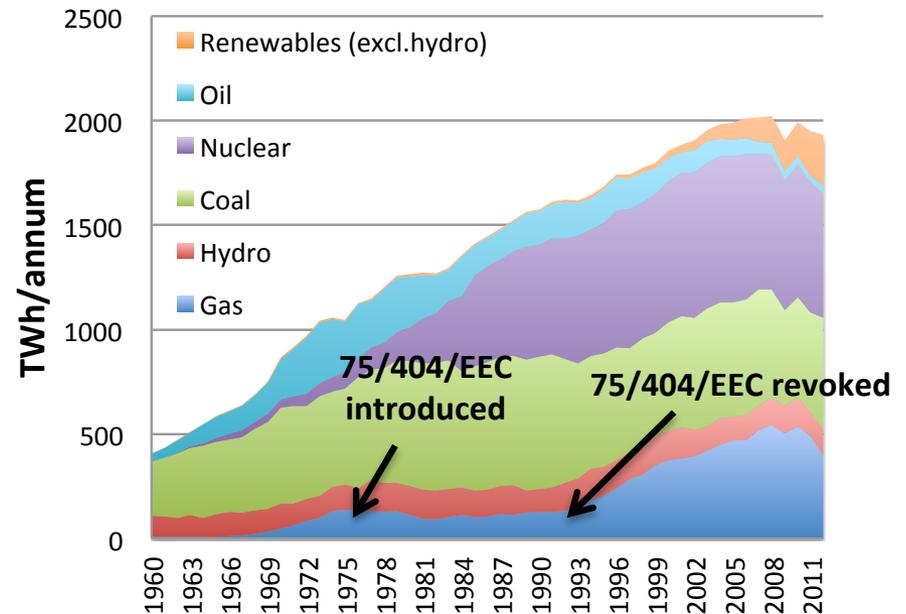
- Low(est) priority in cascading hierarchies
- Bioenergy often seen as a problem that cascading can solve
- Policy implementation?

Historical parallels

- 1975 - 1991: European ban on use of natural gas for electricity
- 1976 - 1991: Swedish rationing on the use of wood for energy
- 2008 - : Flanders policy rationing of woody biomass for industry

EEC ban on use of gas for power

- Response to 1973 oil crisis
- Gas for power only if there was not a “more profitable use” available
- In place 1975-1991



Swedish wood fiber law 1976-1991

- Introduced in late 1970s to ensure reduce competition over forest resources
- Results:
 - Hampered development
 - Nurtured opportunistic behaviour
 - Biased market incentives
- Regulation goals could be reached using other means (more imports & mobilizing of resources)

Flanders: materials hierarchy

- Industrial resources not to be used for energy
- Panel & paper industry consulted in approving use of resources
- Key question: how to decide what is an industrial resource? Who decides?

Lessons from history

- Administrative resource allocation problematic:
 - Non-flexible
 - Lobbyism vs. markets
 - National rules vs. international trade
- Sound precedent for bioeconomy policy?



Conclusions

- Cascading terminology confusion
 - No consensus on what “cascading” is
 - Using undefined concepts in legislation is problematic
- Historical cases highlight risks of regulating resource allocation
- Policy coherence (Bioeconomy, Renewable energy, Circular economy, Forest strategy...)?

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