



SUNPAP

Consumer and market needs

Katja Bergroth, Pöyry
SUNPAP Workshop 5.10.2011

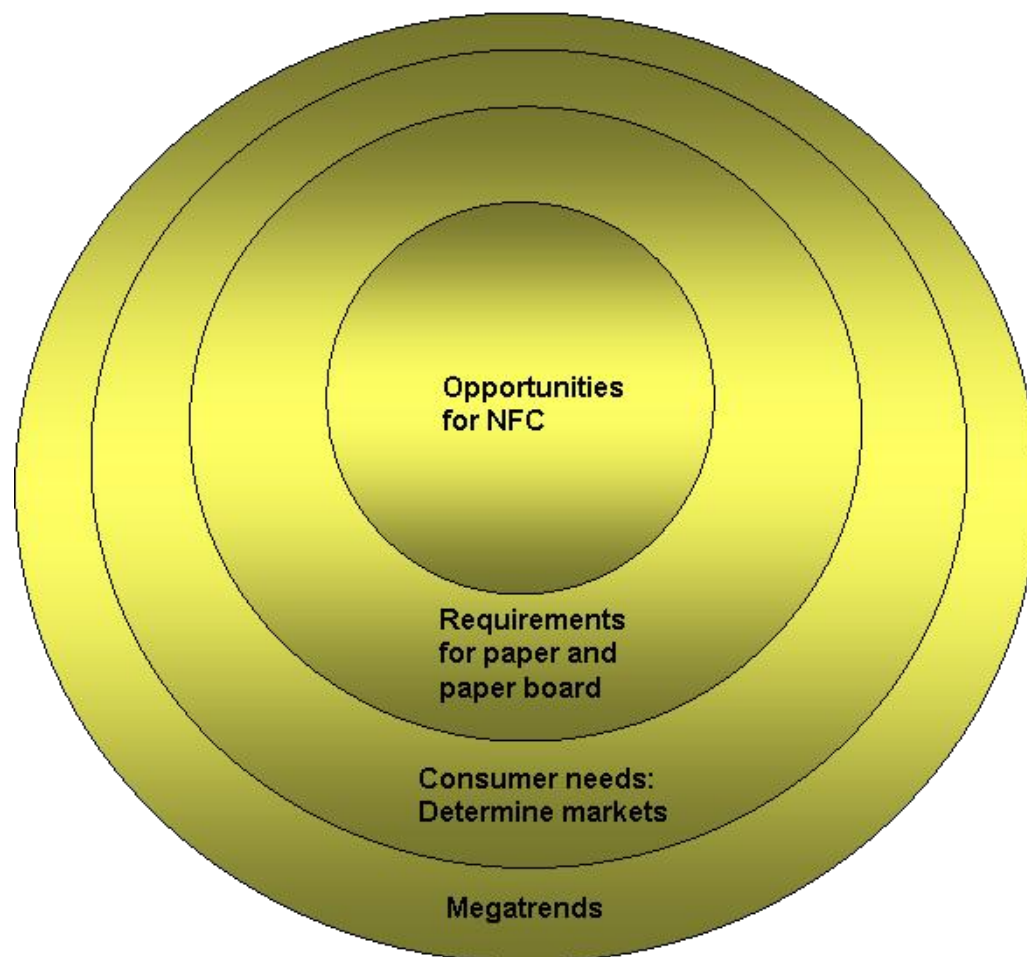
Contents

The consumer markets point of view for producing nanocellulose:

- what can NFC be used for ?
- what consumer needs it could fulfil ?
 - in what type of applications ?

Results are gathered form the SUNPAP report: Market needs to fill

- Starting from megatrends, consumer trends and then identifying impacts on selected paper and paperborad grades.
- CONSUMER: future needs on the global consumer market
- MARKET: current market perspective of SUNPAP grades.
- POTENTIAL: areas based on markets and trends where nanocellulose could be used



MEGA TRENDS

Following megatrends were defined critical for the study:

1. Development of emerging economies
2. Climate change
3. Resource scarcity
4. Population growth
5. Urbanization
6. Technology development

TREND 1: EMERGING ECONOMIES

and Globalisation, or Localisation?

China



Russia



India



Brazil



TREND 2: CLIMATE CHANGE

- Recently several political decisions have been made to support mitigation of climate change



TREND 3: CRITICAL RESOURCES

- **LAND**, according to Sten Nilsson, ex-IIASA, there will be only around 200-300 mill ha free usable land available in 2030
- **WATER**, availability of clean water is a diminishing resource due to agricultural failures, poor industrial standards in developing countries and as climate change proceeds
- **BIOMASS**, development and use of biomass in especially bioenergy results in reduced raw material availability.
 - E.g. EU renewable energy target: renewable energy in final energy consumption in Europe shall be increased from 8.5% in 2005 to 20% in 2020.
- **FOOD**, predicted population growth and land use for other purposes and land degradation put pressure on food production



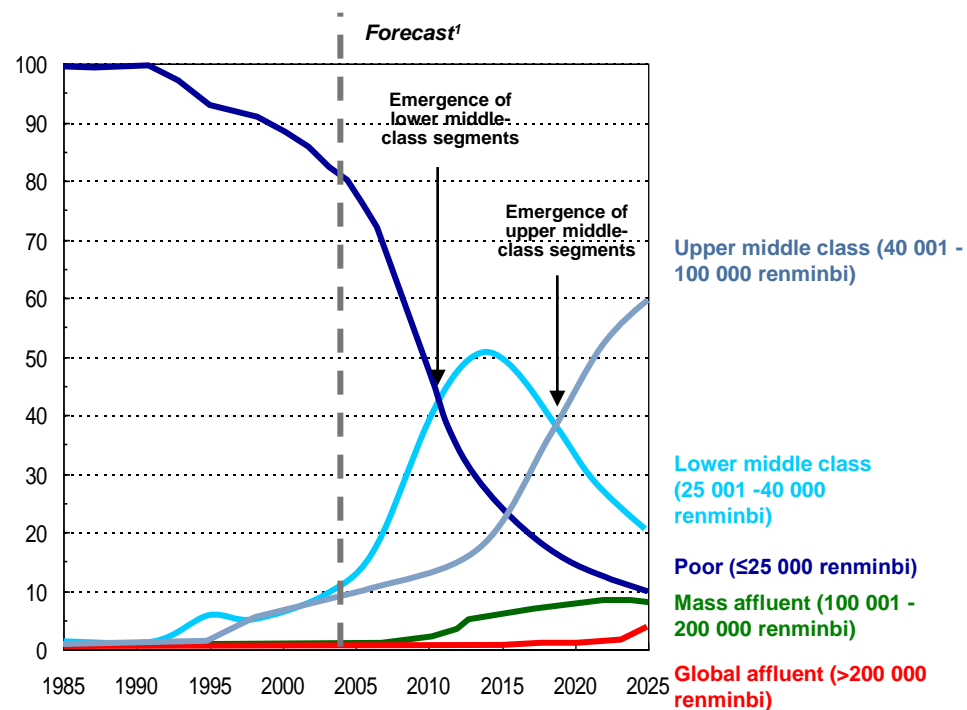
TRENDS 4 and 5 –HIGH POPULATION GROWTH AND URBANISATION

The raise of the middle class in emerging economies



SOURCE: <http://humanurbanisation.wordpress.com>

Share of urban households, ¹ %

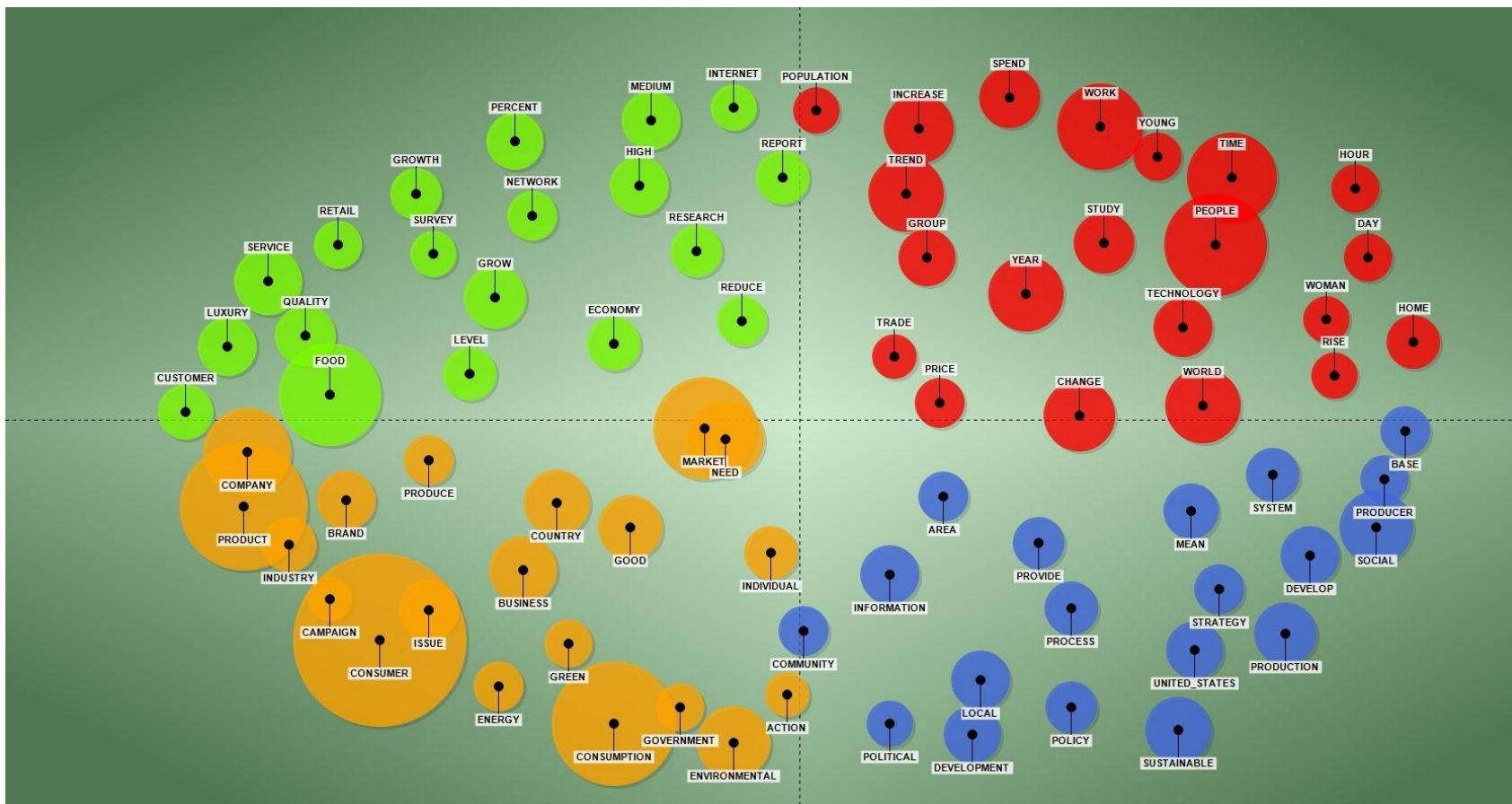


¹ Base case forecast, Q1 2006
Source: National Bureau of Statistics of China; McKinsey Global Institute analysis

TREND 6: FAST TECHNOLOGY DEVELOPMENT



Consumer trends



Case: Consumer types in selected areas

Population Increase

<p>India China Brazil Vietnam</p> <ul style="list-style-type: none"> • <i>Sharply growing demand for various types of consumer products</i> • <i>Growing middle class driver for high growth</i> 	<p>USA</p> <ul style="list-style-type: none"> • <i>Social media, digitalisation and relationship economy</i> • <i>Freedom of choice</i> • <i>Convenience vs. lack of time</i> • <i>“Family pack culture”</i>
<p>Russia Former Eastern European Countries</p> <ul style="list-style-type: none"> • <i>Still emerging demand of conventional bulk products</i> • <i>Segment of ultra luxury</i> • <i>Freedom of choice</i> 	<p>Countries in Western Europe Japan Canada South Korea</p> <ul style="list-style-type: none"> • <i>Social media, digitalisation and relationship economy</i> • <i>Freedom of choice</i> • <i>Convenience vs. lack of time</i> • <i>Dematerialisation and recycling</i> • <i>Request for new type of services for elderly and single/small households</i>

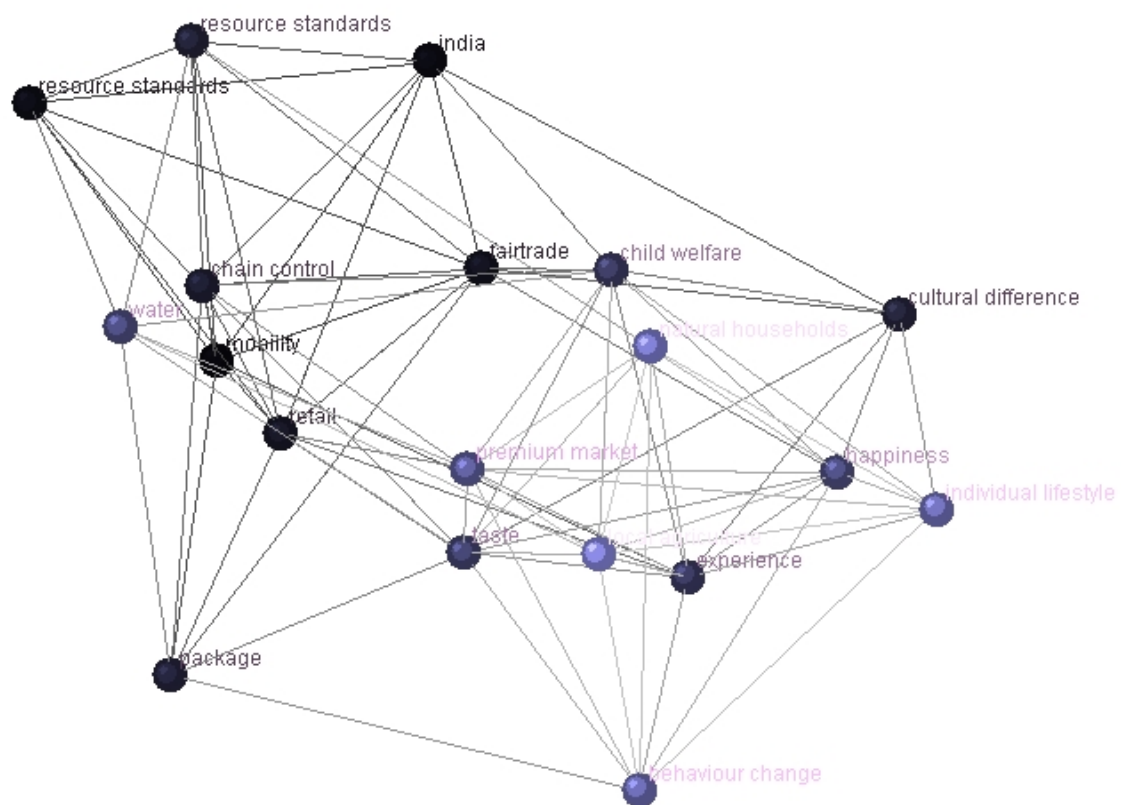
Population Decrease

Emerging Markets

Mature Markets

Source: Pöyry

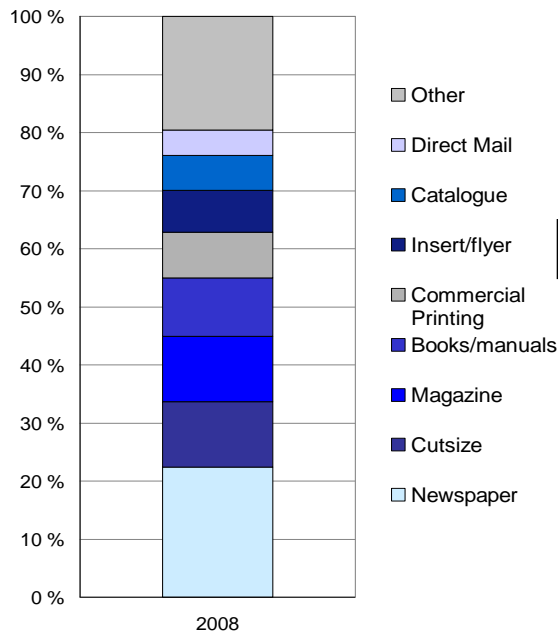
Weak signals links



MARKETS AND SUNPAP GRADES

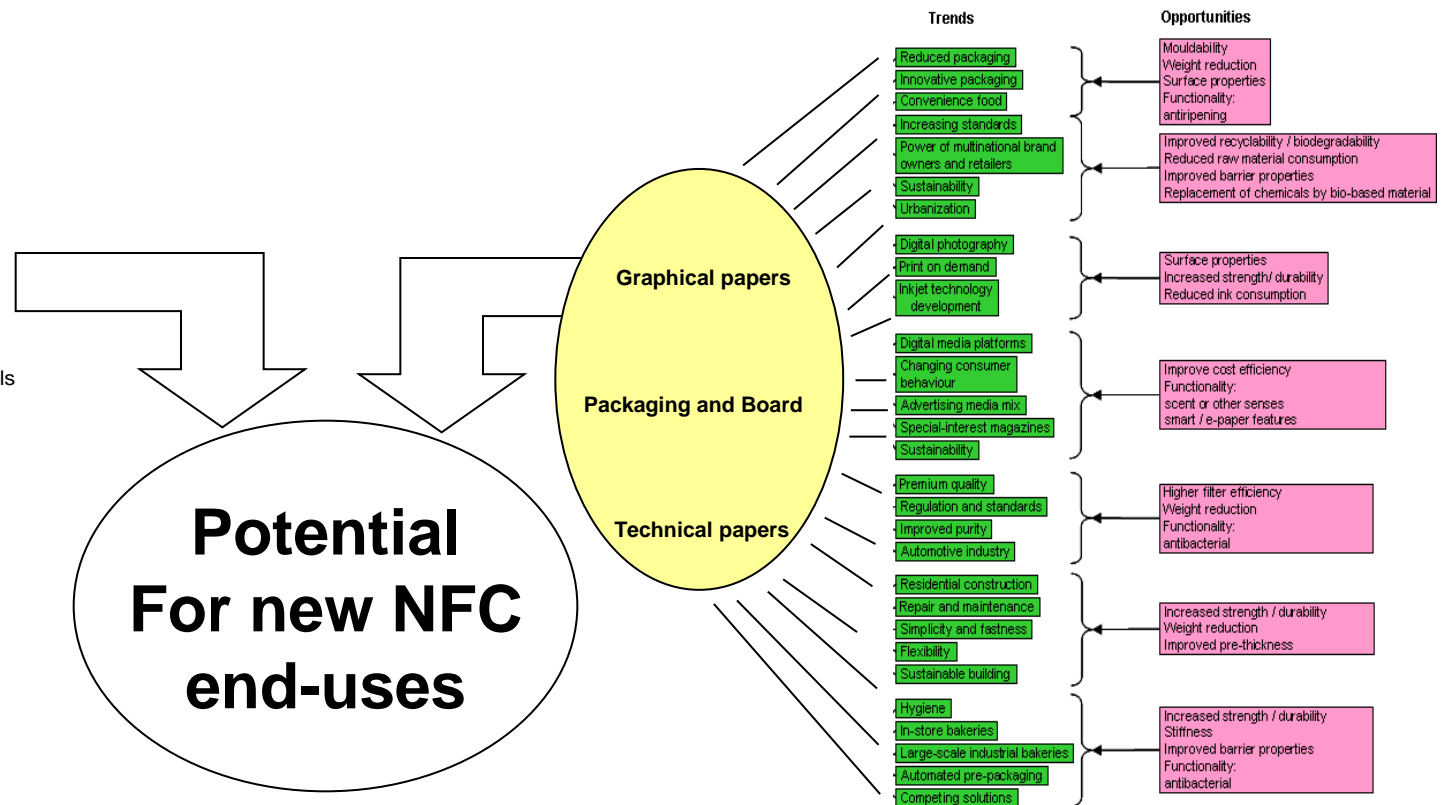
A two folded approach was used

Global perspective of end-uses



Source: UN Comtrade, Pöyry

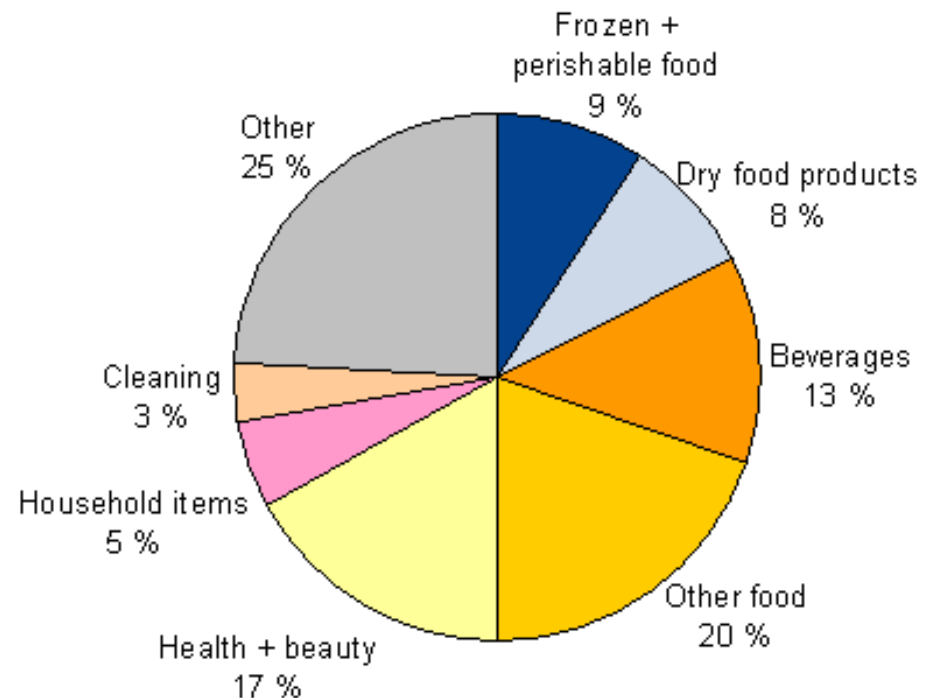
NFC opportunity tree for end-uses



* business forms, envelopes, educational paper, miscellaneous

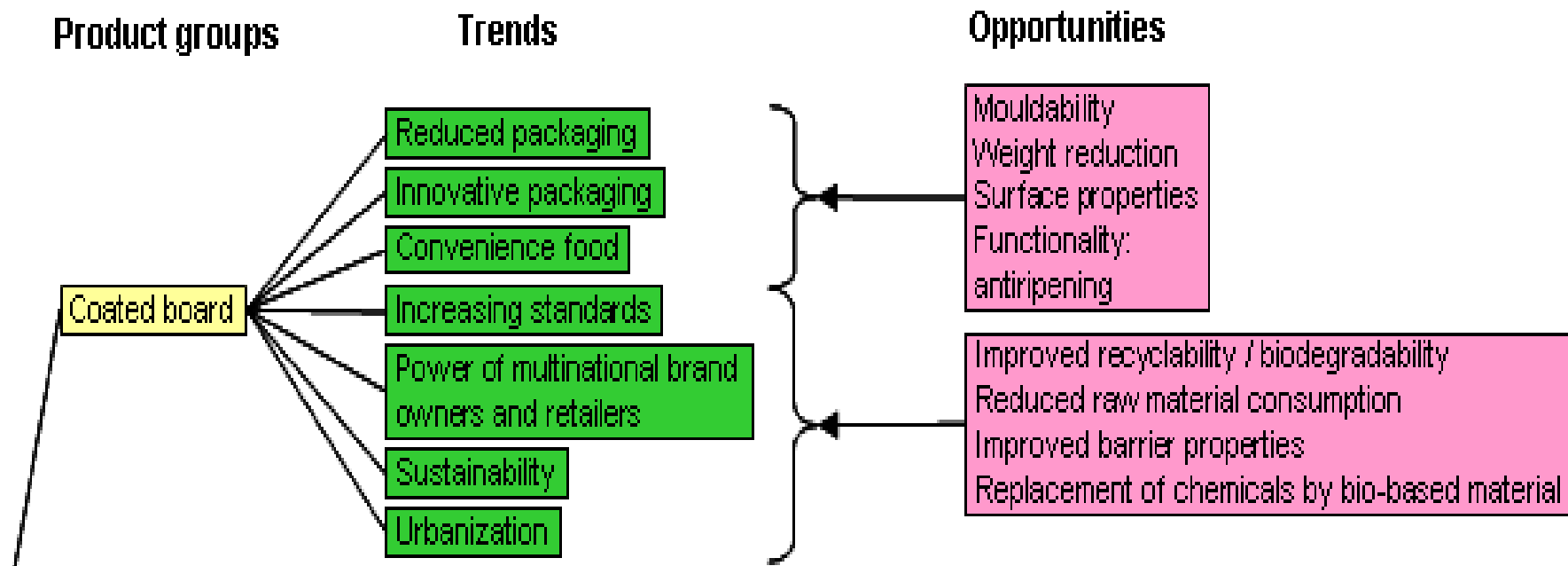
Case 1. Coated board end-uses

- The main end-use is food packaging (~40%)
- Other important end-uses are beverages, cosmetics, pharmaceuticals and electronics.
- FBB/SBS account for 26% of the global packaging grades.



Main cartonboard end-uses

Coated board – trends and opportunities

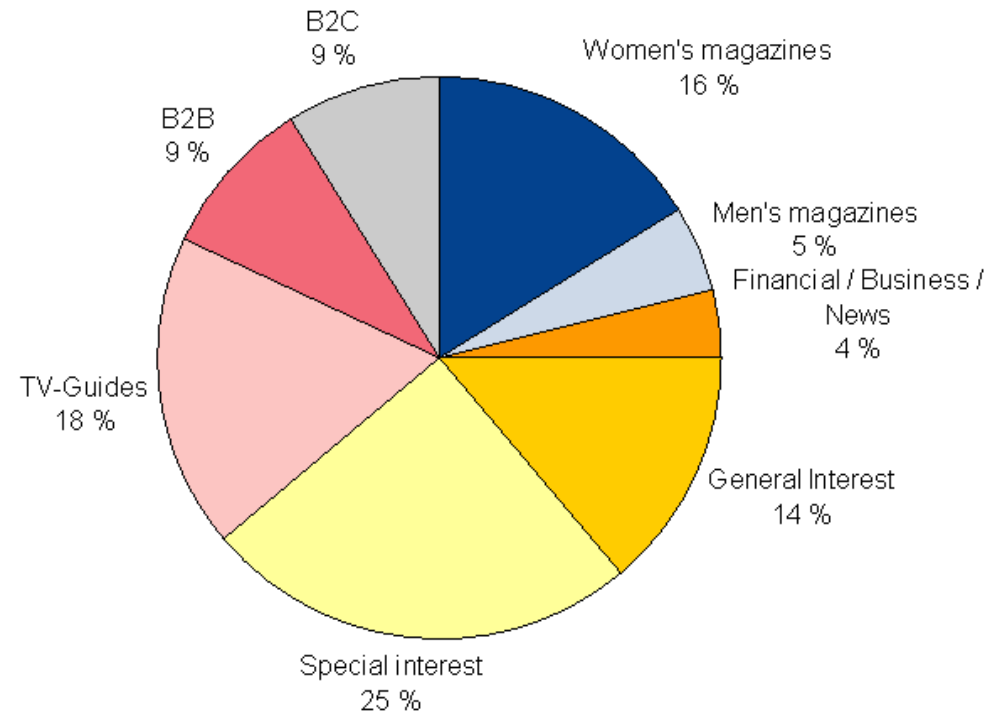


Conclusion– Case 1

- E.g. in the **coated board** product group, in packaging, **urbanisation and sustainability are arising trends.**
- Application of nanocellulose could give a response to these trends by **reducing packaging weight, enhance mouldability properties and improve recyclability.**
- These features would reduce raw materials usage and support trends of resource efficient operations and more importantly the ever increasing demand of cost reductions.

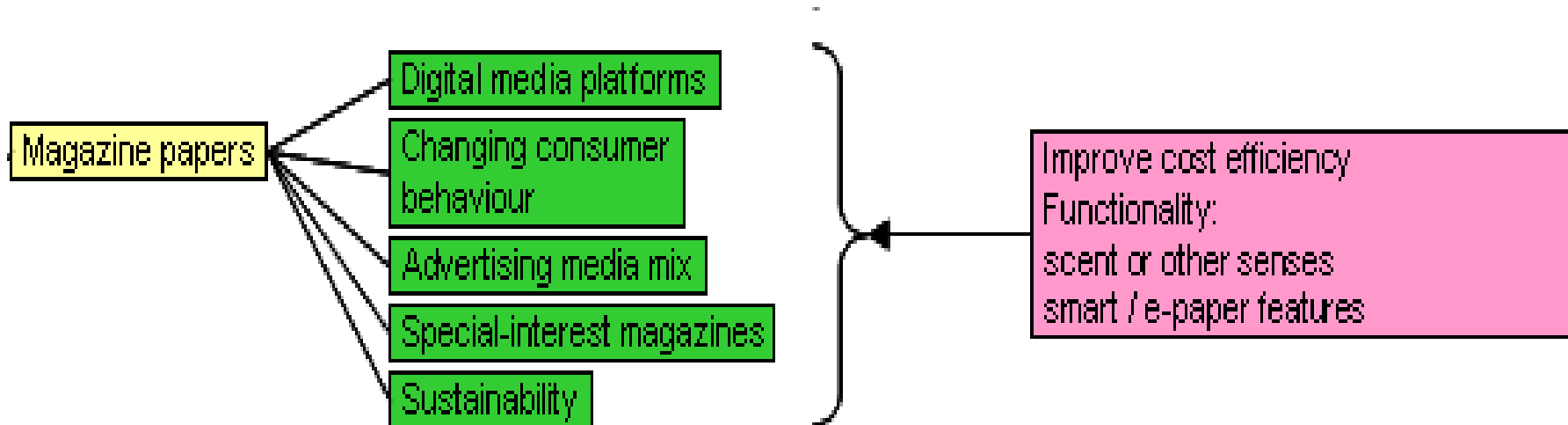
Case 2. Magazine paper end-uses

- There is a trend towards special-interest magazines
- While the consumption (and production) of coated mechanical paper will slowly start to decline in developed markets, the demand in emerging markets will continue to grow.



Magazine end-uses in Europe

Magazine paper – trends and opportunities



Conclusions – Case 2

- In **magazine papers** product group the trend is that the attention of consumers and advertisers is **shifting from printed media to electronic channels**.
- The solution that applications of **functionalised NFC** could offer is development of new types of shiny and appealing but cost efficient surface solutions by **new types of pigment solutions, reducing basis weight** at the same time.
- In addition, several R&D activities indicate that nanocellulose can be used in **improving coating features through strength properties**.

Conclusions

- There are several different potential application areas for nanocellulose in paper and paperboard grades selected in the SUNPAP project.
- The report identified the trends connected to the selected product groups and connected trends to the opportunities of nanocellulose provides.
- Paperboards have the largest market possibilities followed tightly by paper end-uses. Technical and speciality papers offer more opportunities in niche products.
- NFC does not only offer possibilities to improve current products on the market but it makes possible to develop completely **new types of value added of niche products** fitting into all product groups presented in this study. E.g. functionalising NFC a range of new properties like conducting, photoactive or magnetic papers can be added into cellulose materials.

Acknowledgment

- The research leading to these results received funding from the European Community's Seventh Framework Programme under Grant Agreement No 228802.