
Lecture Sustainable Investment Model

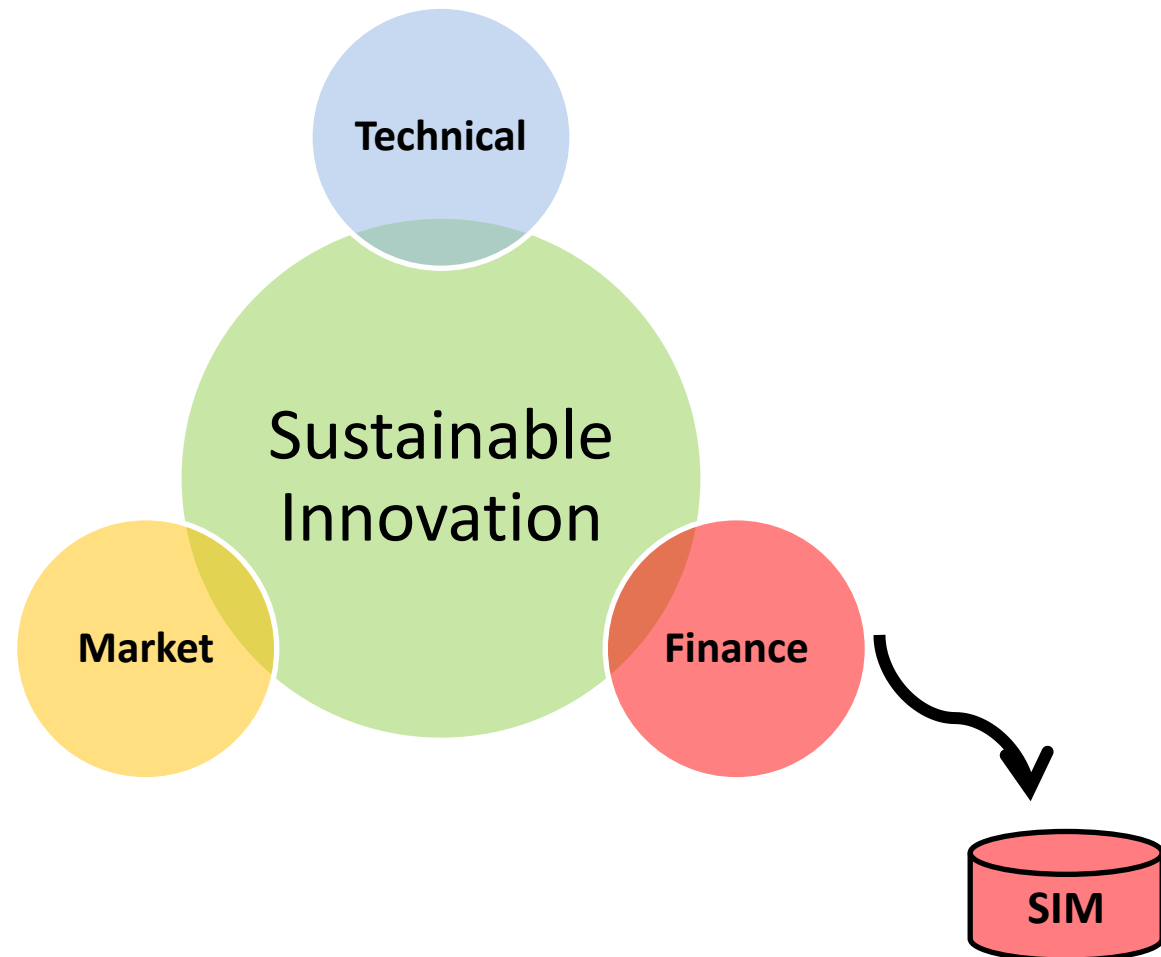
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About Jan H Jansen

- **Senior lecturer**
 - International Finance
 - Management Accounting
- **Researcher**
 - Chair of Total Quality Management in Organizational Networks
 - Chair of Logistics & Alliances
- **Supervisor**
 - Internships / Placements
 - Graduation projects / Dissertations

Sustainable Innovation



Sustainable Investment Model



Problem

- Sustainable development
- Role of the government
- Role of entrepreneurs



DOSIT

- Sustainable
- Entrepreneurial
- Selection
- Innovative
- Technology



SIM

- Sustainable Investment Model

Sustainable Investment Model



The diagram illustrates the Sustainable Investment Model as a vertical flowchart. It consists of three downward-pointing chevron arrows on the left side, each followed by a horizontal bar on the right. The top arrow is red and labeled 'Problem', followed by a light gray bar containing a bulleted list. The middle arrow is green and labeled 'DOSIT', followed by a light gray bar. The bottom arrow is purple and labeled 'SIM', followed by a light gray bar.

Problem

- Sustainable development
- Role of the government
- Role of entrepreneurs

DOSIT

SIM

Problem

- **Can Sustainable Investments contribute to a better future ecology?**
- **Ecological impact of:**
 - Energy production
 - Energy consumption

Sustainable Investments

- **Energy production**
 - Traditional
 - Oil
 - Gas
 - Coal
 - Nuclear
 - Sustainable
 - Wind
 - Hydro
 - Solar
 - Biomass
 - Geothermal

Sustainable Investments

- **Energy consumption**
 - **Transport**
 - Inland vessels
 - Rail
 - Road
 - Trucks
 - Cars
 - **Houses**
 - Use of rainwater & sewage water
 - Use of solar cells & wind turbines
 - Insulation & energy management systems
 - **Factories**
 - Re-use of industrial warmth
 - Geothermic storage of industrial warmth
 - See also under Houses

Some facts about renewable energy in the European Union (EU)

Renewable energy in final energy consumption (2020 target) Source: www.energy.eu

	2006	2007	2008	2020 Target	% To cover:
United Kingdom	1.5 %	1.8 %	2.2 %	15 %	12.8 %
France	9.6 %	10.2 %	11 %	23 %	12 %
Denmark	16.8 %	18.1 %	18.7 %	30 %	11.3 %
Netherlands	2.5 %	3 %	3.2 %	14 %	10.8 %
Italy	5.3 %	5.2 %	6.6 %	17 %	10.4 %
Belgium	2.7 %	3 %	3.3 %	13 %	9.7 %
Spain	9.1 %	9.5 %	10.7 %	20 %	9.3 %
Germany	6.9 %	9 %	8.9 %	18 %	9.1 %
Austria	24.8 %	26.6 %	28.3 %	34 %	5.7 %
Sweden	42.7 %	44.2 %	44.4 %	49 %	4.6 %

Renewable electric energy in the EU

Resource:	2005:	2006:	2007:	2008:
Hydro energy	60.60 %	64.40 %	60.60 %	60.00 %
Wind energy	20.40 %	17.10 %	20.40 %	21.00 %
Biomass	17.00 %	16.70 %	17.00 %	17.00 %
Geothermal energy	1.20 %	1.20 %	1.20 %	1.00 %
Solar energy	0.80 %	0.50 %	0.80 %	1.00 %

Resource: www.energy.eu

Sustainable Investments

- **Sustainable**
 - Added value for social welfare
 - Better & optimal allocation of scarce natural resources
- **Investment**
 - **Capital**
 - Equity
 - Debts / Loans
 - **Recovery**
 - Repayment Debts
 - Payment interest
 - Profitability

Sustainable Investment Model



Problem



DOSIT

- Sustainable
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- Innovative
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SIM

DOSIT Model

Model developed by:

- TNO (Applied Research in Science)
- Research Chair of TQMinON
 - Prof. Gerard Berendsen
- Source:
 - Duurzaam innoveren met de DOSIT-methodiek, G. Berendsen cs, Sigma Kluwermanagement, June 2006
 - http://www.han.nl/onderzoek/kennismaken/ontwikkelen-van-excellente-organisaties/lectoraat/tqm-in-organisatienetwerken/publicaties/_attachments/kip_c2-11_20duurzaam_20innoveren_20met_20de_20dosit_20methodiek.pdf

DOSIT Model

Dutch

- Duurzaam
- Ondernemen
- Selectie
- Innovatieve
- Technologie

DOSIT

English

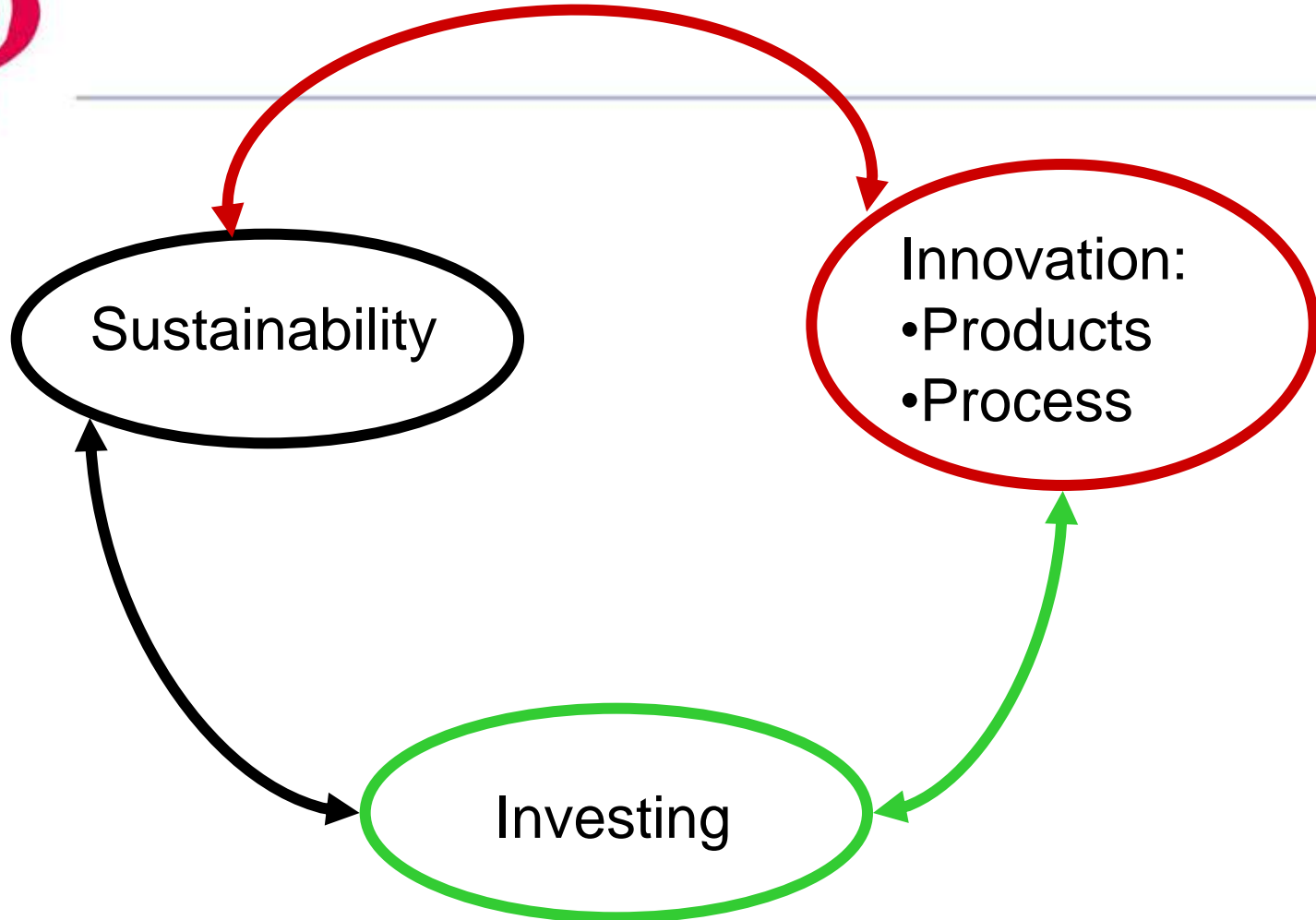
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SESIT

Why DOSIT?

Hot topics in business are:

- Innovation
 - Product innovation
 - Innovation of processes
- Sustainability / CSR
 - **Stewardship** / Managership / Bailiff (UK)
(Dutch: Rentmeesterschap)
- Investments



Sustainability & Entrepreneurship in SME's

- **Company meets the requirements from the government and keeps in mind future requirements**
- **Company fulfils its social and cultural role in society**
- **Company plays in an effective way its role in the huge changes in society & economic development for the mid and long term**



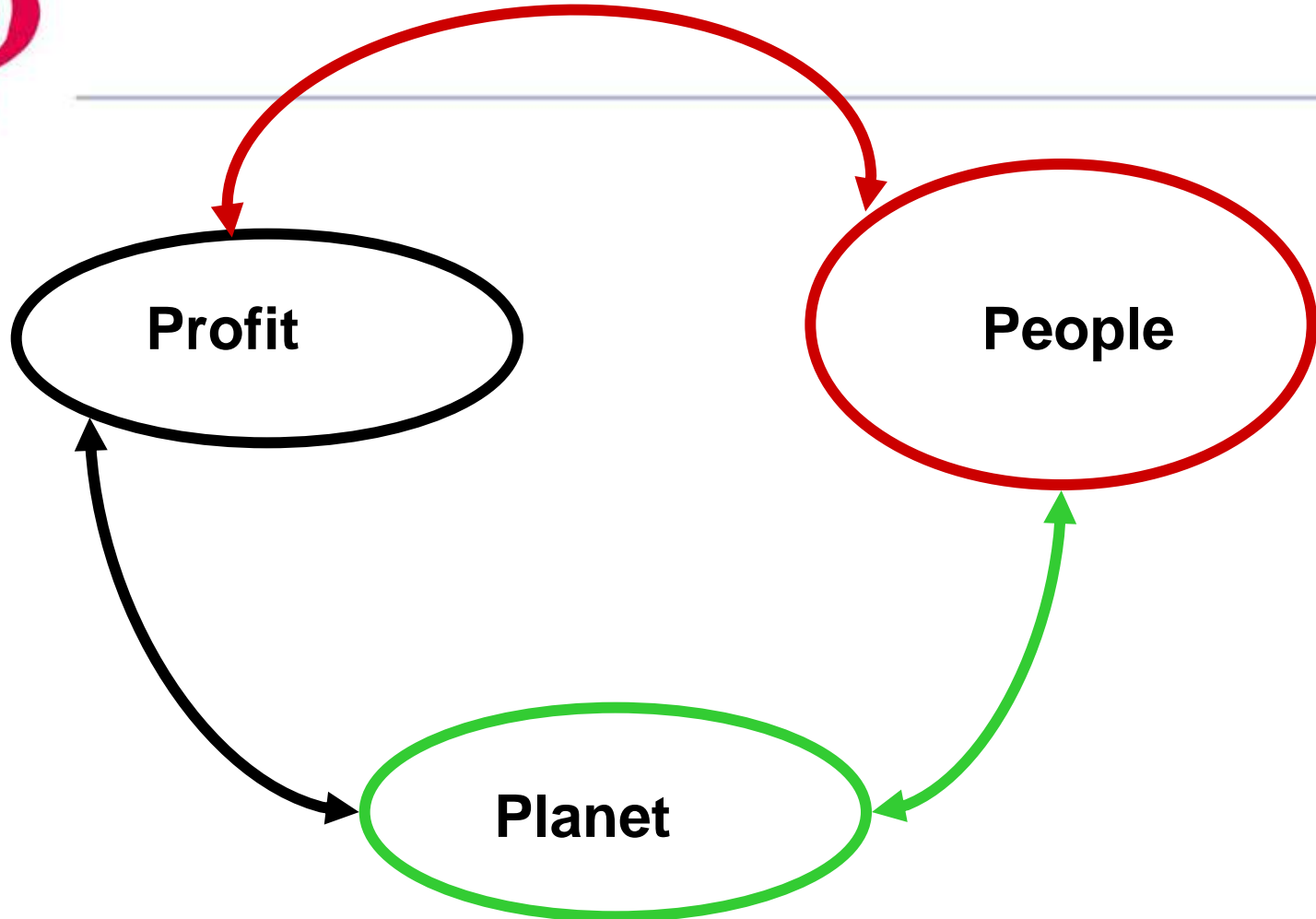
Sustainability & Entrepreneurship in SME's

- **The product, the way the product is used and will be used**
- **The production process (including resources)**
- **The way the product is introduced on the market**



Basic assumptions: DOSIT model

- I. Focus as a company on a limited number of activities connected to sustainability
 - II. Intrinsic motivation of staff concerning change in general and sustainability in specific
 - III. Communication in the company concerning sustainability: Top Down & Bottom Up
 - IV. 'Quick and dirty job' in SME's, staff wants to see immediately results
 - V. Aspects of sustainability have influence on the continuity of the company
 - VI. Sound financial base is important for the continuity of the company**
-



3 P's



Stages in the DOSIT methodology

- 1. Preparation**
- 2. Choice of priorities in the areas of Key Success Factors**
- 3. Selection of possible Innovations**
- 4. Final choices of Innovations**
- 5. Implementation of Innovations**



Elements of the DOSIT model

- **Supply Chain & Value Chain**
 - **Raw materials**
 - **Components**
 - **Business development**
 - **Logistic Processes (I > T > O)**
 - **Production**
 - **Packaging**
 - **Warehousing & Distribution**
 - **Product & Market Development**
 - **Product Use / Reversed Logistics**
-

DOSIT Matrix (Overview Priorities)

Product Use / Reversed Logistics							
Product & Market Development							
Warehousing & Distribution							
Packaging							
Production							
Logistic Processes (ITO)							
Business development							
Components							
Raw materials							
Supply Chain ↑							
& Value Chain ↑							
Aspects ↓							
Planet							
People							
Profit							

Constraints in the process of sustainable innovation

- ROI requirement (**bottom line**)
 - Requirements clients
 - How do process interfere in the chain?
 - Feasibility (in a technical way)
 - Connection with future developments & ambitions of the company
 - What is target for the degree of sustainability
 - How much will be the impact of the innovation (paradigm shift?)
-

Sustainable Investment Model



Problem



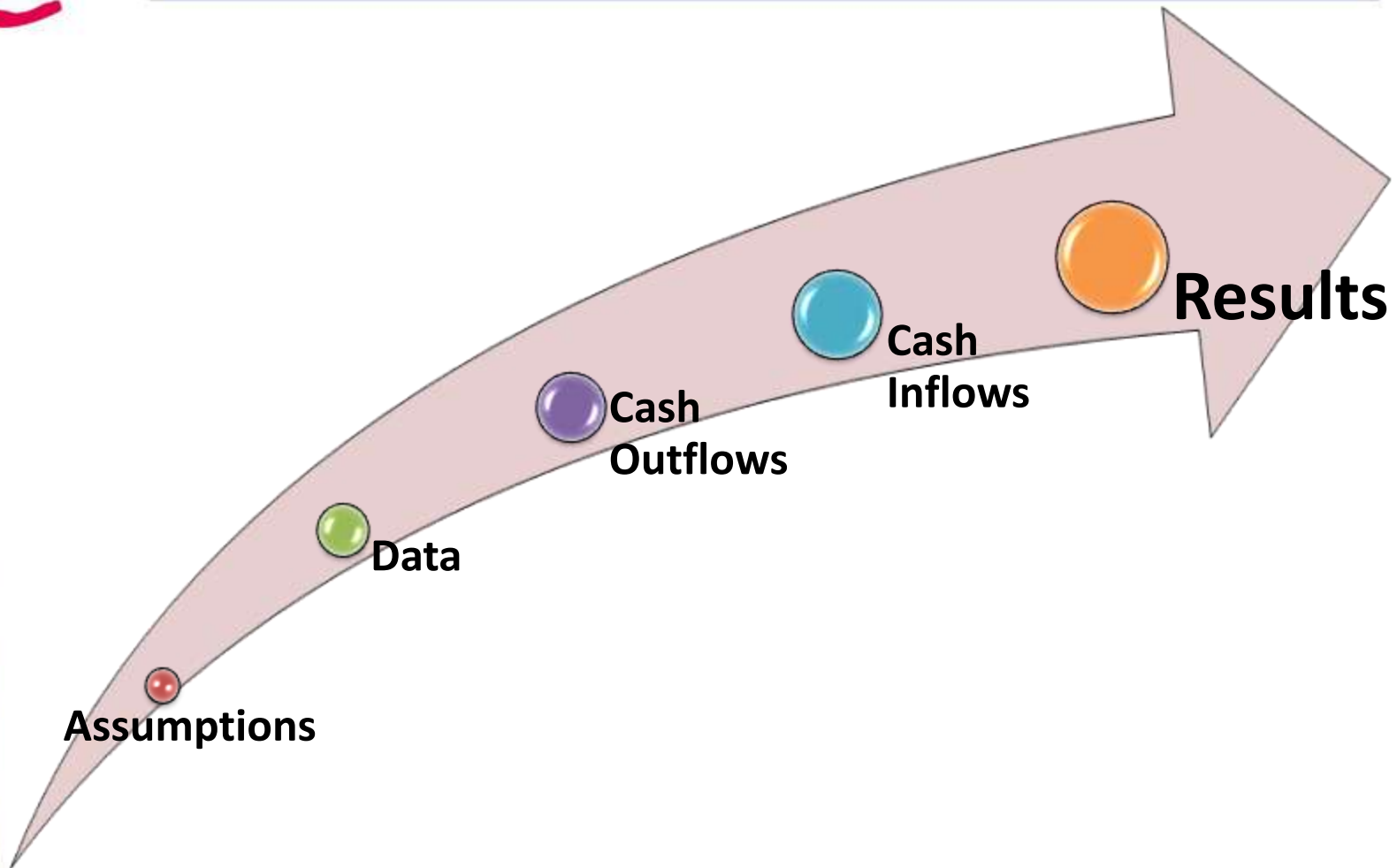
DOSIT



SIM

- Sustainable Investment Model

Structure Sustainable Investment model



Project Structure

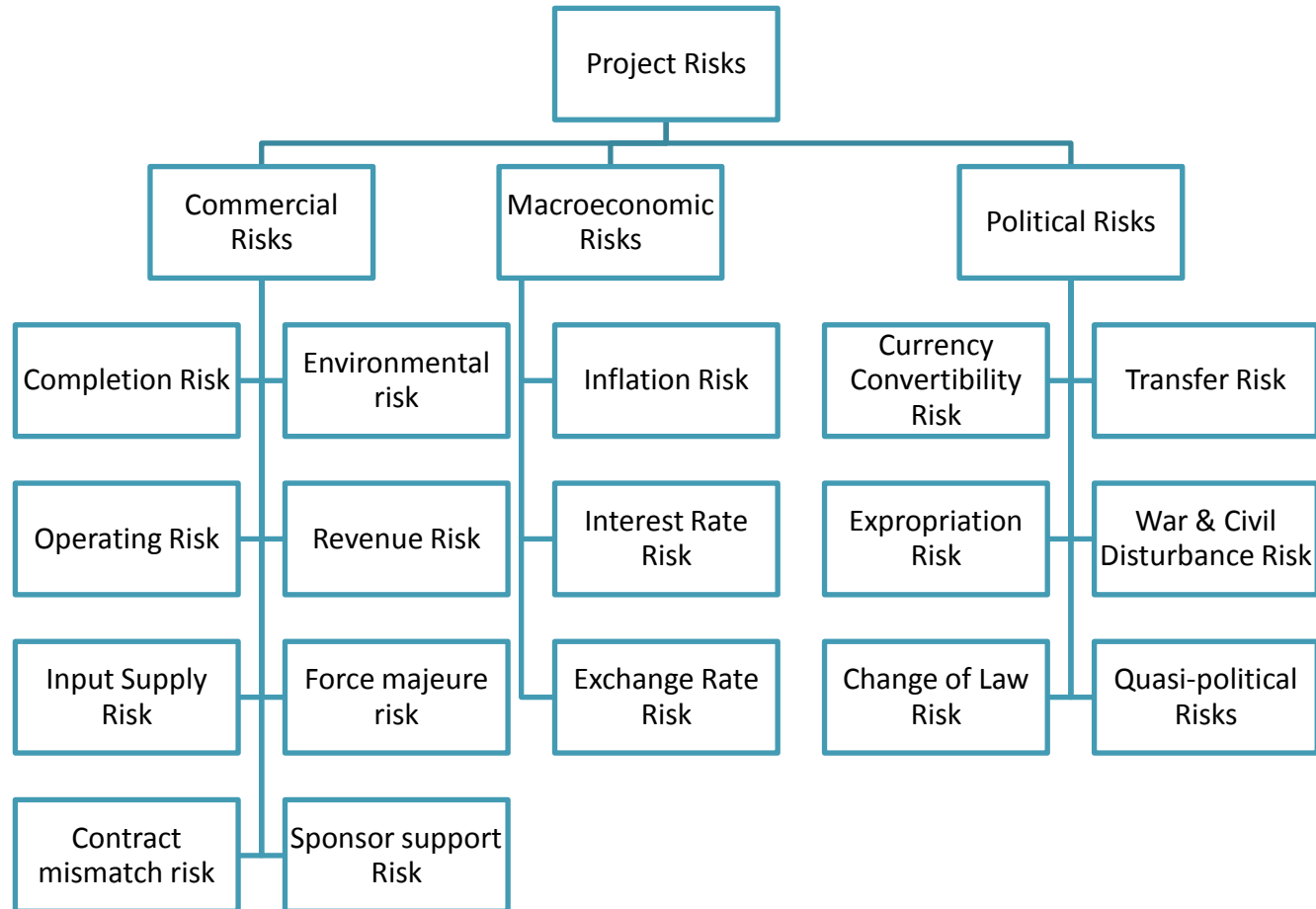


Ring-fenced project





Project Risks



Financing

Investment

- **Equipment**
- **Building**
- **R&D**
- **Environment**
 - **Sustainability**
- **Staff / HR**
- **Maintenance**
- **Operating costs**

Funds

- **Equity**
- **Loans**

Investment recovery

Cash Outflows

- Equipment
- Building
- R&D
- Environment
 - Sustainability
- Staff / HR
- Maintenance
- Operating costs

Cash Inflows

- Sales
- Lower costs

Components Capital Budget Model

- Investment
 - Economic Life of the Investment
 - Interest Rate:
 - *Real interest rate*
 - *Inflation*
 - *Risk (project risk mark-up)*
 - Annual Cash Flows (During economic life)
 - Expenses
 - Revenues
 - Scrap value (end of the project)
-

Decision Criteria

- **Pay Back Period (PBP)**
- **Return On Investments (ROI)**
- **Break Even Time (BET)**
- **Net Present Value (NPV)**
- **Profitability Index**
- **Internal Rate of Return (IRR)**
- **Debt Service Coverage Ratio (DSCR)**

Example: € 20 million investment

Investment	€ 20.000.000	
Scrap value	€ -	
Economic life	20 years	
Annual cash flow (year 1)	€ 2.500.000	
Discount rate	8,9%	
Exchange rate (year 0)	RUR 41,00 per € 1	
Exchange rate (year 0)	€ 0,024 per RUR 1	
Expected inflation Euro zone	2%	
Expected inflation Russia	8%	



Calculations in MS EXCEL

	0	1	2	3	20
Investment in RUR	RUR 820.000.000,00				RUR -
Cashflow in RUR		RUR 102.500.000,00	RUR 110.700.000,00	RUR 119.556.000,00	RUR 442.359.358,56
Net Cash Flow	RUR 820.000.000,00-	RUR 102.500.000,00	RUR 110.700.000,00	RUR 119.556.000,00	RUR 442.359.358,56
Cum NCF	RUR 820.000.000,00-	RUR 717.500.000,00-	RUR 606.800.000,00-	RUR 487.244.000,00-	RUR 3.870.601.340,56
DF	RUR 1,00	RUR 0,92	RUR 0,84	RUR 0,77	RUR 0,18
NCF * DF	RUR 820.000.000,00-	RUR 94.123.048,67	RUR 93.345.172,23	RUR 92.573.724,53	RUR 80.392.886,92
Cum NCF * DF	RUR 820.000.000,00-	RUR 725.876.951,33-	RUR 632.531.779,10-	RUR 539.958.054,57-	RUR 921.742.458,28

Results

Payback Period		7 Years
Return on Investments		47,2%
Net Present Value	RUR	921.742.458,28
NPV / Investment		112,4%
Internal Rate of Return		18,6%
Break Even Time		10 Years

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The complexity of an investment decision

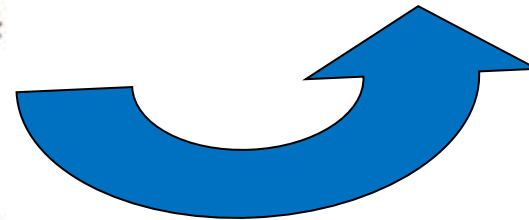
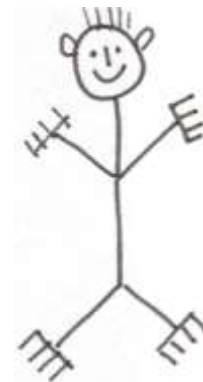
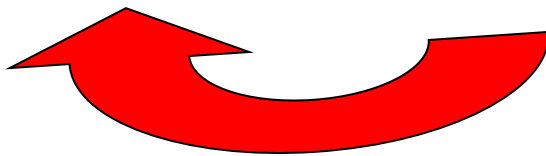
Bookkeeper

Entrepreneur

Past

Present

Future



20 years of uncertainty

Sustainable Innovation

