



SCENARIO PLANNING FOR A CIRCULAR FUTURE: **PETERBOROUGH CONTEXT**

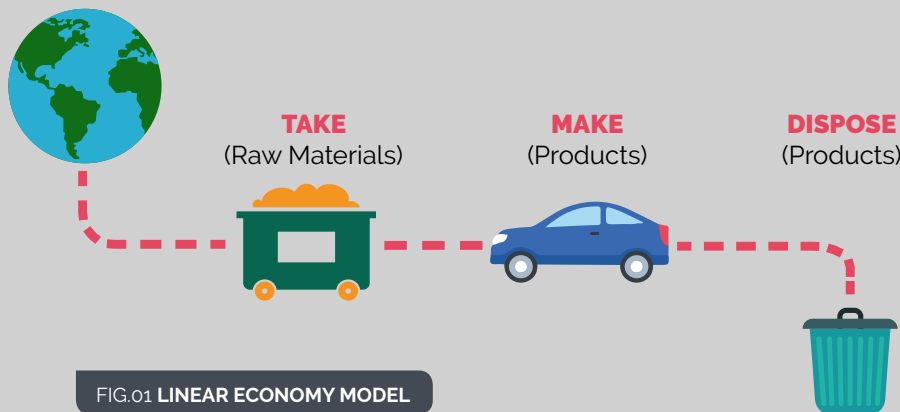
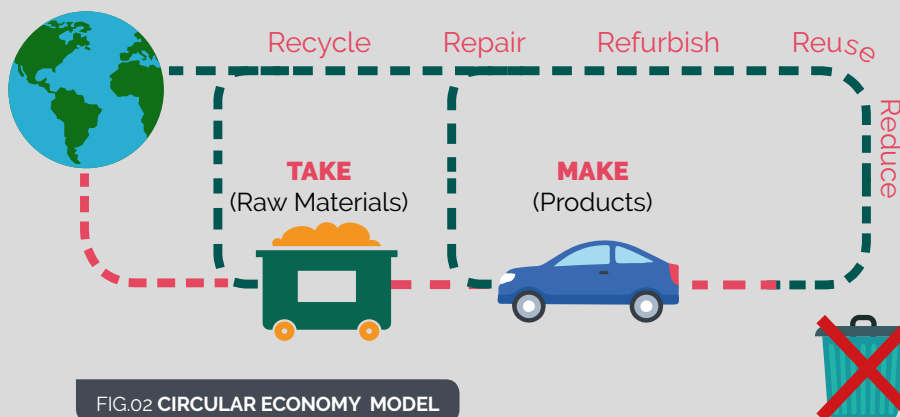
A Cranfield University Masters Group Project, May, 2018

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INTRODUCTION

The city of Peterborough aims to become the environmental capital of the UK (*Peterborough City Council, 2018*). As part of this mission, they aspire to eliminate the linear concept business model of 'take-make-dispose.' Their vision involves the city functioning in a fully circular path by 2050. However, currently, one of the biggest challenges for the council is bridging the gap between generating the interest from individual businesses and transforming the interest into action within their businesses.



GLOBAL VIEW

By 2050, the global population is expected to reach **9 billion**, leading to an enormous pressure on the world's finite resources. Consequently, up to **70%** more food, feed and fibre will be required to meet this populations needs. By 2050, three times more raw materials will be required to sustain the world's growing population. Currently, in the European Union alone, 15 tonnes of raw materials are required per capita per year. One third of this ends up as waste, most of which goes to landfill. (*Potocnik, 2014*). The current exploitative take-make-dispose paradigm is unsustainable and will make meeting this demand difficult.



FIG.03 2050 POPULATION FORECAST



FIG.04 2050 RAW MATERIALS FORECAST



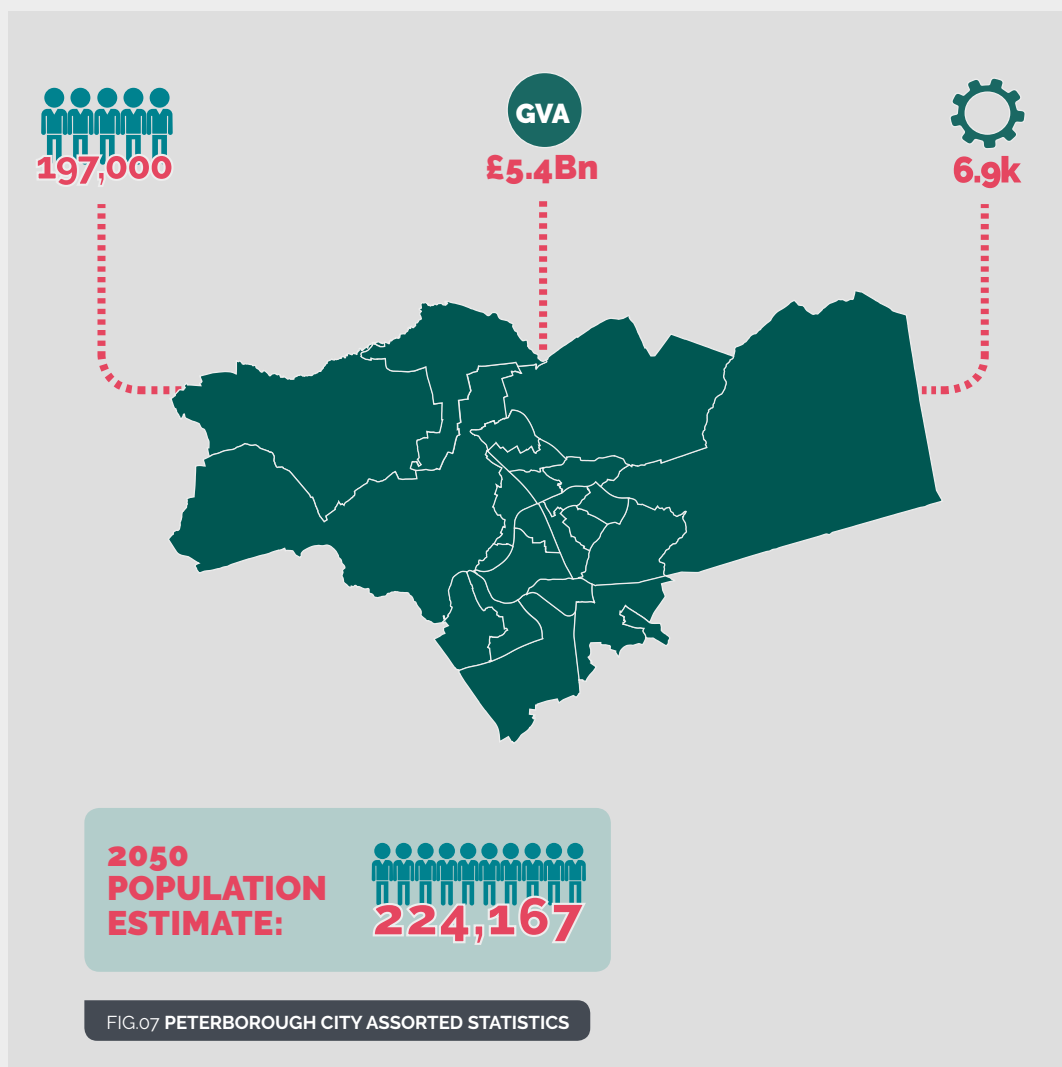
FIG.05 2050 FOOD, FEED & FIBRE



FIG.06 EU ANNUAL WASTE GENERATION

PETERBOROUGH CONTEXT

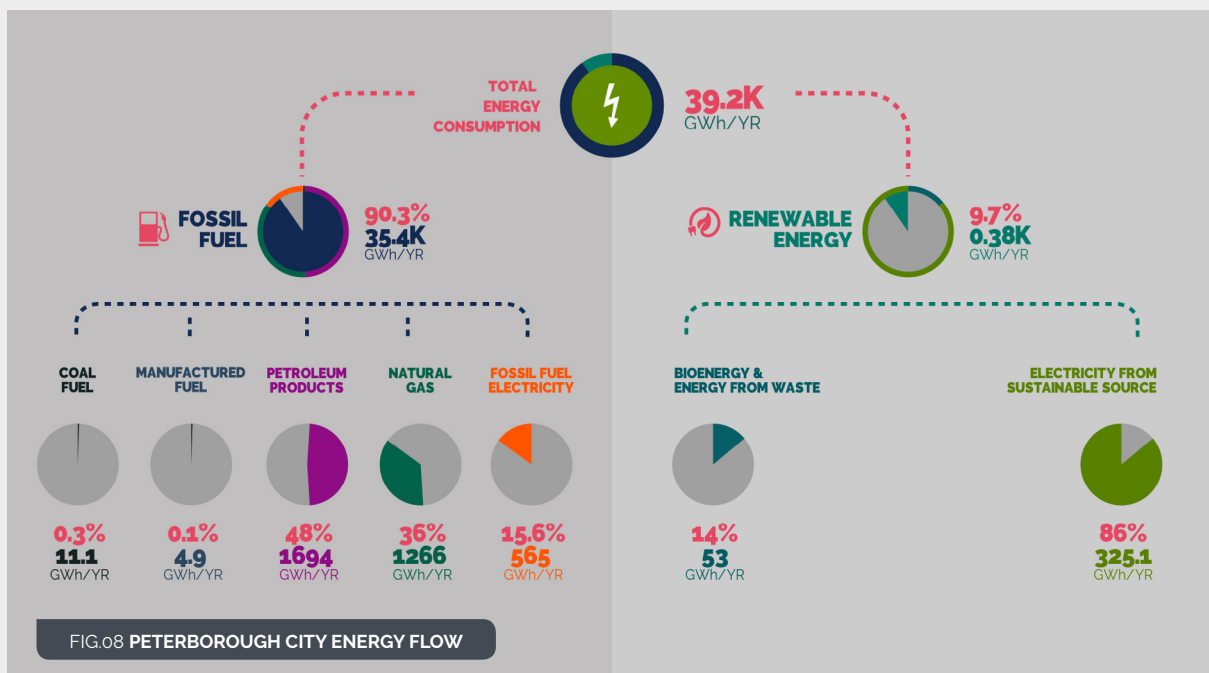
To combat this, the City of Peterborough aims to become fully circular by 2050. Currently, the city has a population of **197,000**. Within the city, **6,900** businesses contribute to a GVA of **£5.4** billion (*Opportunity Peterborough, 2017*). In addition, by using the current and foresighted population of the UK by 2050 (*ONS, 2017a; ONS, 2017b*), the projected increase in population local to Peterborough is estimated to reach **224,167** people.



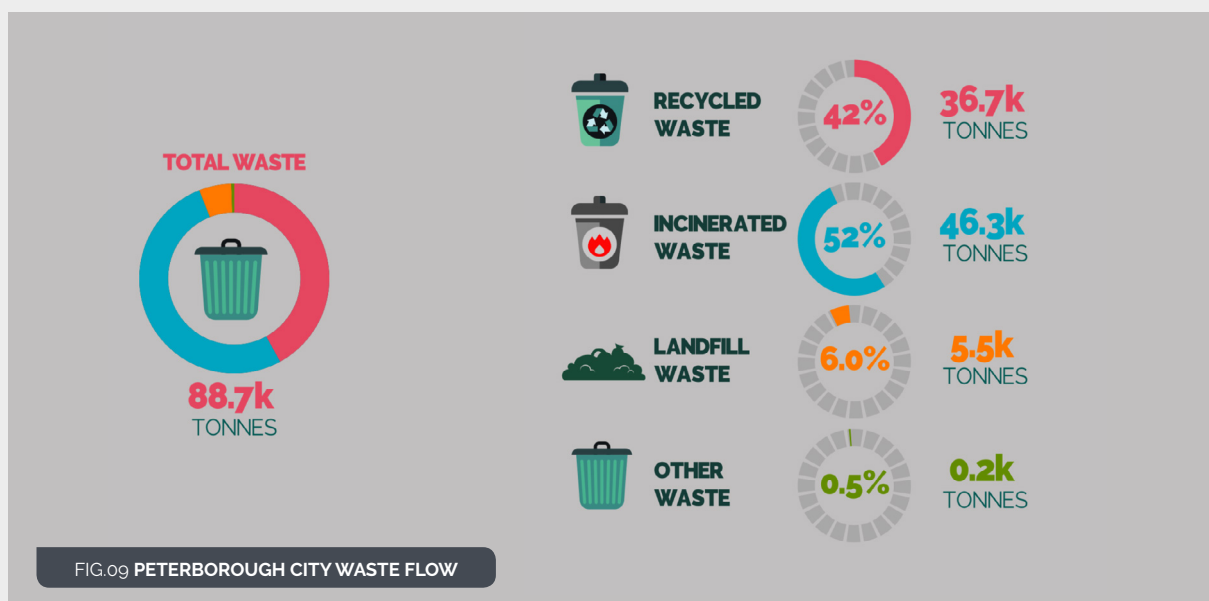
WASTE & ENERGY FLOWS

Given that currently, the city as a whole produces **88,668** tonnes of waste and consumes **39,200 GWh** paer year (*Peterborough City Council, 2018*), it would be unsuitable to continue on this linear path.

PETERBOROUGH CITY ENERGY

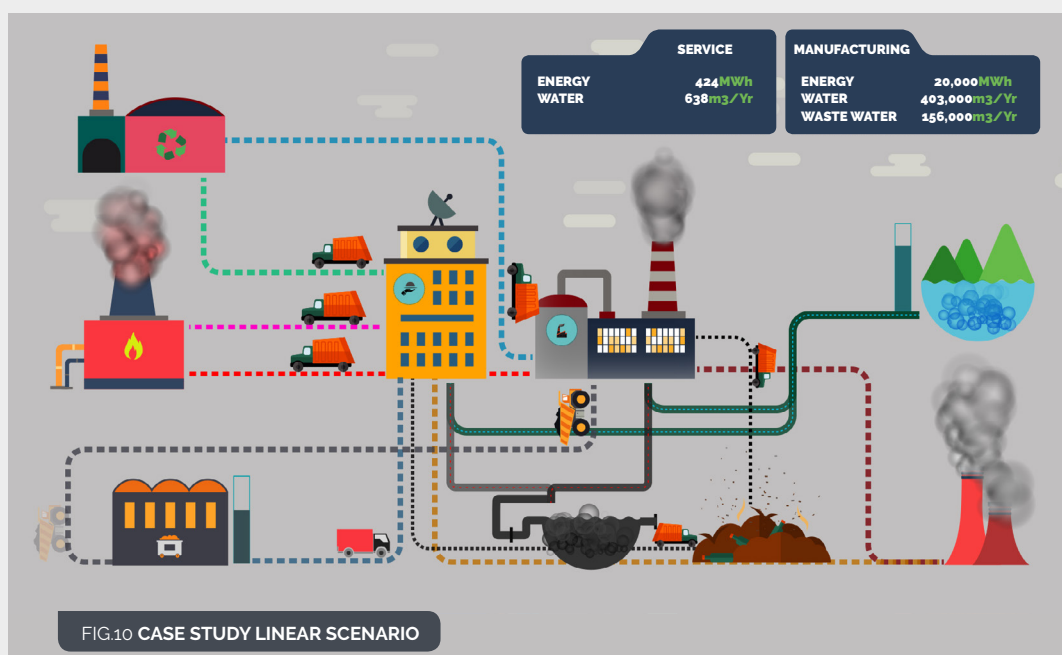


PETERBOROUGH CITY WASTE

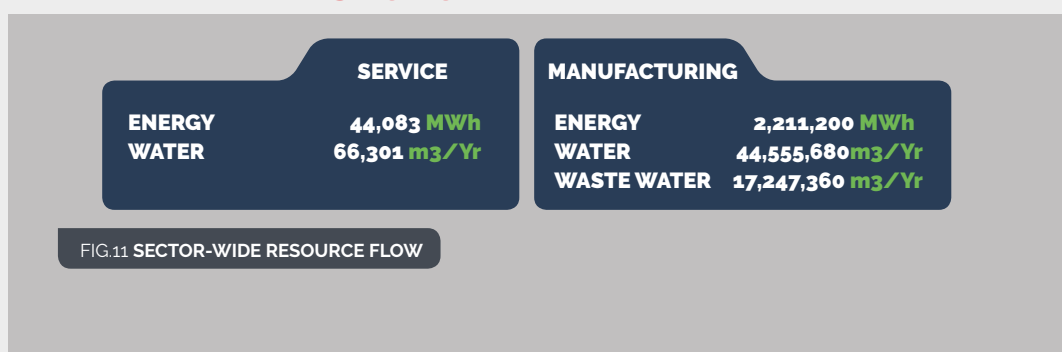


CURRENT SCENARIO

In this context, two alternative scenarios have been foresighted: a linear and a circular scenario for 2050. The first scenario presents the consequences of a linear pathway, whereas the second highlights the benefits of achieving full circularity. Two sectors are considered for these scenarios: manufacturing and services. As is evident in Fig.10, specific case studies are presented as average companies within each of these sectors. The data presented was taken from interviews with the case studies. These case studies are then used to depict the current resource flows of these sectors within the city, using the distribution of industries provided by Opportunity Peterborough (2017).

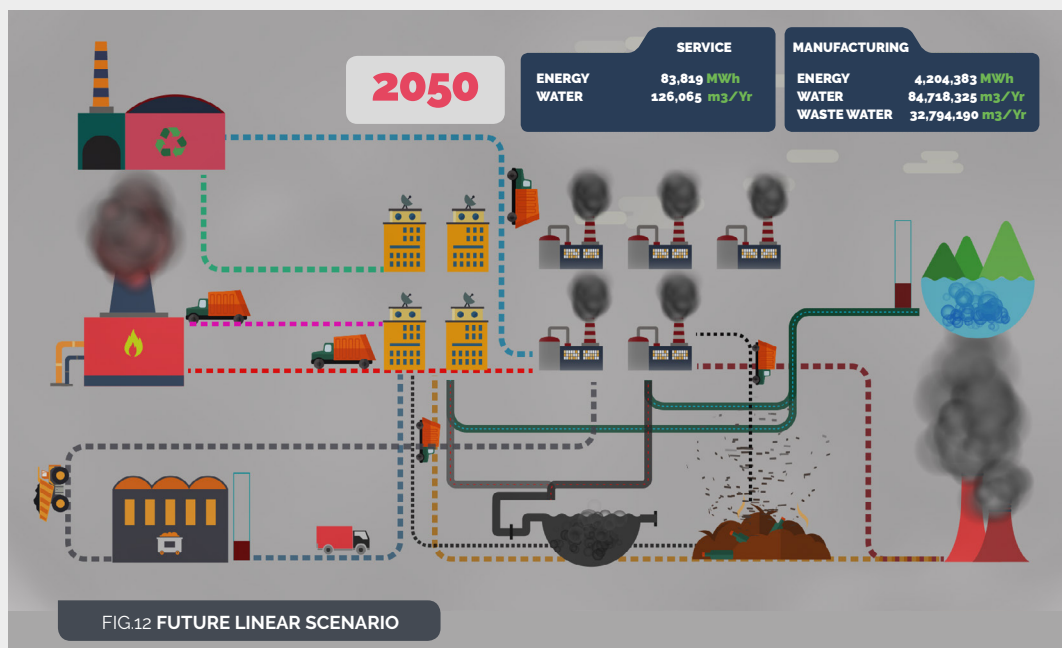


SECTOR -WIDE DATA



FUTURE LINEAR SCENARIO

By correlating increasing resource use with GDP growth, the future resource use of the city is foresighted, assuming that all operations continue on the current linear path. Assuming a GDP increase of 190.3% between now and 2050 (OECD, 2018; The World Bank, 2018), the future linear scenario of the sectors are shown within Figure 12



As a consequence of this linear scenario, increase in resource demand is likely to affect commodities and raw material supply prices, making them rise and increase their volatility (Ellen MacArthur Foundation, 2014). This will have debilitating effects on businesses, leading to increased operational risks and uncertainty, reducing their benefits and resulting in potential employment losses. Ultimately, these risks will be passed on to the consumers through price increases and reductions in purchasing power. Subsequently, a continuation on the economic path will depress the economic growth of the city.



FUTURE CIRCULAR SCENARIO 01

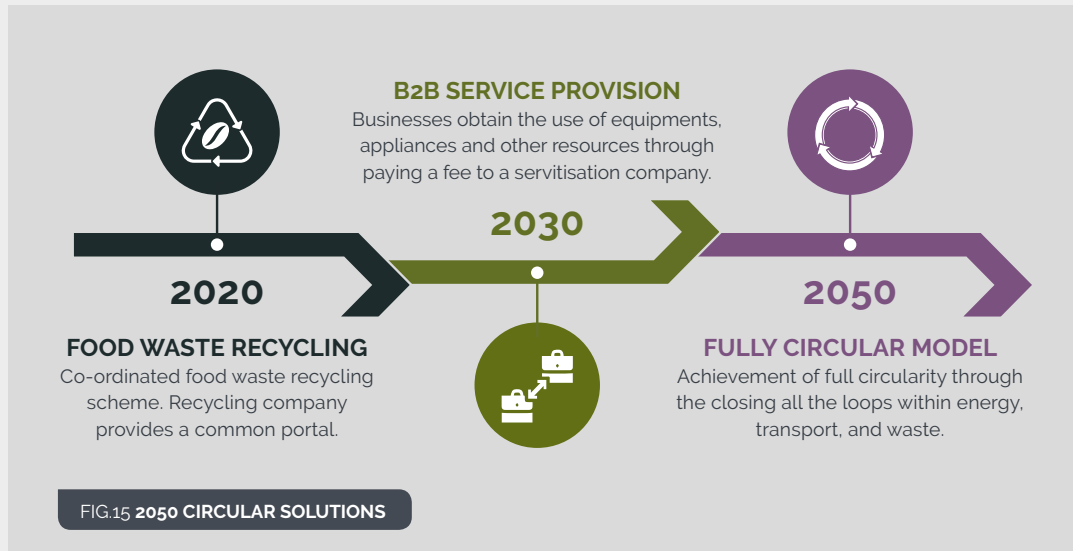
For the same case study examples, a circular road map can be followed to help the businesses achieve full circularity by 2050. The purpose being that this allows a clear pathway to follow. As time moves upwards, the solutions become more disruptive to the business model. This scenario thinking is inspired by the Ellen MacArthur Butterfly Diagram. The solutions are specifically designed based upon the results from interviews with businesses. Note that these are just examples for two specific businesses. Circular solutions must be tailored to individual businesses for them to achieve the best gains. At the end of this booklet, two activities can be found to help your business begin its circular journey.

BELOW IS THE CIRCULAR SOLUTION FOR THE MANUFACTURING SECTOR:



FUTURE CIRCULAR SCENARIO 02

BELOW IS THE CIRCULAR SOLUTION FOR THE SERVICE SECTOR:



FUTURE CIRCULAR BENEFITS

If every company within Peterborough followed their own road map to become fully circular by 2050, huge benefits could be achieved for them and for the city*.



*To foresight these outcomes, the projections from the London Waste and Recycling Board (LWARB, 2017; LWARB, 2015) for a fully circular Greater London have been applied to the context of Peterborough.

CIRCULAR SOLUTIONS ACTIVITY

The following activities are designed to encourage businesses to take their next steps towards circularity.

01. Circular Solutions Canvas

The Circular Solutions Canvas is an adaptation of the Value Proposition Canvas by 'Strategyzer'. It offers businesses, looking to design a circular business solution, a simplified way to transition to the desired solution.

To get started, it is always important to define a viable problem or operation for which a circular solution is required.

 CURRENT OPERATIONS Q: What's the problem? What needs doing? Eg. Energy provision,		 ALTERNATIVE OPERATIONS What solutions are you capable of providing? Eg. Renewable energy,	
 PAINS In an ideal world what type of energy would you like to provide and what is making that so difficult? What loops need closing?	 GAINS What are the benefits of providing that type of energy?	 GAINS CREATORS What can we do to create these benefits associated with this type of energy?	 PAIN KILLERS What measures can you propose to alleviate the difficulties associated with this solution? How to close the loops

Adapted from Strategyzer

02. Circular Business Model Canvas

The Circular Business Model Canvas is also an adaptation of the Business Model Canvas by 'Strategyzer'. It is a useful template for developing a circular business model based on the circular solution from the previous exercise.

It has detailed elements that would help make viable the circular solution arrived at

<p>Key Partners</p> <p>Who are our key partners including suppliers and stakeholder</p>	<p>Key Activities</p> <p>To execute this solution, what key activities are necessary?</p>	<p>Circular Solutions</p> <p>What is this solution? What pain does it alleviate? Does it offer complete solution?</p>	<p>Maintaining/ improving consumer Relationships</p> <p>What type of relationship can we establish with our beneficiaries</p>	<p>Beneficiaries</p> <p>Who are the most important beneficiaries of this solution?</p>
	<p>Key Resources</p> <p>What human, natural, technical resources are required to execute this solution?</p>		<p>Execution</p> <p>What are the available channels for the execution of this solution?</p>	
<p>Revenue</p> <p>What revenues can we expect to generate from this solution?</p> <p>Are there other indirect revenue streams?</p>		<p>Cost</p> <p>What is the cost structure? What are the most important costs inherent in this solution?</p> <p>Are there other indirect costs to be incurred?</p>		

Adapted from Strategyzer

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