Resource Dashboard: Relevance to CRM Substitution

Risk Assessment in Material Supply Chains (Example – Optical Fibres)

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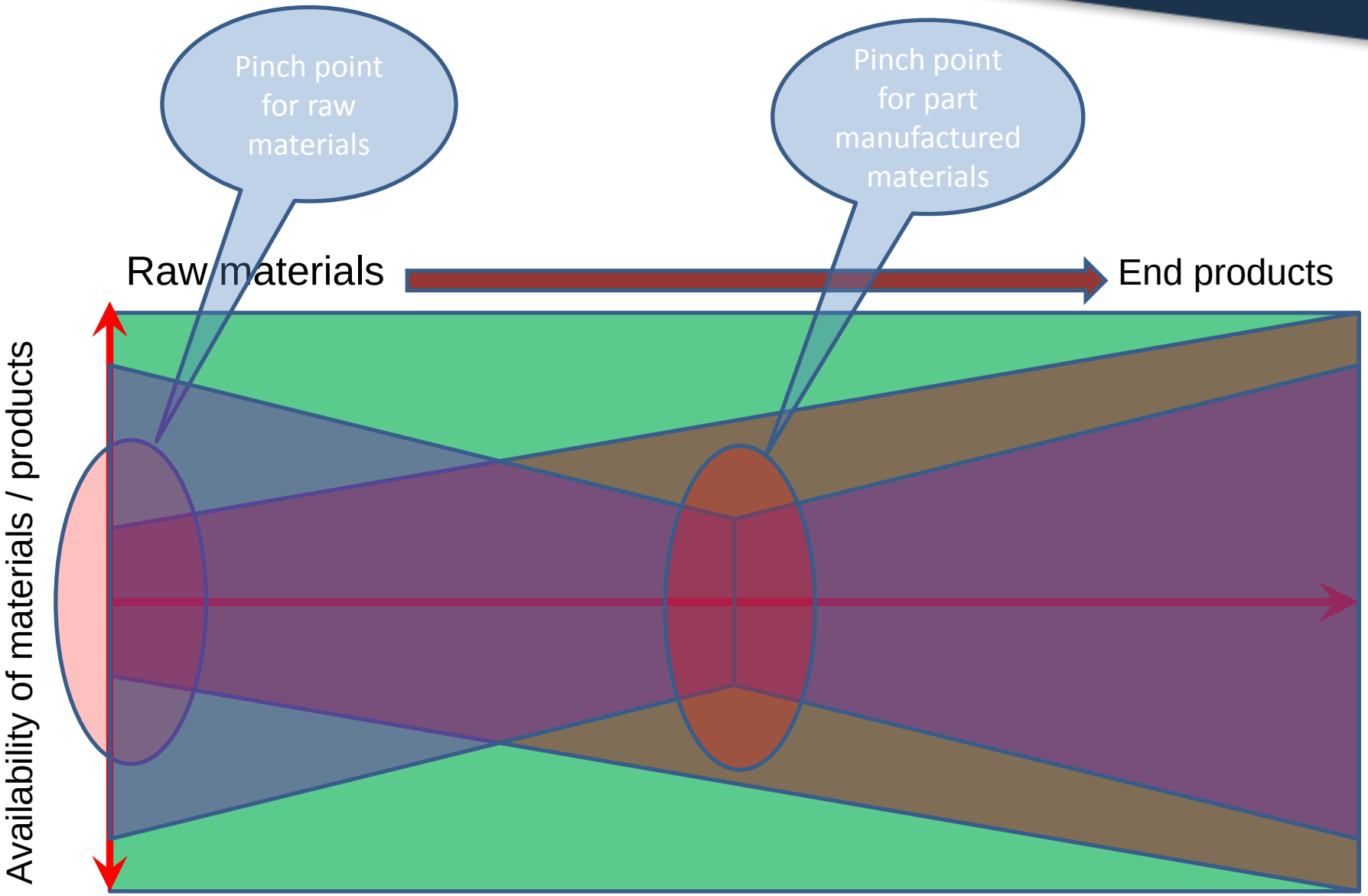
Background

- Developed in response to UK Resource Security Action Plan
  - ***The House of Commons Science and Technology Committee,and business bodies such as the Aldersgate Grouphave called for a dashboard or database to raise awareness and help companies understand the risk and issues associated with the security of materials.***

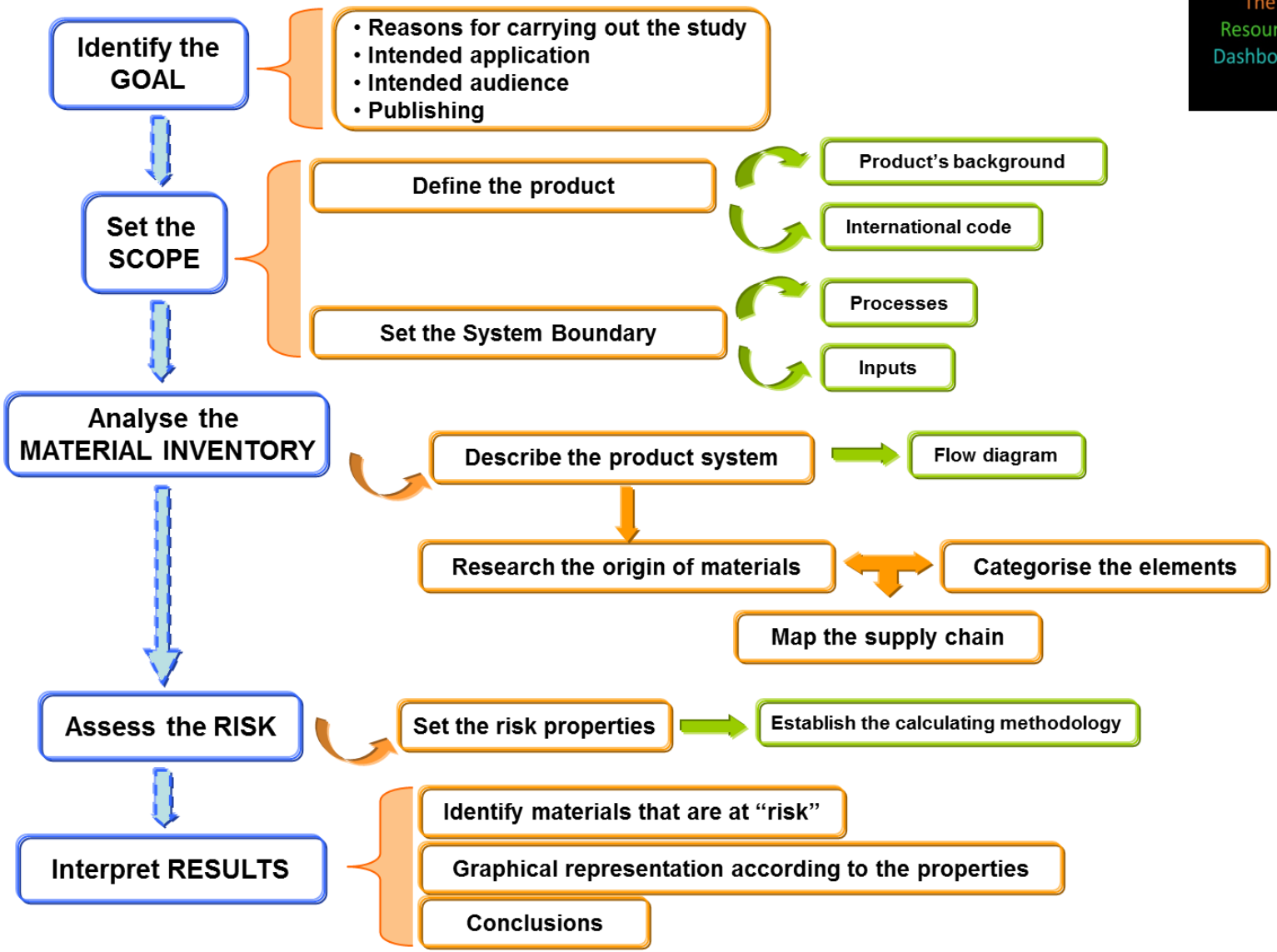
Beyond raw material supply



A complex problem

- How to represent the material flows and assign risk throughout the supply chain from resource to product?
- A need to identify hot-spots for further investigation
- Five phases
  - Identify the goal
  - Set the scope
  - Develop the material inventory
  - Assess the risk
  - Interpret the results

Overall methodology



Step 1: Identify the goal

- Description of the problem to be studied and reasons for undertaking the study
  - One or two paragraphs to outline the overall objective and provide an overview to any interested organisations. Also can compare this with other studies undertaken.

(Evaluation of the risk of the materials supply for producing and optical fibre cable. A publicly available analysis for comment and review based on a generic cable system)

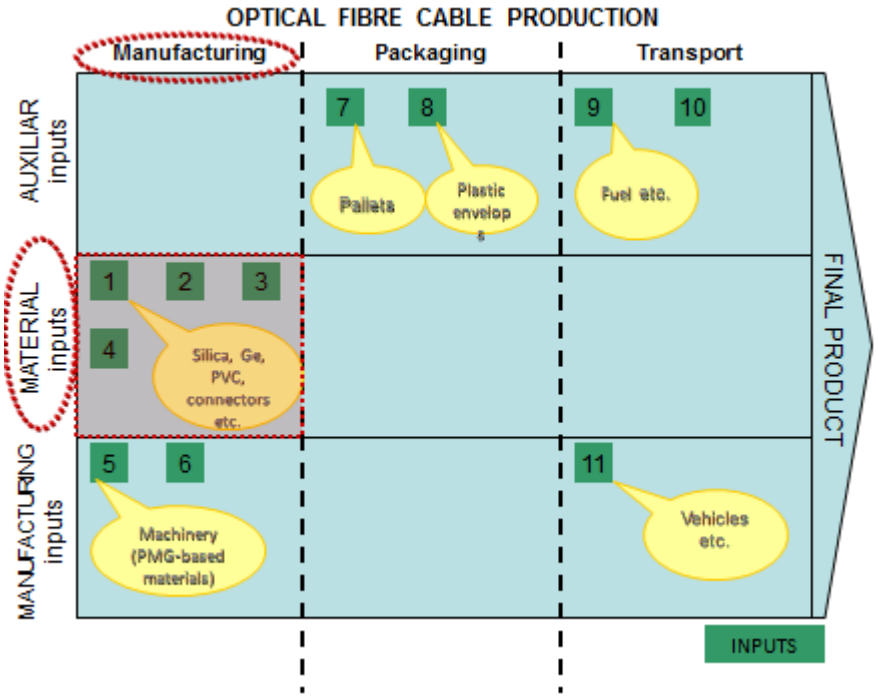
Step 2: Scope

- The product at the end of the supply chain is identified using a recognised international standard (e.g. WCO's Combined Nomenclature or ProdCom – these two standards have comparative tables
- System Boundary
  - The manufacture of the product / packaging / transport / use
  - Materials in the product only or materials needed to manufacture it (e.g. tools, catalysts etc.)

The study looks at the product code 85447000 – Optical fibre cables made up of individually sheathed fibres, whether or not containing electric conductors or fitted with connectors

Stage 3: Material Inventory Analysis

- Map the material inventory for the product in question that lies within the system boundary and the links between them.



Stage 3: Material Inventory Analysis (2)

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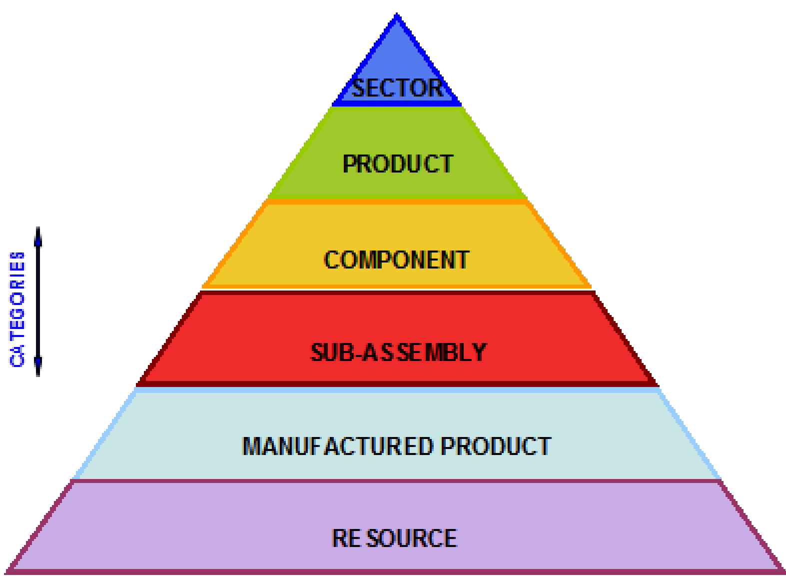
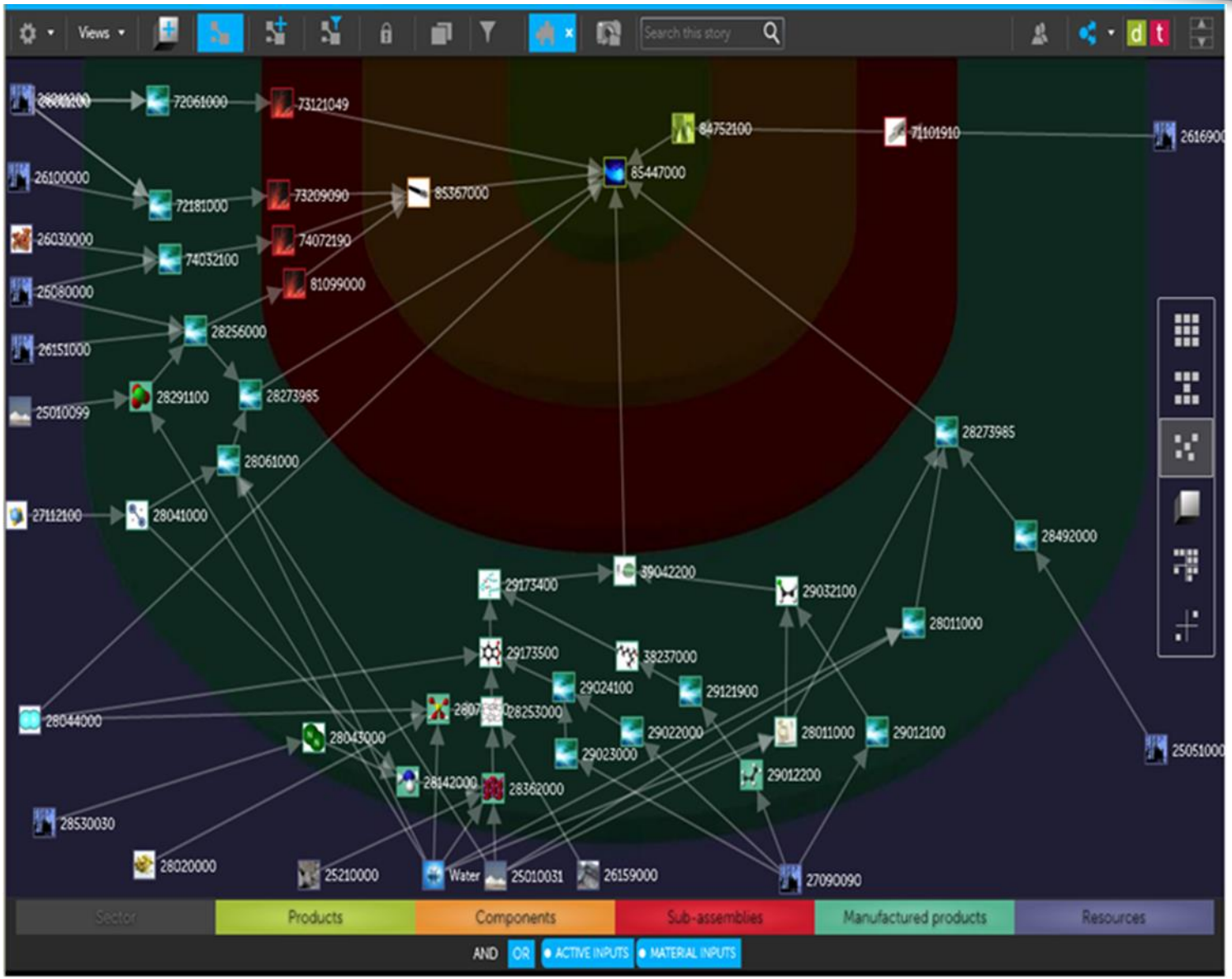
- Establish the links between each part of the product and the resources it needs



For the production of which element is this element used? / Which elements are needed for producing this element?

			Components	Sub-assemblies				Manufactured products																	
			85367000	73121049	73209000	74072190	81099000	28273985	39042200	28273985	72061000	72181000	74032100	28256000	28061000	29173400	29032100	28011000	28492000	28291100	28041000	38237000	29173500	29012100	29121900
Products	85447000	Optical fibre cables made up of individually sheathed fibres, whether or not containing electric conductors or fitted with connectors	X	X				X	X	X															
Components	85367000	Connectors for optical fibres, optical fibre bundles or cables			X	X	X																		
Sub-assemblies	73121049	Stranded wire, ropes and cables, of iron or steel other than stainless steel, with a maximum cross-sectional dimension of <= 3 mm (excl. electrically insulated, twisted fencing and barbed wire, and plated or coated with copper-zinc alloys (brass))									X														
	73209000	Springs and leaves for springs, of iron or steel										X													
	74072190	Profiles of copper-zinc base alloys "brass", n.e.s.											X												
	81099000	Articles of zirconium, n.e.s.												X											
Manufactured products	28273985	GeCL4-->Chlorides (excl. ammonium, calcium, magnesium, aluminium, iron, cobalt, nickel, tin and mercury chloride)												X	X										
	39042200	Plasticised poly"vinyl chloride", in primary forms, mixed with other substances														X	X								
	28273985	SiCL4-->Chlorides (excl. ammonium, calcium, magnesium, aluminium, iron, cobalt, nickel, tin and mercury chloride)																X	X						
	72061000	Ingots, of iron and non-alloy steel (excl. remelted scrap ingots, continuous cast products, iron of heading 7203)																							
	72181000	Steel, stainless, in ingots and other primary forms (excl. waste and scrap in ingot form, and products obtained by continuous casting)																							
	74032100	Copper-zinc base alloys "brass" unwrought																							
	28256000	Germanium oxides and zirconium dioxide																		X					
	28061000	Hydrogen chloride "hydrochloric acid"																			X				
	29173400	Esters of orthophthalic acid (excl. dioctyl, dinonyl or didecyl orthophthalates)																				X	X		
	29032100	Vinyl chloride "chloroethylene"																X						X	
	28011000	Chlorine																							
	28492000	Carbides of silicon, whether or not chemically defined																							
	28291100	Chlorate of sodium																							
	28041000	Hydrogen																							
	38237000	Fatty alcohols, industrial																							X
	29173500	Phthalic anhydride																							
	29012100	Ethylene																							
	29121900	Acyclic aldehydes																							
	28253000	Vanadium oxides and hydroxides																							
	29024100	Xylene																							
	29012200	Propene "propylene"																							
	28362000	Disodium carbonate																							
	28070000	Sulphuric acid; oleum																							
	29022000	Benzene																							
	29023000	Toluene																							
	28142000	Ammonia in aqueous solution																			X				
	28043000	Nitrogen																							

Representation in Sharpcloud



Stage 4: Risk Assessment

- Use a 3 axis system
  - Risks
    - Regulation; Price; Price volatility; Global market size; Supply concentration; Stability of nations; Growth rate of use
  - Impact
    - GHG Emissions; Water use; Local impact
  - Mitigation
    - Recycling; Substitutability; Reuse; Longevity; Research levels

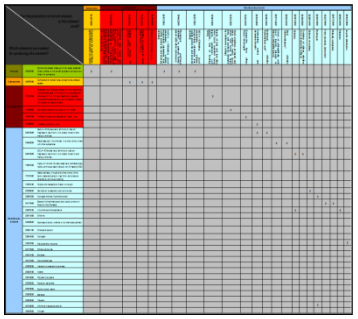
Table of 3 axis evaluation

Material elements		Numerical values of the risk properties *(from 0 to 100)*		
		RISK	IMPACT	MITIGATION
Risky element		50	80	60
85447000	Optical fibre cables made up of individually sheathed fibres, whether or not containing electric conductors or fitted with connectors	52,89	62.04	36.65
85367000	Connectors for optical fibres, optical fibre bundles or cables	22.67	69.76	57.42
73121049	Stranded wire, ropes and cables, of iron or steel other than stainless steel, with a maximum cross-sectional dimension of <= 3 mm (excl. electrically insulated, twisted fencing and barbed wire, and plated or coated with copper-zinc alloys [brass])	19.66	63.16	10.02
28273985	GeCL4–>Chlorides (excl. ammonium, calcium, magnesium, aluminium, iron, cobalt, nickel, tin and mercury chloride)	80.99	88.7	63.95
39042200	Plasticised poly"vinyl chloride", in primary forms, mixed with other substances	39.6	95.5	69.98
28273985	SiCL4–>Chlorides (excl. ammonium, calcium, magnesium, aluminium, iron, cobalt, nickel, tin and mercury chloride)	40.99	28.71	26.9
28044000	Oxygen	8.46	10.58	19.04

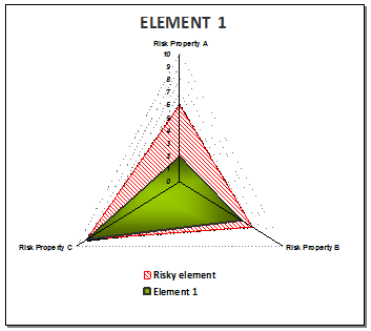
Stage 5: Interpretation of results

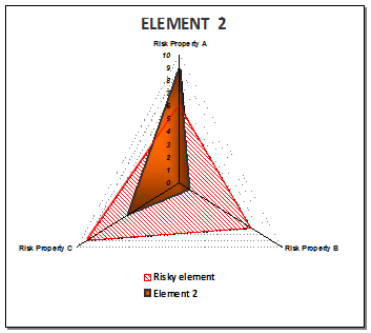
- How to identify the parts of the supply chain that are most at risk from a materials point of view, for example
  - when each value exceeds a threshold;
  - Just one value exceeds a threshold;
  - When the average value exceeds a threshold

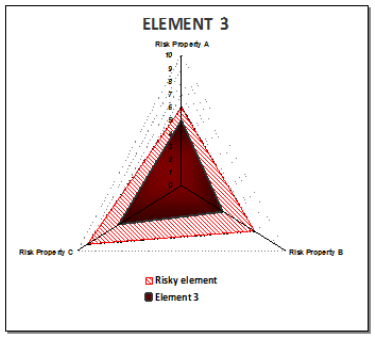
Representation of Information

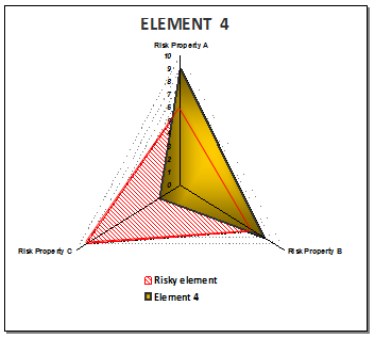


- Tables for supply chain data
- Plots for risk analysis









- Software – Sharpcloud
  - Dynamic representation of information
  - Available for others to update or modify (if permitted)