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# **Business Tools for Biobanks**

### Publisher

Biobanking and Biomolecular Resources Research Infrastructure The Netherlands (BBMRI.nl)

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### Date of publication

September 2019

### Preferred citation

Van der Stijl, R. and Eijdemans, E.W.H.M., *Business Tools for Biobanks*, BBMRI.nl, 2019

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### Sponsor

This report was financially supported by BBMRI.nl, a Research Infrastructure financed by the Dutch government (NWO), grant number 184033111

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### Website

<https://bbmri.nl/services/knowledge/sustainable-biobanking>

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# 1. Background

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## 1.1. Project context

*Business Tools for Biobanks* is a product of Biobanking and BioMolecular resources Research Infrastructure The Netherlands (BBMRI.nl) work package 6: Sustainable and Interactive Biobanking. BBMRI.nl is an initiative of the eight Dutch university medical centres, other Dutch research centres and organisations, as well as the [Parelsnoer Institute](#). In addition, it serves as the Dutch node of the European network of biobanks, united under BBMRI-ERIC.

It is BBMRI.nl's mission to maximize the use of biobanks for health research on the prevention, diagnosis, and treatment of diseases. To achieve its mission, BBMRI.nl provides access to samples, images, and data; tools for capturing, integrating, and analysing data; and support on ethical, legal and societal implications. BBMRI.nl is part of [Health-RI](#), the overarching Dutch research infrastructure on personalized medicine and health.

## 1.2. A BBMRI.nl series on sustainable biobanking

*Business Tools for Biobanks* is part of a [BBMRI.nl series on the financial dimension of sustainable biobanking](#). In this series we provide recommendations, good practices, business tools, and background information, all to help individual biobanks improve their sustainability. The series consists of:

1. [Recommendations for Financial Sustainability](#)
2. [Sustainable Biobanking: The Financial Dimension](#)
3. [Good practices in Sustainable Biobanking: A Case Study Analysis](#)
4. [Business Tools for Biobanks](#)

## 1.3. Definitions

This report adheres to the BBMRI-ERIC definition of **biobanks**: *Biobanks are collections, repositories and distribution centres of all types of human biological samples, such as blood, tissues, cells or DNA and/or related data such as associated clinical and research data, as well as biomolecular resources, including model- and microorganisms that might contribute to the understanding of the physiology and diseases of humans* (European Commission 2016).

This report follows the Organisation for Economic Co-operation and Development definition of research infrastructure **sustainability**: *Sustainability is the capacity of a research infrastructure to remain operative, effective, and competitive over its expected lifetime* (OECD Global Science Forum 2017).

## 1.4. Goal and introduction

Our overall goal is to support individual biobanks, biobanking professionals, and researchers in their quest for a sustainable biobank. The five business tools listed in this report will enable biobanks to capture their complex environment in an understandable format. Also, the use of these business tools will force biobanks to make the vague explicit and address their blind spots. The resulting insights will help biobanks to make choices, set priorities, and align strategies towards sustainability. For each business tool we provide a short description, a template, and, where possible, links to additional documents. Biobanks should pick those tools that fit their individual needs.

## 2. Business tools for biobanks

### 2.1. Business plan

A business plan is a written document that describes, in detail, an organisation's goals and how it's going to achieve them. It mainly revolves around three questions: 1) Where are we now?, 2) Where do we want to go?, and 3) How are we going to get there? Content-wise, a business plan contains a section on the organisation's structure, processes, products, and services; a section on the market, the potential customers, and the competition; and a section on the finances, including income, costs and forecasts.

For a biobank, making a business plan is a valuable exercise. It provides an opportunity to pause from day-to-day activities and reflect on the current state and future direction of the biobank. It allows you to define the biobanks direction, vision, strategy, and goals; reduce complexity; organise new ideas and changes; inform, instil trust, and gain commitment from institutional leadership and other key stakeholders; and justify purchasing and staff hiring (Seiler, Eschbacher et al. 2015). Also, often, elements from a business plan provide input for funding applications.

The information in a business plan is based on realistic assumptions, available data, and market research. A business plan should be drafted before the actual start of operations, together with key stakeholders, and when necessary external consultants. It should address the lifetime of the biobank, including its termination (ISBER 2018). Business plans should be updated on an annual basis to keep focus and account for changing conditions.

#### Biobank business plan template

<b>1) Executive summary</b>	
<b>2) Biobank profile</b>	
a. Vision	<i>Your purpose, why are you here? Focus on tomorrow.</i>
b. Mission	<i>What do you do? for who? Focus on today.</i>
c. Strategic objectives	<i>SMART<sup>1</sup> long term goals to achieve mission and vision. Objectives can be financial, customer, operational or people focused.</i>
d. Unique selling points	<i>What makes you unique (versus the competition)?</i>
e. Type of biobank	<i>A description of your biobank</i>
<b>3) Service and product portfolio</b>	
a. Samples	<i>What samples do you offer?</i>
b. Data	<i>What data do you offer?</i>
c. Services	<i>What services do you offer (e.g. analyses, bioinformatics)?</i>
<b>4) Business environment</b>	
a. National and international field	<i>Description of the research field at different relevant levels.</i>
b. Research projects	<i>Relevant current and future projects and consortia, how will you take advantage of them?</i>
c. Competition	<i>Describe competing biobanks and their advantages and disadvantages. How will you differentiate? See 2.4. Porter's Five Forces analysis.</i>

<sup>1</sup> The SMART acronym stands for Specific, Measurable, Achievable, Relevant, and Time-bound. An example: "Our objective is to increase issuance of blood samples (S) by 10% (M) in the coming year (T)". Achievability and relevance are context dependent.



<b>5) Market</b>	
a. Market analysis	<i>What is the current and future market for your products and services?</i>
b. Stakeholder analysis	<i>See 2.5. Stakeholder analysis</i>
c. Customer groups	<i>Who are your (future) users and what are their needs, problems, and interests?</i>
d. Marketing and communication strategy	<i>Develop an engagement strategy per stakeholder group, including method, channel, frequency, resources, and responsible parties.</i>
<b>6) Management &amp; governance</b>	
a. Organisational structure	<i>How is the biobank structured?</i>
b. Management team	<i>Who forms the management? Short bio/CV</i>
c. Biobank policies	<i>What are your request, access, and user policies?</i>
d. Staff	<i>What staff do you have? What competences?</i>
e. Key performance indicators	<i>How will you measure progress?</i>
f. Ethical, legal and societal issues (ELSI)	<i>How do you handle the relevant ELSI topics (e.g. AVG, incidental findings)?</i>
<b>7) Biobanking operations</b>	
a. Workflow / Process flow-chart	<i>How are your biobank's processes organised?</i>
b. Infrastructure	<i>What infrastructure do you have (access to)?</i>
c. Software	<i>What software do you have (access to)?</i>
d. Purchasing / procurement	<i>What do you purchase? Frequency? Quantity?</i>
<b>8) Risks and contingency planning</b>	
a. Risks and risk mitigation	<i>What are potential relevant risks for your biobank (low/medium/high)? What measures do you take towards these risks?</i>
b. Assumptions	<i>What assumptions do you have about the market, your users, finances, collection, stakeholders etc.? Assumptions are obscured risks.</i>
c. External dependencies	<i>What relevant external factors can influence your success and how will you manage these?</i>
<b>9) Exit and termination strategy</b>	
a. Legacy planning	<i>When and how will your biobank end? What will happen in the case of unexpected termination? Related costs?</i>
<b>10) Financial planning</b>	
a. Business model	<i>Mechanism through which the biobank translates its value into resources. For more information see 2.2. Business Model Canvas. For examples see the report <a href="#">Sustainable Biobanking: The Financial Dimension</a>.</i>
b. Funding & revenues	<i>Current and future funding sources</i>
c. Costs	<i>The biobank's current and future cost structure</i>
d. Scenario planning	<i>Financial forecasts, incl. best/worst case scenarios</i>
<b>11) Strengths, Weaknesses, Opportunities and Threats (SWOT) (See 2.3. SWOT analysis)</b>	

**Further reading:**

- Karine Sargsyan et al. *Sustainability in Biobanking: Model of Biobank Graz*, BIOPRESERVATION AND BIOBANKING, Volume 13, number 6, 2015
- Mirella Ciaburri et al. *Business Planning in Biobanking: How to Implement a Tool for Sustainability*, BIOPRESERVATION AND BIOBANKING, Volume 00, number 00, 2016
- Tanja Macheiner et al. , *Challenges and Driving Forces for Business Plans in Biobanking*, BIOPRESERVATION AND BIOBANKING, Volume 15, Number 2, 2017

**2.2. Business Model Canvas**

The **Business Model Canvas**<sup>2</sup> from Strategyzer is an accessible visual tool to help develop and adapt a business model. A business model is the mechanism through which an organisation creates, captures, and delivers value for its customers (Osterwalder, Pigneur 2010). This differs from a business plan. The business plan, describing an organisation's strategy and assets, is shaped around the business model and explains the steps necessary to carry out the business model.

Developing a feasible business model and organising your biobank, its personnel, and the related activities accordingly will help plan for sustained success. The basis of most business models revolves around four key questions (Johnson, Christensen et al. 2008, Johnson 2010, Teece 2010, Mazzarol 2011, Steegers 2016):

- 1) Who are your stakeholders? (see 2.5. Stakeholder analysis)
- 2) What do your stakeholders value?
- 3) What is your financial structure?
- 4) What are your key resources and key processes?

The Business Model Canvas consists of nine different elements: Key Partners, Key Activities, Key Resources, Value Propositions, Customer Relationships, Channels, Customer Segments, Cost Structure, and Revenue Streams. When printed out on a large surface the Business Model Canvas becomes a hands-on tool to design and adapt a business model with a group of people, using post-its and markers. Through its visual representation the Business Model Canvas fosters understanding, discussion, creativity, and analysis.

For more information on business models and for examples of business models used by biobanks see the BBMRI.nl report *Sustainable Biobanking: The Financial Dimension*.

**Further reading:**

- Background on business models and their generation:
  - o Osterwalder A, Pigneur Y, *Business Model Generation: A Handbook for Visionaries, Game Changers and Challengers*, John Wiley, Hoboken, NJ, 2010.
- Description of the Business Model Canvas as used by a biobank:
  - o Rademaker S.H.M. and Huitinga I., *A new viewpoint: running a non-profit brain bank as a business*, Handbook of Clinical Neurology, vol. 150, 2018

**Links to explanatory movies:**

- **Alexander Osterwalder: The Business Model Canvas**, a 3-minute video introduction to the Business Model Canvas, 6 February 2012
- **Alexander Osterwalder: Tools for Business Model Generation**, a 53-minute video discussing the Business Model Canvas in detail. *Stanford Entrepreneurship Corner*, 26 January 2012

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<sup>2</sup> The Business Model Canvas is developed by Strategyzer and can be downloaded from their [website](#).

Figure 1. Business Model Canvas template

The Business Model Canvas

Designed for:Designed by:Date:Version:

Key Partners

Who are we relying on to help us?

Who do we rely on to help us?

Which key resources do we acquire from partners?

Which key activities do we acquire from partners?

Which key resources do we acquire from partners?

Which key activities do we acquire from partners?

Which key resources do we acquire from partners?

Which key activities do we acquire from partners?

Key Activities

What key activities do we do?

What key activities do we do?

What key activities do we do?

What key activities do we do?

What key activities do we do?

What key activities do we do?

What key activities do we do?

What key activities do we do?

Value Propositions

What value do we deliver to the customer?

What value do we deliver to the customer?

What value do we deliver to the customer?

What value do we deliver to the customer?

What value do we deliver to the customer?

What value do we deliver to the customer?

What value do we deliver to the customer?

What value do we deliver to the customer?

Customer Relationships

What type of relationship does each of our customer segments expect us to develop and maintain with them?

What type of relationship does each of our customer segments expect us to develop and maintain with them?

What type of relationship does each of our customer segments expect us to develop and maintain with them?

What type of relationship does each of our customer segments expect us to develop and maintain with them?

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What type of relationship does each of our customer segments expect us to develop and maintain with them?

What type of relationship does each of our customer segments expect us to develop and maintain with them?

What type of relationship does each of our customer segments expect us to develop and maintain with them?

Customer Segments

Who are we creating value for?

Who are we creating value for?

Who are we creating value for?

Who are we creating value for?

Who are we creating value for?

Who are we creating value for?

Who are we creating value for?

Who are we creating value for?

Key Resources

What key resources do we have?

What key resources do we have?

What key resources do we have?

What key resources do we have?

What key resources do we have?

What key resources do we have?

What key resources do we have?

Channels

Through which channels do we reach our customer segments?

Through which channels do we reach our customer segments?

Through which channels do we reach our customer segments?

Through which channels do we reach our customer segments?

Through which channels do we reach our customer segments?

Through which channels do we reach our customer segments?

Through which channels do we reach our customer segments?

Through which channels do we reach our customer segments?

Cost Structure

What are the most important costs we incur?

What are the most important costs we incur?

What are the most important costs we incur?

What are the most important costs we incur?

What are the most important costs we incur?

What are the most important costs we incur?

What are the most important costs we incur?

Revenue Streams

For what value do our customers really willing to pay?

For what value do our customers really willing to pay?

For what value do our customers really willing to pay?

For what value do our customers really willing to pay?

For what value do our customers really willing to pay?

For what value do our customers really willing to pay?

For what value do our customers really willing to pay?

DESIGNED BY: Business Model Foundry AG

Strategyzer

5



### 2.3. Strengths, weaknesses, opportunities, and threats (SWOT) analysis

A SWOT analysis is a strategic planning tool that helps biobanks identify their strengths, weaknesses, opportunities, and threats. The analysis is a starting point for discussions that guide a biobank's strategic choices. A SWOT consists of the following four sections:

- **Strengths** (internal) describe what a biobank is great at and what separates it from its competition. Examples are unique samples, fast delivery, or linked clinical datasets.
- **Weaknesses** (internal) prevent a biobank from performing at its optimum level. These are areas a biobank needs to improve to remain competitive. Examples are limited funds, lack of visibility, poor quality control, or high levels of bureaucracy.
- **Opportunities** (external) are favourable external factors that could provide a biobank with a competitive advantage. Leveraging existing strengths or fixing current weaknesses can create new opportunities. Examples are the removal of barriers for international sample and data exchange, new infrastructure calls, or new national legislation.
- **Threats** (external) are external factors that could potentially harm a biobank. Examples are changes in policy of the hosting institution, increasing research costs, or a negative public opinion about biobanking.

A SWOT is performed in small group sessions using post-its and markers. The more diverse the group, the better the results. First identify factors within each category. When filling in a SWOT try to avoid beliefs, assumptions, and subjectivity. A SWOT's success depends on the quality of the underlying data, as faulty data might provide support for the wrong strategic decisions. Subsequently, evaluate and prioritise the different factors and identify interrelationships. The final results should feed into the biobank's strategic choices.

Keep in mind that a SWOT has its limitations. The analysis should always be linked to certain organisational objectives to prevent the random creation of lists that do not lead to strategies. Furthermore, the identified factors should be evaluated critically, to prevent conclusions about, for example, weak opportunities balancing strong threats. Assigning weights (low/medium/high) to the identified factors can help counter this weakness. In the end, a SWOT is a snapshot of a particular moment in time, not taking into account the biobank's rapidly changing environment. However, a SWOT's compact format allows it to be repeated regularly with updated information.

#### Further reading:

- Karine Sargsyan et al. *Sustainability in Biobanking: Model of Biobank Graz*, BIOPRESERVATION AND BIOBANKING, Volume 13, number 6, 2015

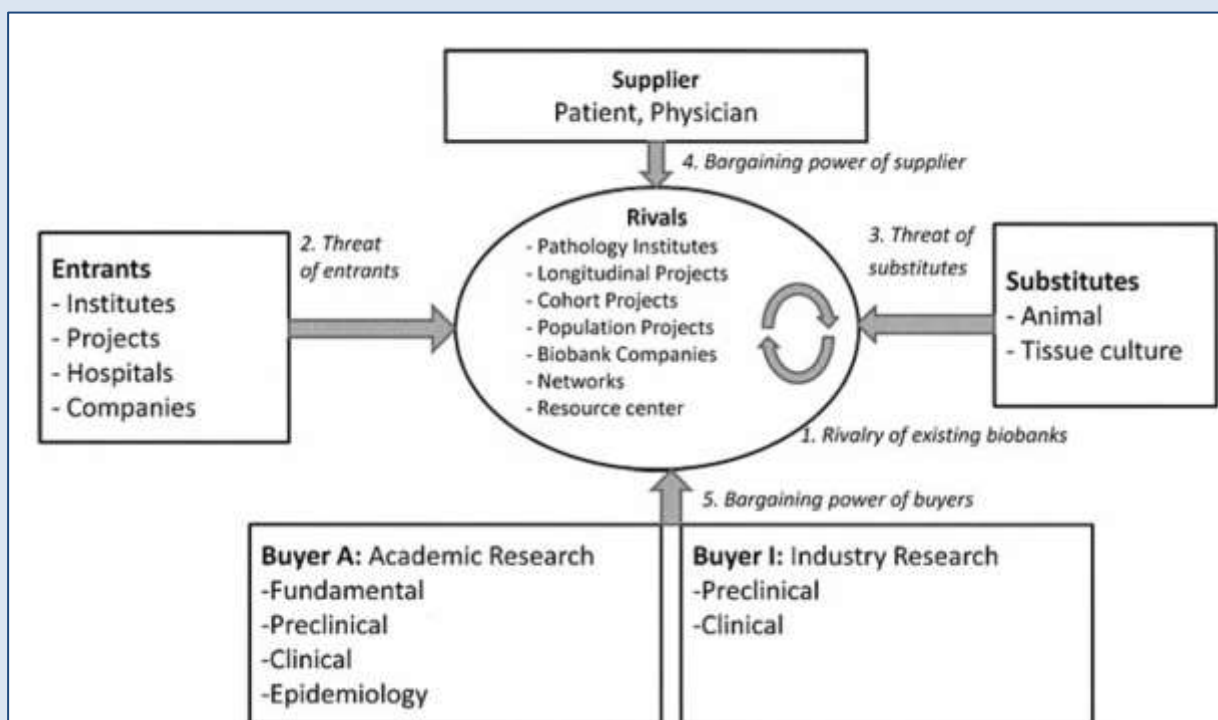
Figure 2. SWOT analysis template

Internal factors	<b>Strengths</b> <ul style="list-style-type: none"><li>• What do you do better than anyone?</li><li>• What makes you unique?</li><li>• What unique/lost-cost resources can you draw upon that others can't?</li><li>• What do people in your market see as your strengths?</li></ul>	<b>Weaknesses</b> <ul style="list-style-type: none"><li>• What could you improve?</li><li>• What should you avoid?</li><li>• What are things your users (might) see as weaknesses?</li></ul>
	<b>Opportunities</b> <ul style="list-style-type: none"><li>• Do people have a need?</li><li>• Do people prefer something else?</li><li>• Are there any changes in technology?</li><li>• Are there changes in government policy?</li></ul>	<b>Threats</b> <ul style="list-style-type: none"><li>• What challenges do you face?</li><li>• What are your competitors doing?</li><li>• Is changing technology making things difficult?</li><li>• Is there an issue with finances?</li></ul>

## 2.4. Porter's Five Forces Framework

Porter's Five Forces Framework is used to assess a biobank's competitive micro-environment. The micro-environment relates to the direct surroundings of an organisation; affecting an organisation's day-to-day operations and determining its competitive position. Micro-environmental factors are often within an organisation's sphere of influence. The main factors that constitute the competitive micro-environment are an organisation's customers, suppliers, intermediaries (e.g. resellers, networks), substitute products<sup>3</sup>, existing rivals, new entrants, and an organisation's own internal organisation (Porter 1979). The Porter's Five Forces Framework can help identify positive and negative factors in a biobank's micro-environment, after which a biobank can develop strategies to exploit the positive factors and address the negative factors.

Figure 3. Porter's Five Forces Framework filled in for a clinical biobank



Adjusted from (Warth, Perren 2014)

Rainer Warth and Aurel Perren used Porter's Five Forces Framework to study the competitive micro-environment of a clinical biobank delivering to multiple users (Warth, Perren 2014)(see figure 3). Their analysis, which can serve as a starting point for biobanks to perform their own individual analysis, is summarized in table 1.

### Further reading:

- Warth, R. and Perren, A., 2014. *Construction of a business model to assure financial sustainability of biobanks*. Biopreservation and biobanking, 12(6), pp. 389-394.

<sup>3</sup> A different type of product that answer the same client question and therefore indirectly competes with your product. For example, "water" and "orange juice" are substitute products, answering the same client question of "thirst".

- Porter, M.E., 2008. *The Five Competitive Forces That Shape Strategy*, Harvard Business Review, [link](#)
- [https://en.wikipedia.org/wiki/Porter%27s\\_five\\_forces\\_analysis](https://en.wikipedia.org/wiki/Porter%27s_five_forces_analysis)

Table 1. Porter's Five Forces Framework: an analysis of a multi-user clinical biobank		
Competitive force	Analysis	Conclusion
<b>Rivalry among existing biobanks</b>	<ul style="list-style-type: none"> <li>• Differentiated sample and data offerings</li> <li>• Low number of similar biobanks</li> <li>• Variable costs</li> </ul>	Rivalry between existing biobanks is low as few competitors offer the same samples and data and often cater to different client groups (depending on biobank disease or research niche).
<b>Threat of new entrants</b>	<ul style="list-style-type: none"> <li>• Highly regulated market</li> <li>• Restricted access to patients</li> <li>• Requires (often) high starting capital</li> <li>• Takes considerable time and effort to gather sufficient number of samples</li> </ul>	The threat of new entrants is low. In other words, it is difficult to start a new biobank, which speaks in favour of already established biobanks.
<b>Threat of substitutes</b>	<ul style="list-style-type: none"> <li>• Usefulness of substitutes (e.g. cell cultures or animal models) is limited for clinical research</li> </ul>	The threat of substitute products is low.
<b>Bargaining power of supplier of samples and data (e.g. participants, physicians)</b>	<ul style="list-style-type: none"> <li>• Trust is relatively high</li> <li>• Favourable public opinion</li> <li>• Heterogeneity of samples</li> </ul>	Middle, often good support from patients and participants. Public opinion can switch.
<b>Bargaining power of buyers</b>	<ul style="list-style-type: none"> <li>• User demand is irregular and hard to predict.</li> <li>• Difficulty in sample and data pricing</li> </ul>	Bargaining power is often not in favour of the biobank. This prevents product standardisation and results in an uncertain revenue stream.

## 2.5. Stakeholder analysis and the Power-Interest Matrix

### Stakeholder analysis

A stakeholder analysis should be performed at an early stage, before the start of operations, as the results influence the biobank's strategy and objectives. A thorough stakeholder analysis is essential to identify those stakeholders that are required for the long-term future of a biobank (Bjugn, Casati 2012). Table 2 describes the different phases of a stakeholder analysis and their corresponding actions. The analysis should result in the identification, segmentation, and prioritisation of stakeholders, followed by an appropriate engagement strategy per stakeholder or stakeholder group, taking into account their motivations, needs, interests, and level of influence. The results are input for the biobank's business plan, business model, and value proposition (for more information on business models and the value proposition see BBMRI.nl report *Sustainable Biobanking: The Financial Dimension*).

Time and economic restraints may force a biobank to skip the stakeholder analysis. However, this could lower a biobank's sustainability on the long run as important stakeholders and their concerns might remain unaddressed. Any organisation can perform a stakeholder analysis, as neither

sophisticated equipment nor deep theoretical knowledge is required. What is required is a will to face possible negative future factors and risks, to engage with people who might have different views, and to change objectives and strategies if deemed necessary to reach overall goals. The discussion accompanying the analysis will in itself already provide new insights and a shared understanding (Bjugn, Casati 2012).

**Table 2. Stakeholder analysis phases and actions**

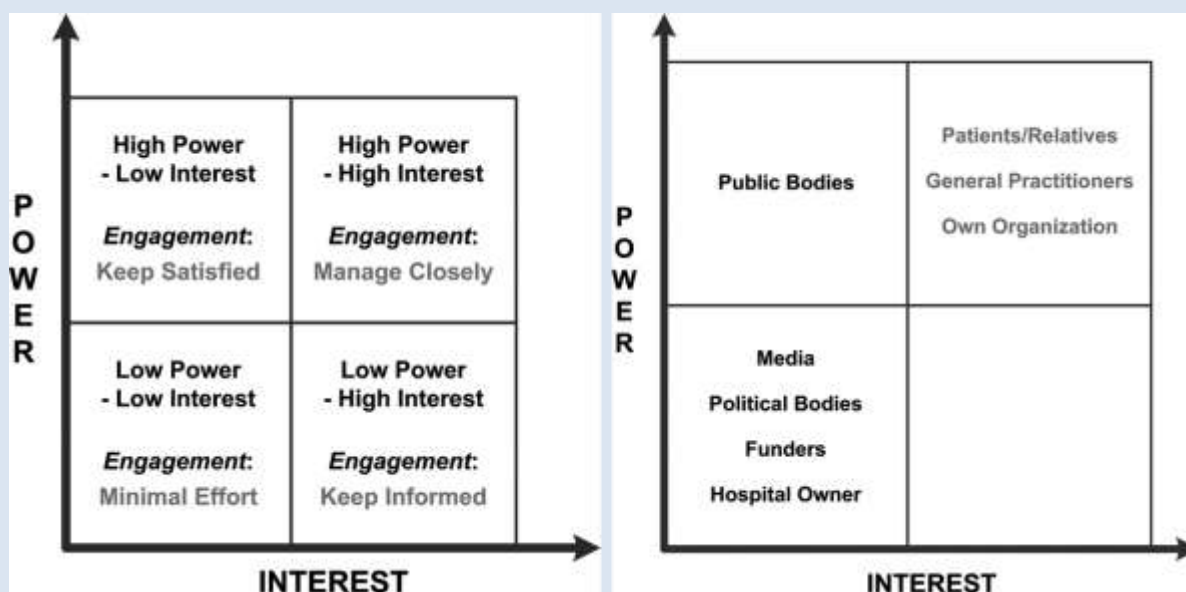
Phase	Actions
<b>1. Identification of stakeholders</b>	<ul style="list-style-type: none"> <li>• Brainstorm session with project team.</li> <li>• Verify with external party/parties.</li> <li>• Identify to the level of individual or group (the more specific, the better).</li> </ul>
<b>2. Attributing qualities to stakeholders</b>	<ul style="list-style-type: none"> <li>• Session with project team.</li> <li>• Adopt outsider's point of view.</li> <li>• What does each stakeholder want, need, and value?</li> <li>• What is their power &amp; influence? (high/low/specific)</li> <li>• What is their interest? (high/low/specific)</li> </ul>
<b>3. Prioritising</b>	<ul style="list-style-type: none"> <li>• Prioritise the identified stakeholders according to:               <ul style="list-style-type: none"> <li>○ Power vs. interest</li> <li>○ High/moderate/low impact</li> </ul> </li> <li>• Handle results with care as stakeholders might react to their position by changing their interest and impact.</li> <li>• Talk with your key stakeholders to get a better understanding on their needs and interests.</li> </ul>
<b>4. Engagement strategy</b>	<ul style="list-style-type: none"> <li>• Build a stakeholder engagement plan with engagement strategies and communication actions per stakeholder or stakeholder group.</li> </ul>
<b>5. Monitoring</b>	<ul style="list-style-type: none"> <li>• Monitor the engagement plan and adjust when required.</li> <li>• Review the stakeholder analysis periodically to determine shifts in a stakeholders' position, power, interests, and needs.</li> <li>• Adjust prioritisation, engagement strategy, and biobank organisation accordingly.</li> </ul>
Based on work by (Bjugn, Casati 2012)	

### Power-Interest Matrix

A Power-Interest Matrix is a tool you can use in a stakeholder analysis. The matrix allows a biobank to position its stakeholders based on their power over and interest in the biobank. Subsequently, the matrix provides guidance on an appropriate communication and engagement strategy per stakeholder or stakeholder group. The Power-Interest Matrix can help discover where the real power is located, allowing for better decision-making. However, be aware that this analysis results in potentially sensitive information which could influence the behaviour of individual stakeholders.

The influence of each stakeholder on the biobank is determined by allocating them the attributes high power/low power and high interest/low interest. Depending on the resulting position, the model suggests different engagement strategies. Stakeholders with high power en low interest shall be kept satisfied. Those with low interest and low power shall be only monitored with minimum effort. A stakeholder with low power and high interest in a project shall be kept informed and finally the high power and high interest stakeholders shall be closely monitored and engaged actively.

Figure 4. Power-Interest Matrix template and example



A power-interest matrix template (left) and an example from a long-term, multidisciplinary project on colorectal cancer depicting eight stakeholder groups (right). Source: (Bjugn, Casati 2012).

#### Further reading:

- Bjugn, R. and Casati, B., 2012. Stakeholder analysis: a useful tool for biobank planning. *Biopreservation and biobanking*, 10(3), pp. 239-244.
- Ackermann, F. and Eden C., 2011. *Strategic Management of Stakeholders: Theory and Practice*. [Link](#)
- Wageningen University & Research, *Power-Interest grid for stakeholder participation*
- Thompson, R., *Stakeholder Analysis: Winning Support for Your Projects*, MindTools



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