

ENERGIETRANSITIE



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van Nederlandse Papier- en kartonfabrieken



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Biorefinery

in the Dutch Paper and Board Industry

Annita Westenbroek, 16 June 2006

EEN GROTE SPRONG MAKEN



Biorefinery

het scheiden van biomassa in verschillende componenten die al dan niet na een verdere bewerking en scheiding afzonderlijk af te zetten zijn*

* Transitiepad Bioraffinage okt. 2003

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EEN GROTE SPRONG MAKEN

Biorefinery in the paper industry

The pulp mill biorefinery:

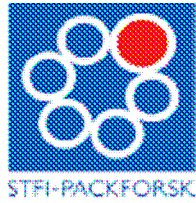
- Full utilization of the incoming biomass (= trees) for simultaneous production of fibres for paper products, chemicals and energy



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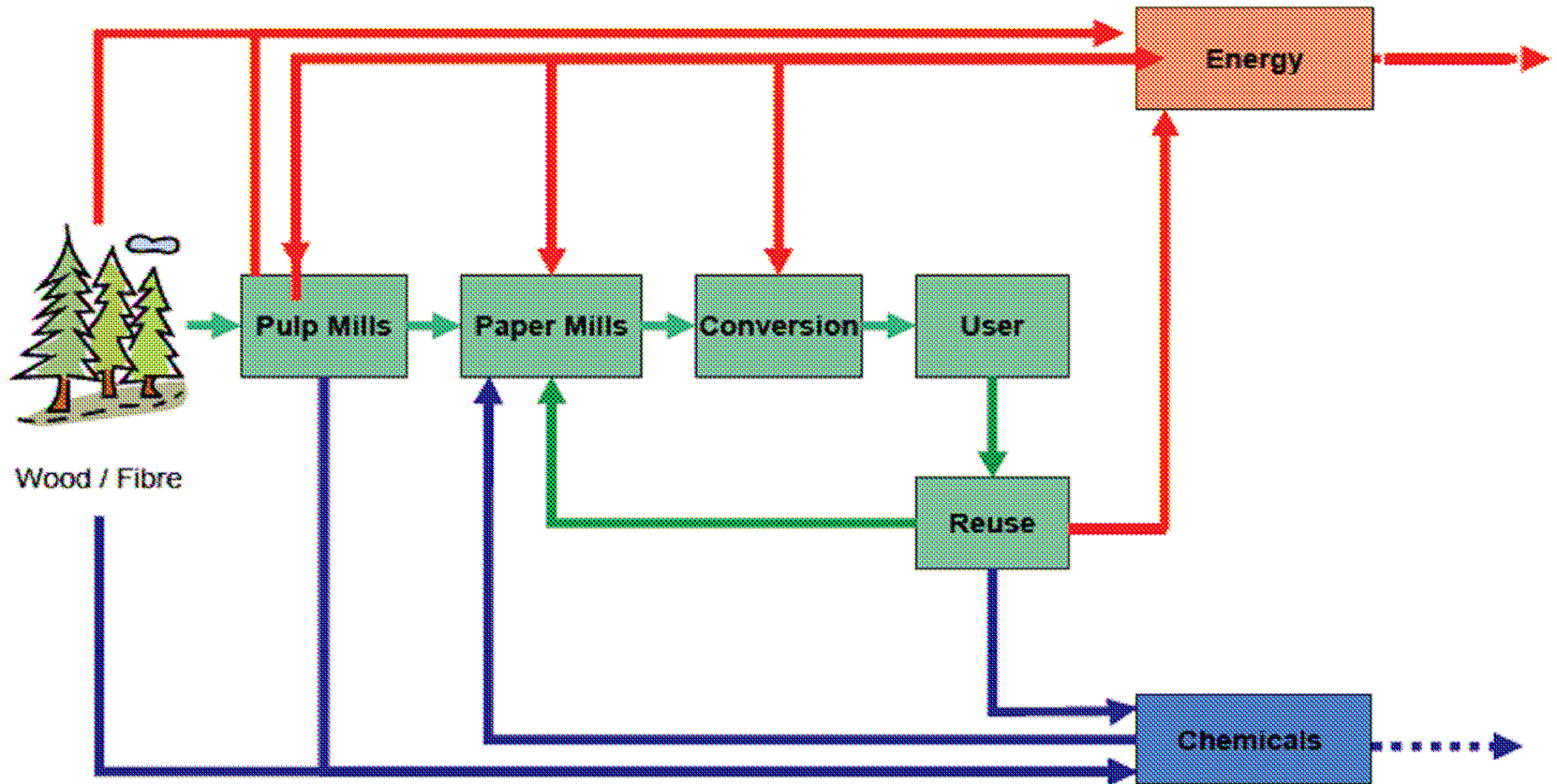


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Fibres, energy and chemicals from wood

Peter Axegård, STFI-Packforsk
Presentation at the 1st International Biorefinery Workshop
July 20-21, 2005, Washington, D.C.





A modern SW kraft mill producing 630 000 t pulp/y yields as by-products

- 750 000 t of organic material in black liquor:
 - 330 000 t lignin
 - 220 000 t hydroxycarboxylic acids
 - 75 000 t extractives
 - 37 000 t aliphatic acids
 - 7 000 t methanol
- 120 000 t bark
- 22 000 t tall oil
- 2 600 t turpentine

Not applicable in the Dutch paper industry!

Why is the Dutch situation different?

- No chemical pulping (so no lignin recovery)
- Virgin fibres are imported as ready made pulp, and 5% is mechanically pulped from wood
- 75% of fibre raw materials is recycled!

What is biorefinery for the Dutch paper industry?



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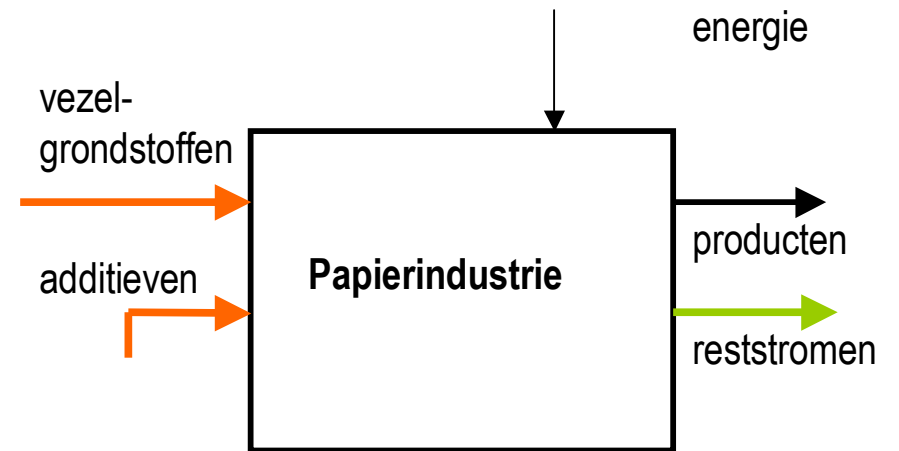
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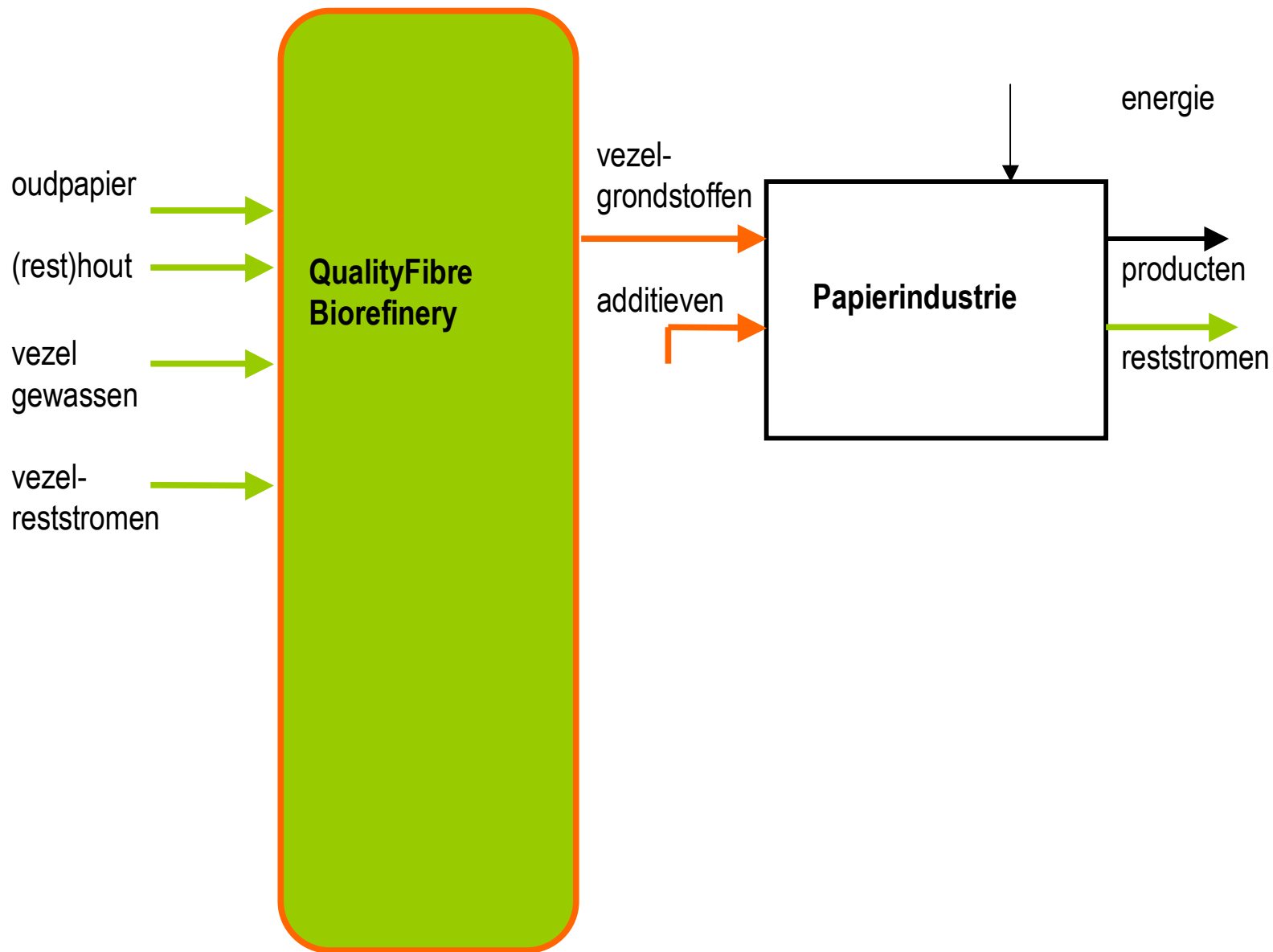


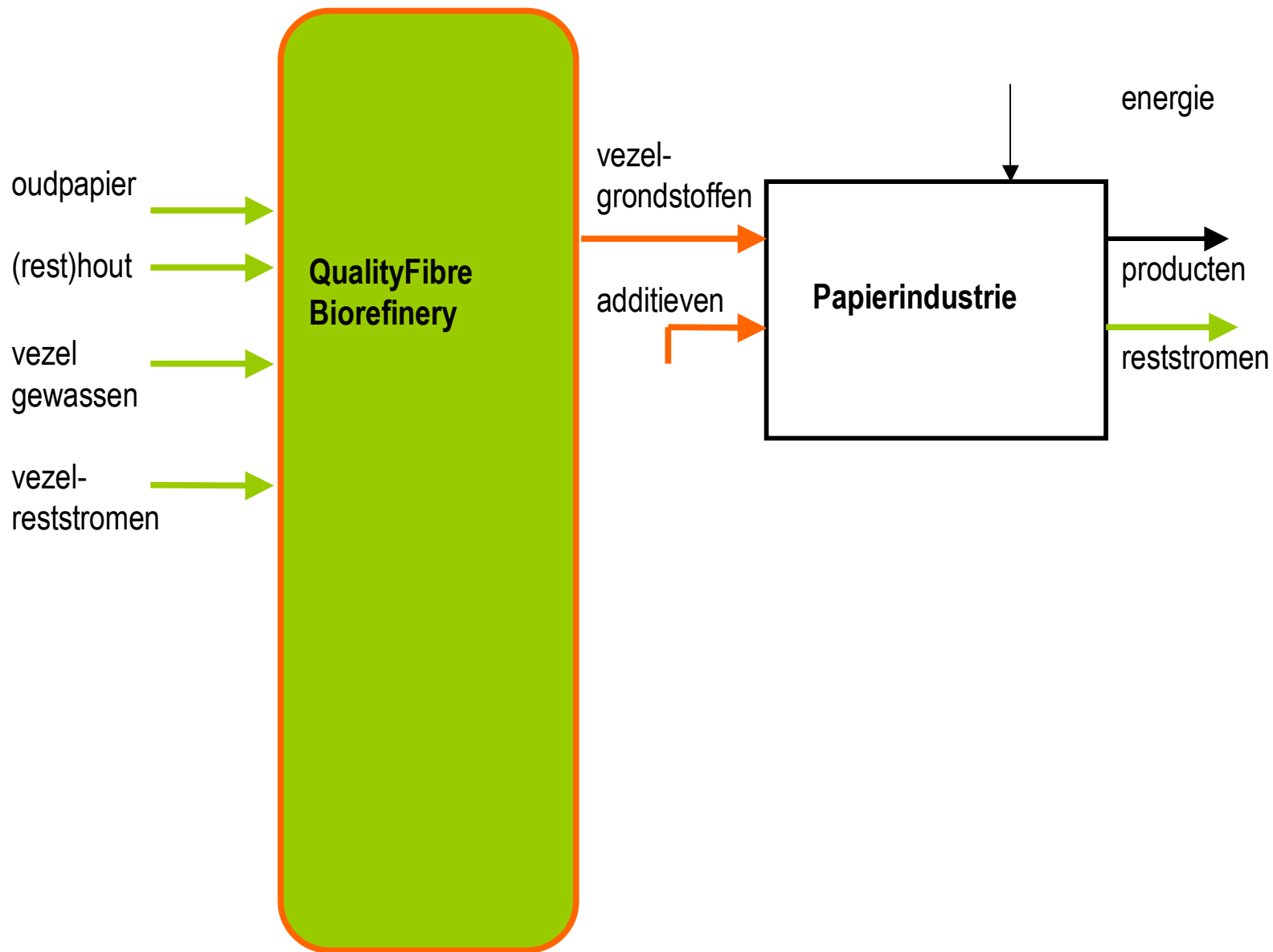
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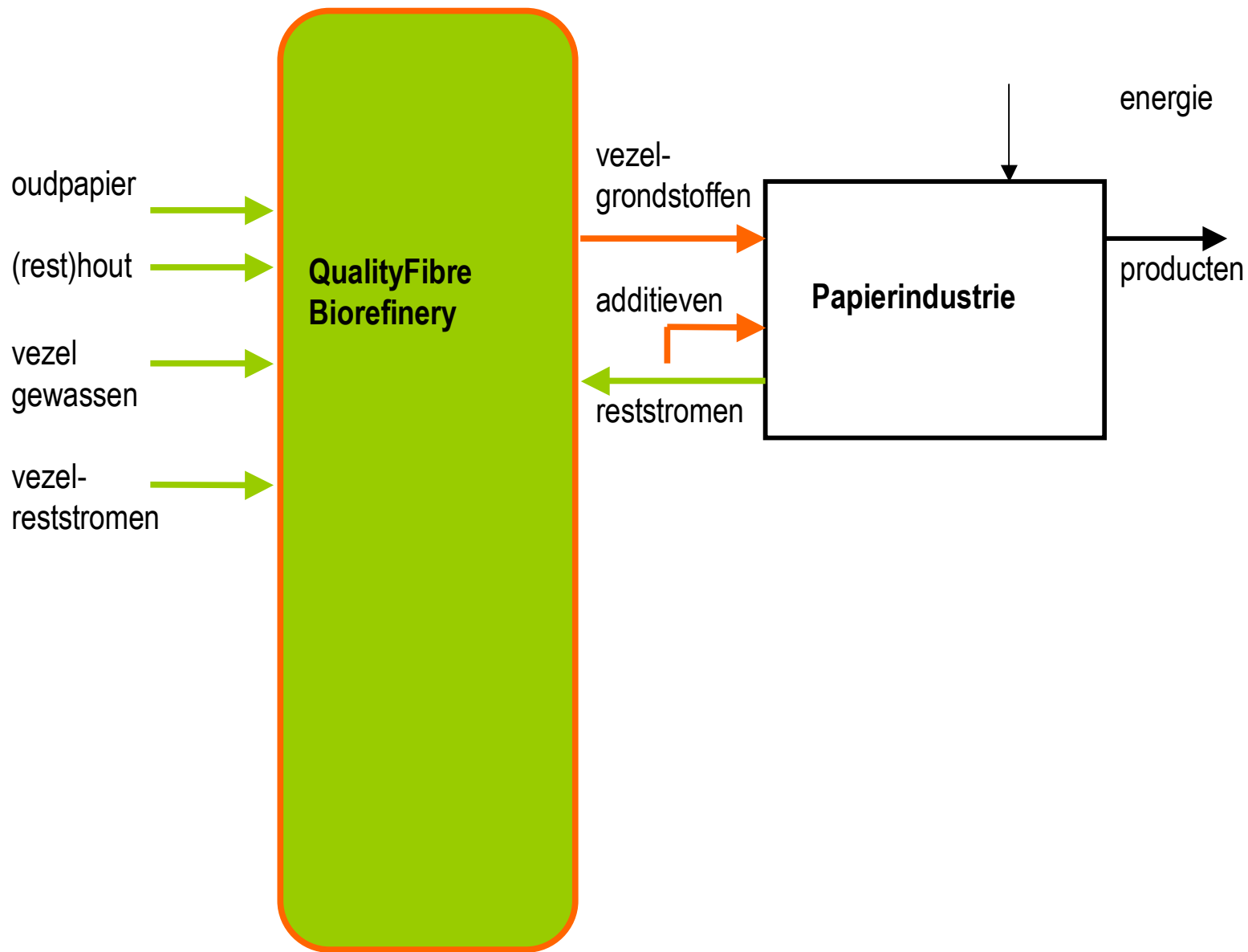


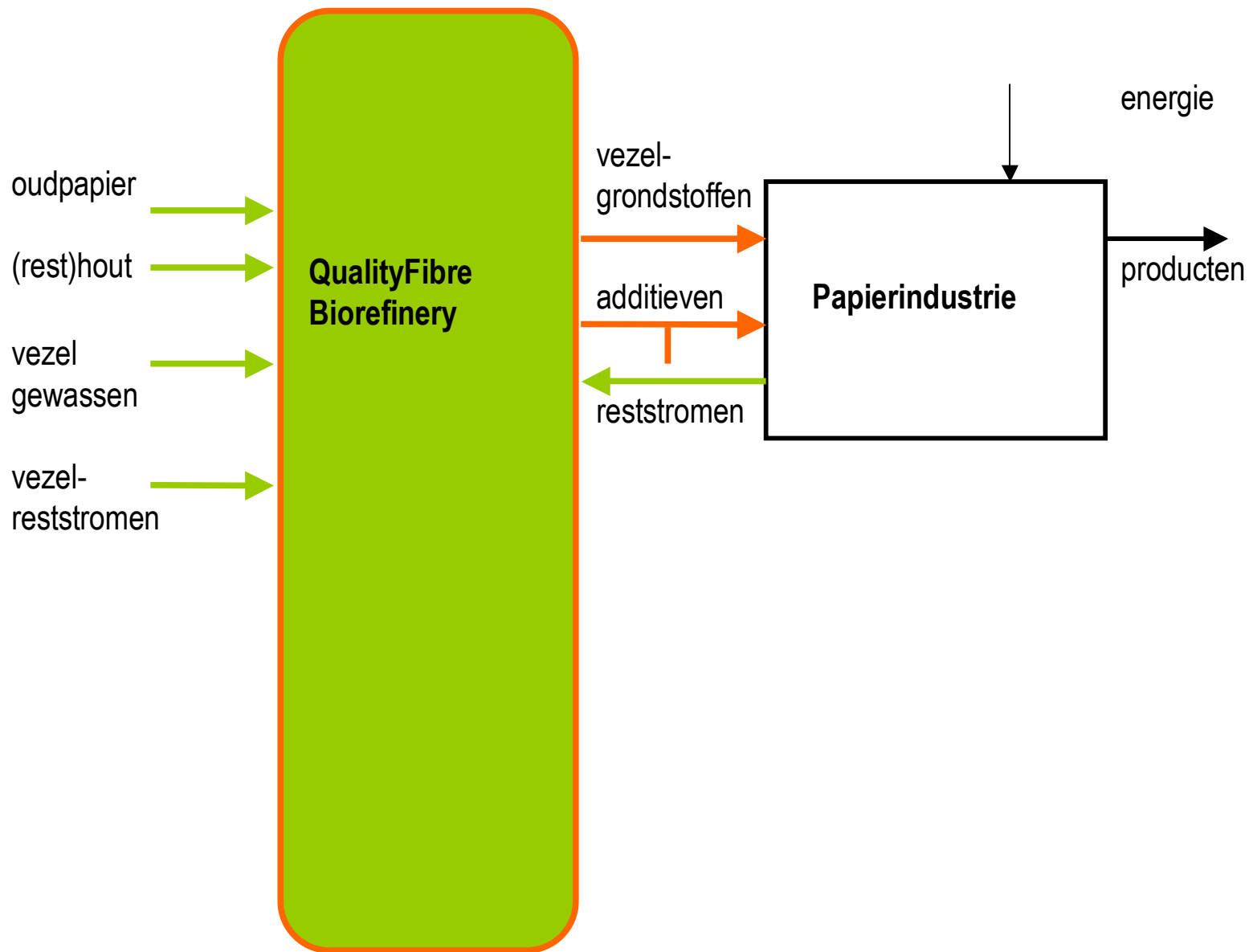
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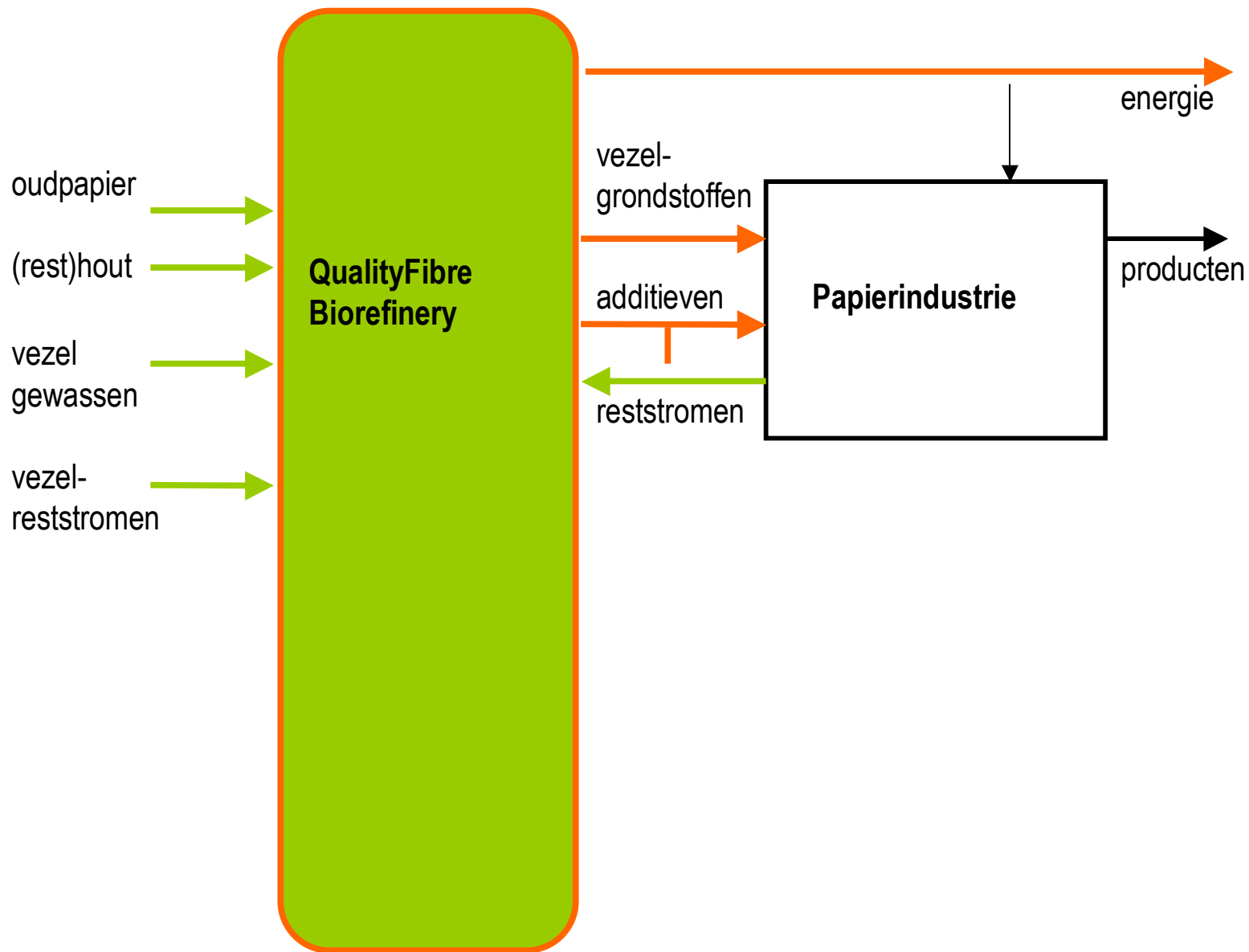


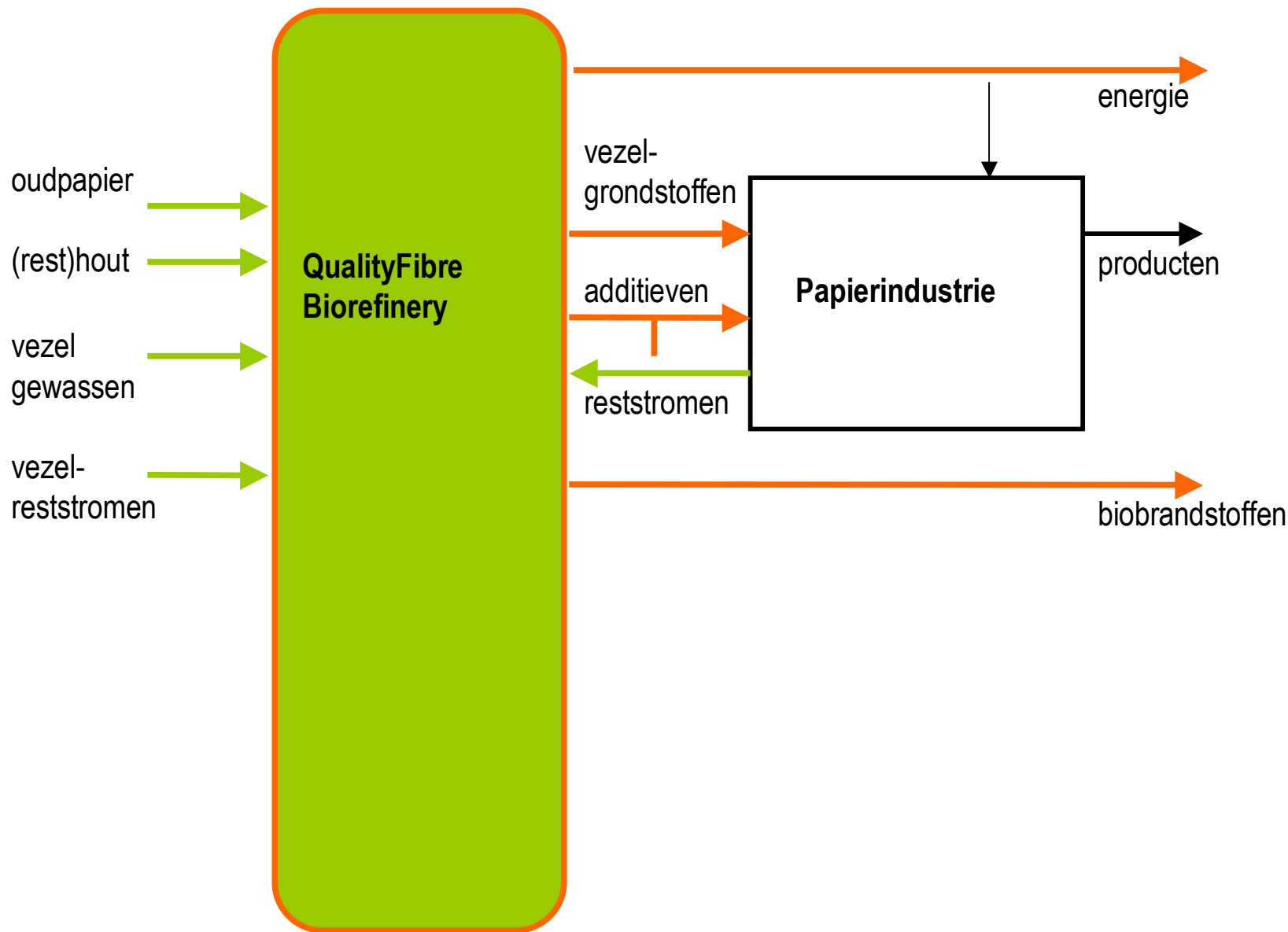


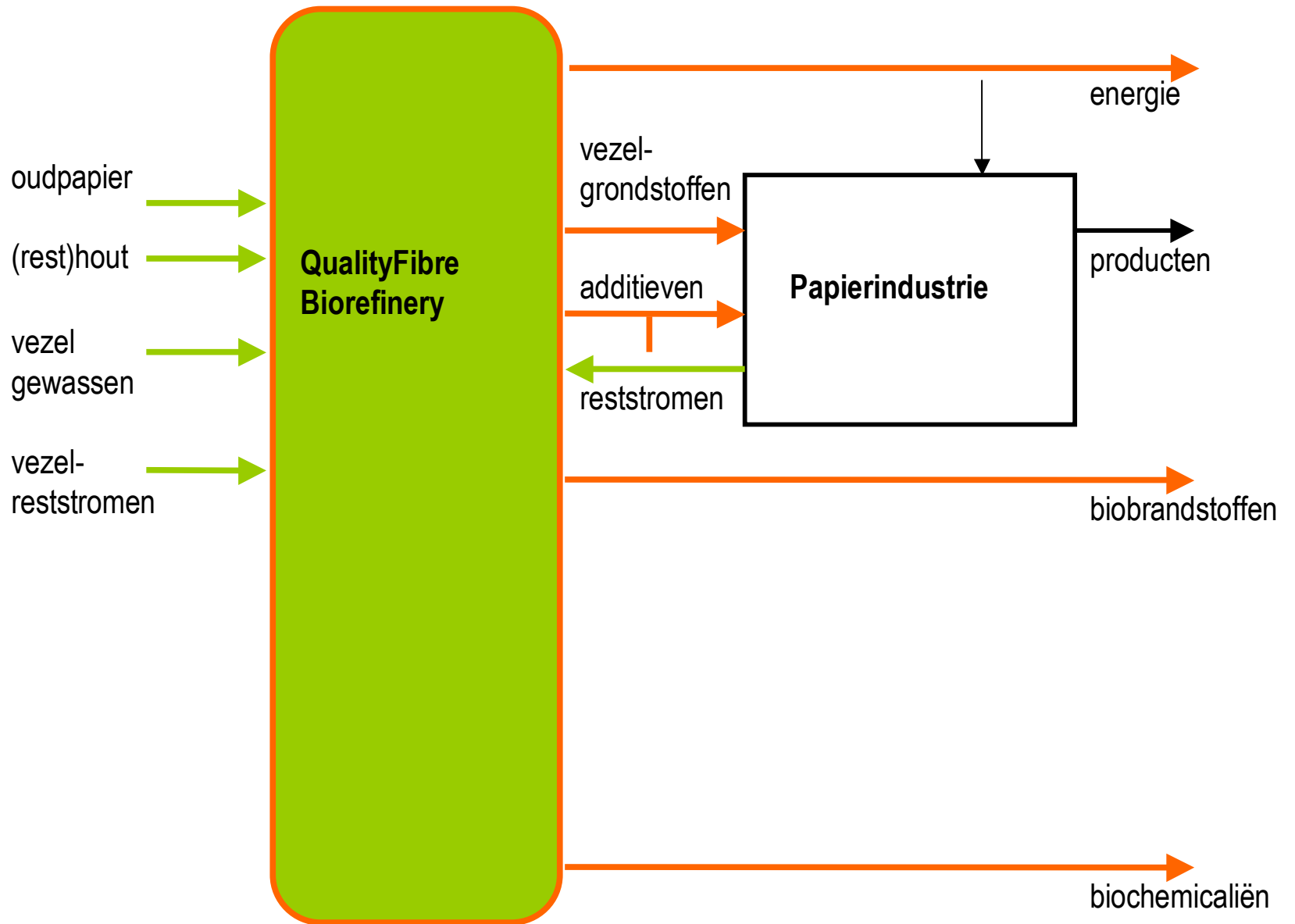


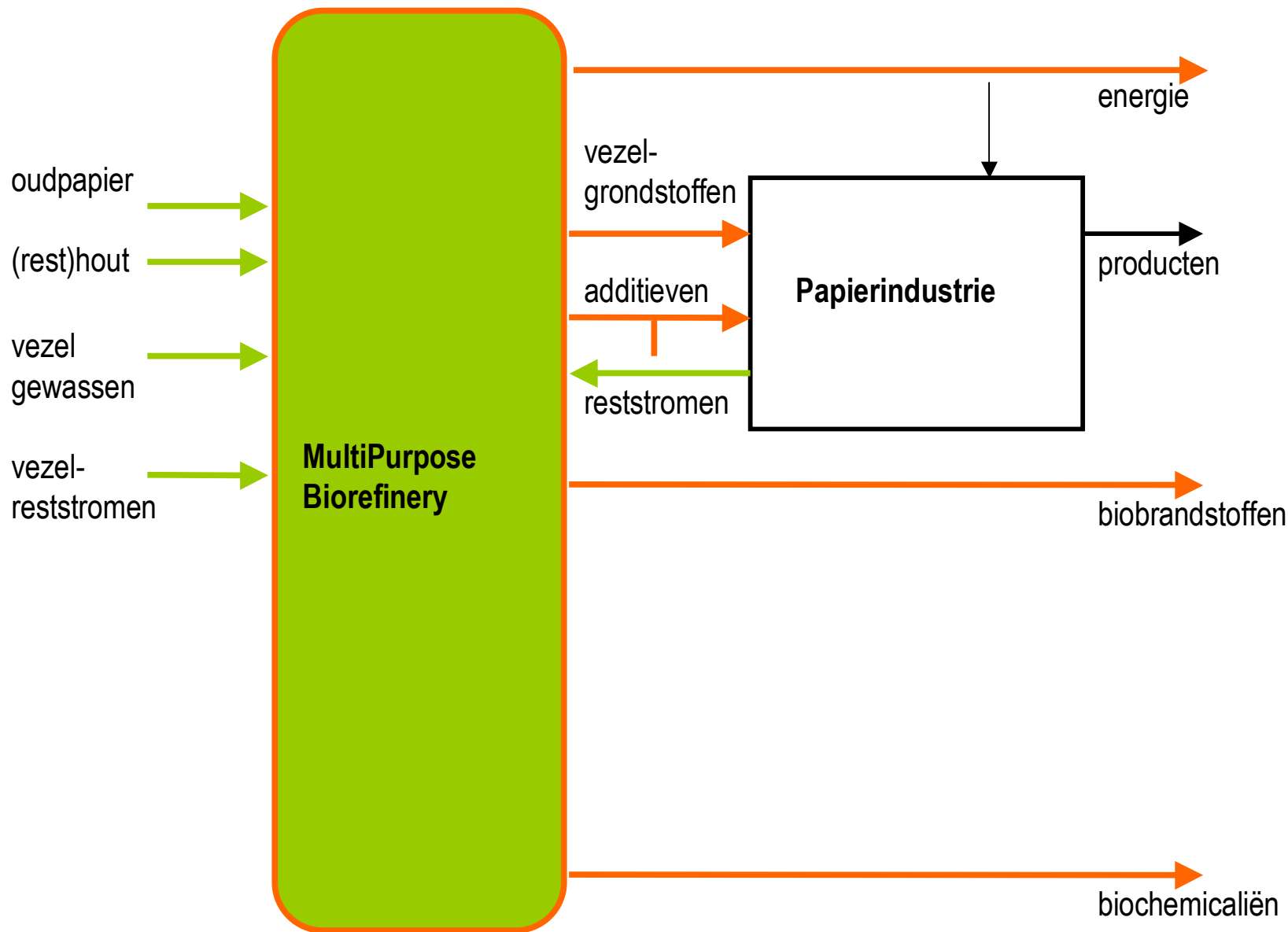










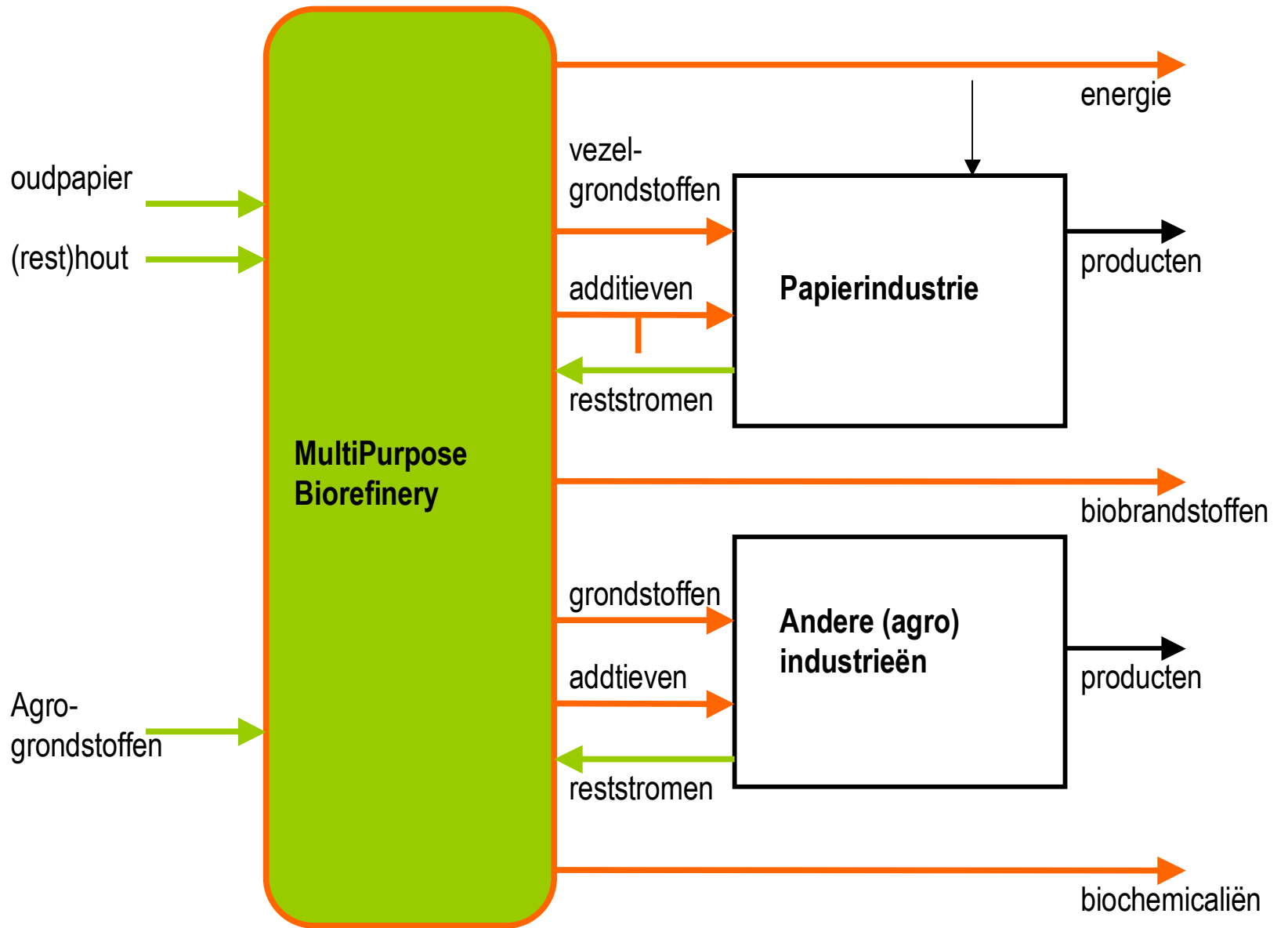


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Biorefinery

- Efficient and total usage of raw materials and by-streams
 - Into a broad range of high added value products
 - By co-operation in and between chains



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Scope

Three dependent themes:

- Co-operation in fibre raw material processing and use (virgin, recycled, alternative sources) towards tailor made raw materials for each process and product
- Conversion of own by-streams to valuable components, new products and/or energy
- Processing of by-streams from other industries into valuable raw materials and additives for our industry



Discussion

- How to translate this future vision into concrete and clear actions in the coming period?
- Which external parties can play a role in this?
- Definition 'biorefinery' for 'Primary Products': What is thought of when mentioning the term 'biorefinery'?

