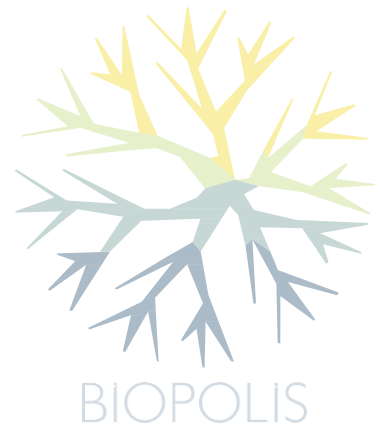


WP9

Definition of CoE KPIs

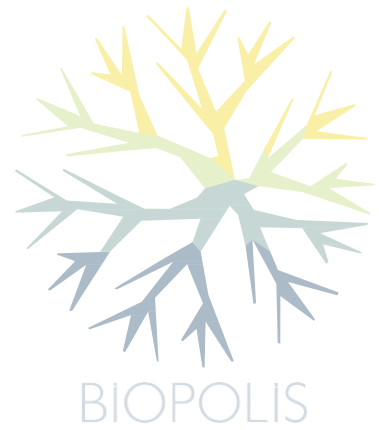
Deliverable 9.2



Definition of CoE KPIs

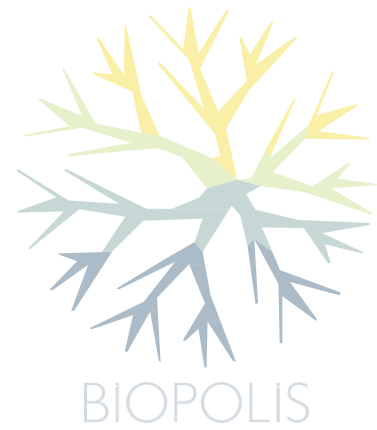
Deliverable 9.2

Lead beneficiary	PBS
Submission date	May 31 st 2020



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1. Introduction

“The right set of KPIs will shine a light on the key aspects of performance and highlight areas that may need attention”

Bernard Marr & Co.

Key performance indicators provide a way to evaluate how organisations, teams, projects, business units or individuals are performing in relation to their strategic goals. KPIs are measurement instruments that enable an unbiased assessment to understand whether or not the subject is on track toward the strategy defined.

The ultimate utility of the definition of KPIs is to improve performance, as these indicators provide useful insights for decision-making purposes.

According to Viki, T., Toma, D., & Gons, E. (2017) there are two categories of key performance indicators: activity metrics and impact metrics. Activity metrics measure the level of activity going on. Impact metrics measure tangible results that are emerging from the activity.

Nonetheless, not all indicators are equally relevant to pursue the objectives. So, the first steps of this analysis were to examine, select and connect the indicators mentioned on the Application stage.

In fact, the Application presents four categories of metrics: **strategic objectives**, **impact indicators** to measure the first, **specific objectives** and **performance indicators** to measure the last.

These metrics presented are related to each other, although some of them not directly. Hence, the first step was to build an egg model that correlates all variables but accepts the link between the metrics in layers, rather than straightforward.

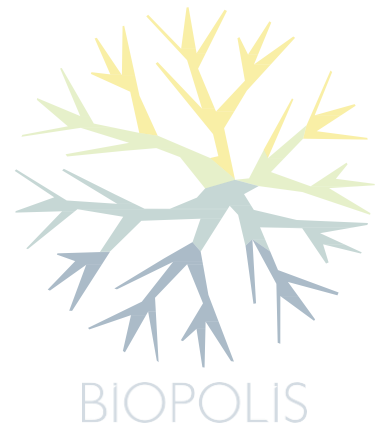
Nonetheless, as the goal of this deliverable was to find the **performance indicators to evaluate the strategic objectives**, all variables were combined to find this specific linear relation. So the second step of this task was based on the understanding that some indicators have higher significance to the strategic objectives than others, so direct links can be made between strategic objectives and performance indicators, through the impact indicators.

Besides, activity indicators were established to evaluate how well BIOPOLIS is achieving the performance indicators. These will serve as milestones.

In the following section, the Application will be scanned concerning the objectives and indicators.

Then, data will be interpreted, the results will be presented and the activity KPIs will be defined.

Lastly, major conclusions will be provided.



2. Application analysis

2.1. Strategic Objectives

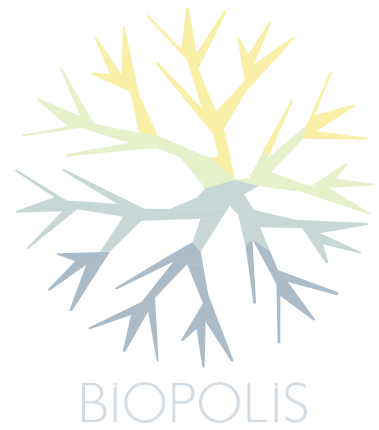
At the Application stage, a set of BIOPOLIS' **strategic objectives** were defined and grouped into three main axes: Excellence towards innovation, Empower economy and sustainability for a better society, and Internationalization in research and training. Each **strategic objective** was then divided into three **strategic sub-objectives**, listed below. Thus, 3 **strategic objectives** and 9 **strategic sub-objectives** are presented.

I. Excellence towards innovation

- i. Tap into Portugal's potential in research and innovation, creating an independent, strong and sustainable CoE that delivers excellent scientific research and innovation with high societal impact over the long term.
- ii. Build up human and logistic capacities for developing excellent research and innovation, train researchers and practitioners, and promote knowledge transfer and the exploitation of results, establishing a state-of-the-art collaborative research platform where the best facilities and equipment are available to researchers, spin-off and start-ups, and industrial partners.
- iii. Tackle cutting-edge research problems at the frontiers of current knowledge, harnessing the powerful concepts and tools of the New Biology framework, and involving collaborations with top-level researchers and research institutions worldwide.

II. Empower economy and sustainability for a better society

- iv. Develop solutions to societal challenges, addressing the United Nations 2030 Sustainable Development Goals (SDGs), and promoting the sustainable use of biodiversity (including agrobiodiversity) and ecosystems to reduce poverty and enhance economic growth opportunities, with a strong focus on least developed countries, particularly Portuguese-speaking African countries.
- v. Enhance the appreciation of science, biodiversity and ecosystems by society as a whole, raising awareness regarding the links between the knowledge-based management of social-ecological systems, sustainable socioeconomic development and human health and well-being.
- vi. Promote specialised jobs, economic growth and investment at the national and regional levels, engaging with business corporations and other stakeholders, increasing capacities to develop problem-solving research, transferring knowledge to end users, and creating start-up companies.

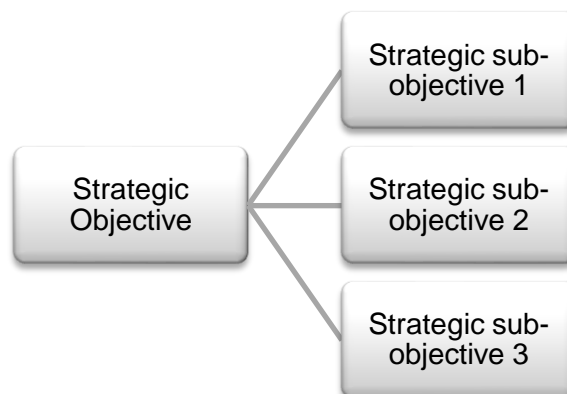


III. Internationalization in research and training

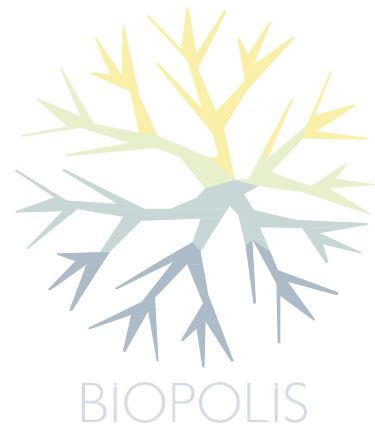
vii. Raise the critical mass of highly skilled researchers and international visibility of the country and region in the fields of environment, biodiversity and agriculture at the national and regional levels, attracting the best talent worldwide, and contributing to reversing the problems associated with “brain drain”.

viii. Improve international experience, networking capacities and participation in cross-border science networks, connecting researchers and research institutions through strategic partnerships with internationally leading institutions worldwide, and with research institutions from least developed countries.

ix. Train a new generation of highly-skilled researchers and practitioners, offering internationally recognised doctoral and post-doctoral programmes, as well as advanced training and continuous development programmes for professionals at different stages of their career.



Scheme 1. Correlation between strategic objectives and strategic sub-objectives



2.2. Impact indicators

Impact indicators were assigned to measure the achievement of strategic sub-objectives. For each strategic sub-objective, a few **impact indicators** were designated.

I. EXCELLENCE TOWARDS INNOVATION

(i) Tap into Portugal's potential in Research and Innovation

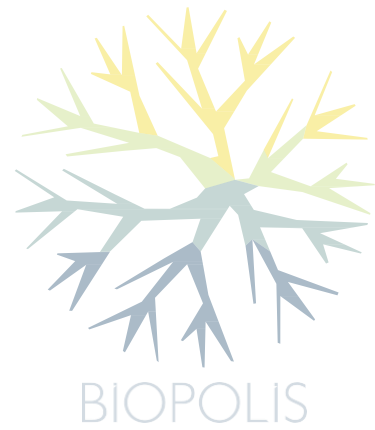
- I1.1. Financial self-sufficiency (balance between revenues and costs)
- I1.2. Annual No. of projects funded by a foreign agency (non-UE) or private entity
- I1.3. Percentage of funding for research obtained from EU programmes
- I1.4. No. of Invited Chairs funded by business corporations

(ii) Build up Human and logistic capacities

- I2.1. Annual No. of private or public academic and business using the platform facilities
- I2.2. Annual No. of courses for technology and knowledge updating

(iii) Tackle cutting-edge research problems in the frontiers of current knowledge

- I3.1. Annual No. of projects in fundamental research nationally funded
- I3.2. Annual No. of projects in fundamental research internationally funded
- I3.3. Annual No. of international scientific meetings organized by CoE researchers
- I3.4. No. of scientific publications in top ranked journals (SCI impact factor >10)



II. EMPOWER ECONOMY AND SUSTAINABILITY FOR A BETTER SOCIETY

(iv) Develop Solutions to Societal Challenges

II4.1. No. of TwinLabs established in low- and middle-income countries

II4.2. No. of students from low- and middle-income countries enrolled in post-graduation

II4.3 No. of contracts with the public administration regarding biodiversity and ecosystems

II4.4 No. of contracts with key actors in the agrifood sector and with SMEs for the exploitation of Results

II4.5 No. number of innovative solutions developed to address environmental challenges

(v) Enhance appreciation of science, biodiversity and ecosystems by the society

II5.1. No. of articles on news outlets about BIOPOLIS activities

II5.2. No. of scientific dissemination publications edited or authored by BIOPOLIS

II5.3. No. of non-academic people involved in scientific outreach activities or enrolled in exchange training programmes with business and industry

II5.4. No. of joint activities with regional and local authorities on societal issues

II5.5. No. number of outreaching events organised for the general public and number of participants

(vi) Promote specialised jobs, economic growth and investment

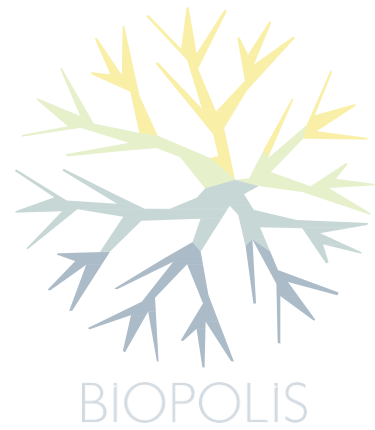
II6.1. No. of patents, open innovative solutions, technical guidelines, and manuals derived from BIOPOLIS research

II6.2. No. of stakeholders enrolled in the CoE's Affiliates Programme

II6.3. No. of innovative and marketable outputs of partnerships with business corporations

II6.4. No. of new businesses, start-ups and spinoffs initiated

II6.5. No. of Invited Chair established by private corporations



III. INTERNATIONALIZATION IN RESEARCH AND TRAINING

(vii) Raise Critical Mass and international visibility

III7.1. No. of new top-ranked researchers attracted

III7.2. Percentage of permanent staff from abroad

III7.3. Percentage of the staff enrolled in mobility programs

(viii) Improve international experience and networking capacities

III8.1. No. of collaborations with foreign top ranked institutions

III8.2. No. of international consortia led by BIOPOLIS

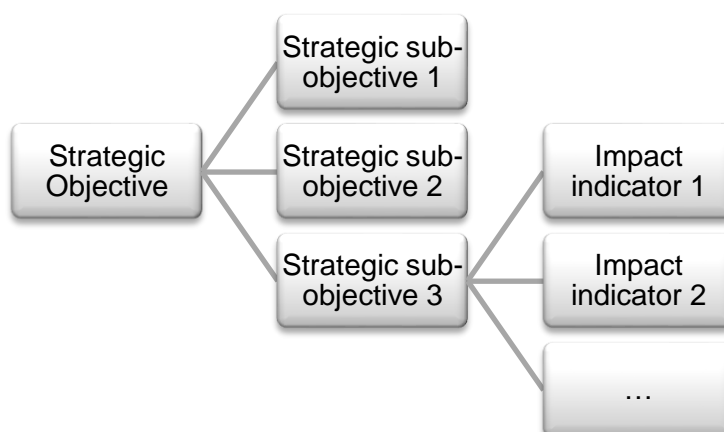
III8.3. % of post-graduation students of from other nationalities

(ix) Train a new generation of Highly-Skilled Researchers

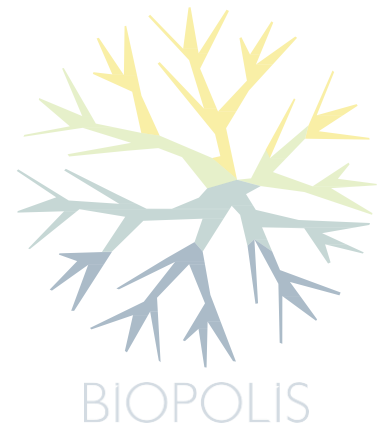
III9.1. No. of students annually enrolled in the CoE's post-graduation programmes

III9.2. No. of doctoral thesis submitted per year

III9.2. No. of employees from national or international organizations trained at BIOPOLIS



Scheme 2. Correlation between strategic objectives, strategic sub-objectives and impact indicators



2.3. Specific objectives

To translate the strategic objectives into concrete actions specific objectives [SO] were defined. Although, the strategic and specific objectives are not directly linked, the pursuing of the specific ones will lead to the achievement of the strategic ones.

[SO1] To establish strong governance, organizational and administration structures, with adequate staff, and to implement the management of the CoE through efficient and fair strategies and procedures (e.g., human resources, finances, infrastructures and equipment).

[SO2] To upgrade the research structure, a hiring of staff composed of international talented researchers at different career stages, supported by skilled technical staff, and organised in robust research units implementing ambitious programmes of research and innovation.

[SO3] To reinforce the outreach structure, with specialised staff devoted to communication, dissemination and exploitation (CD&E), advanced training, knowledge transfer, and stakeholder engagement, which implement outreach programmes following efficient strategies and procedures.

[SO4] To reinforce research capacities, competences and international visibility, enhancing the ability of researchers to attract regular funding through national and international research and innovation projects, to produce high-quality scientific outputs, and to engage in problem-solving research with business partners and other end users.

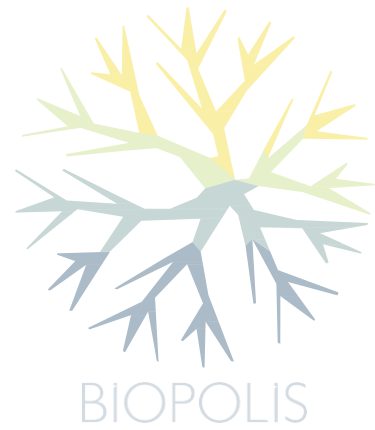
[SO5] To reinforce the on-going doctoral programme, establish a post-doctoral programme, and reinforce the advanced training and continuous development programmes, contributing to enhance leadership of BIOPOLIS in advanced training.

[SO6] To strengthen partnerships with end-users, creating and implementing a strong Affiliates Programme (AP), thereby effectively reinforcing the “quadruple helix” model of innovation, boosting interactions and mutual trust with end-users, and promoting dissemination and exploitation of results.

[SO7] To expand the international network of partnerships with leading institutions worldwide, and with institutions from least developed countries through a network of TwinLabs, positioning BIOPOLIS at the forefront of collaborative partnerships between Europe, Africa and South America.

[SO8] To upgrade CIBIO into a highly competitive R&D&I CoE, with the ability to attract and retain high-level young and senior researchers, to participate in international networks of leading institutions, and to be involved in (and coordinate) large projects funded by the EU and other institutions.

[SO9] To upgrade CIBIO into a CoE positioned as a key player in the fields of environmental biology, ecosystem research and agrobiodiversity, with high scientific impact, and high international scientific visibility.

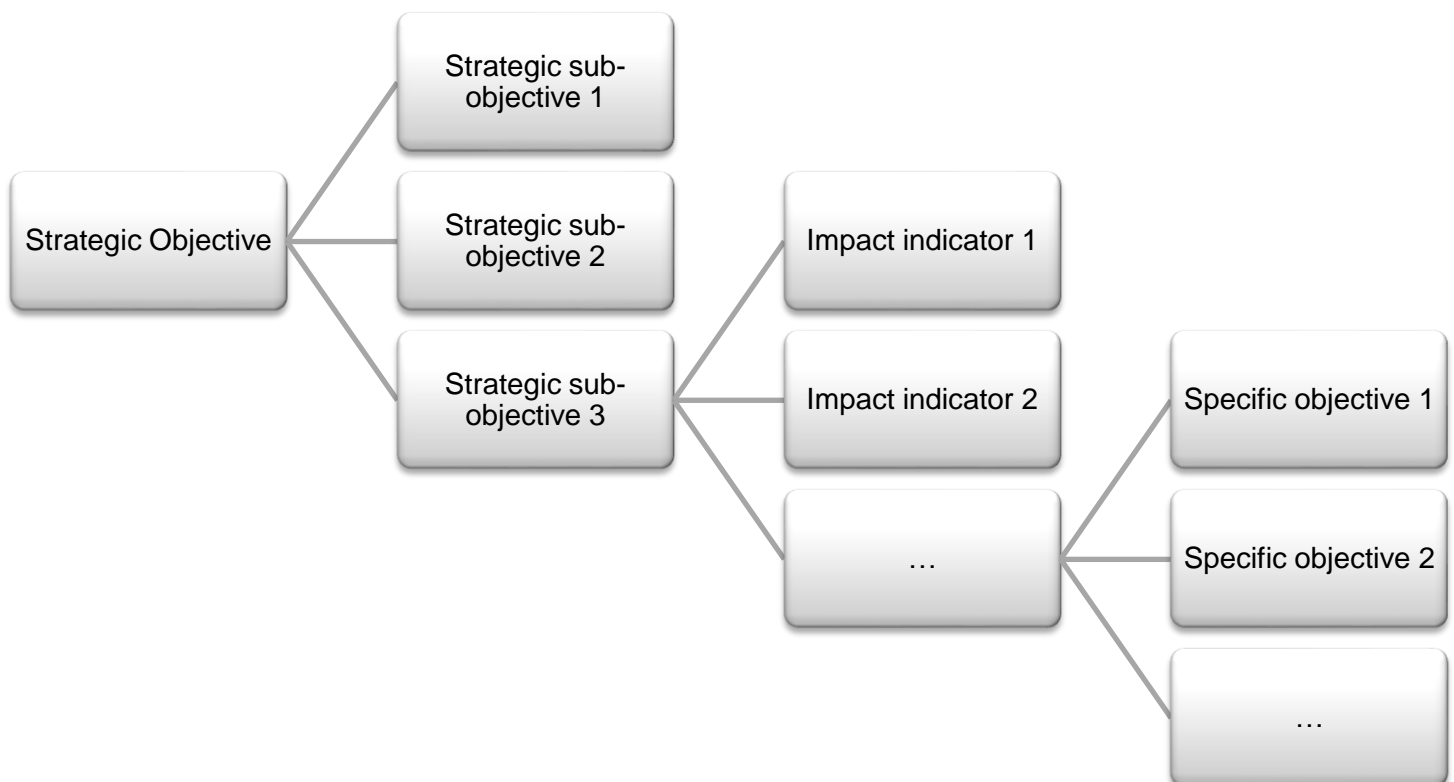


[SO10] To upgrade CIBIO into a reference CoE for “quadruple helix” partnerships in environment, biodiversity and agriculture, thereby assuring its role in the dissemination and exploitation of research and innovation results.

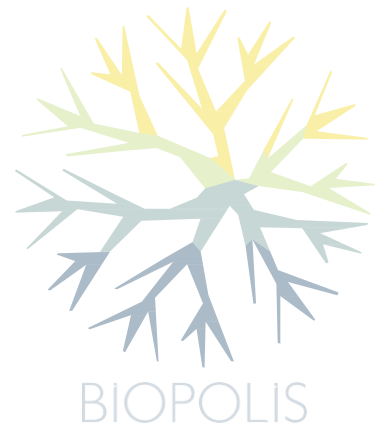
[SO11] To upgrade CIBIO into a reference CoE for the management and sustainable use of biodiversity (including agrobiodiversity) and ecosystems, providing advanced scientific and technical advice to end users.

[SO12] To achieve full financial sustainability, with a successful fundraising strategy based on the regular participation in EU and other research projects, IP revenues, industry contracts, among others.

These **specific objectives** were associated to the impact indicators: to each **impact indicator** several specific objectives were assigned.

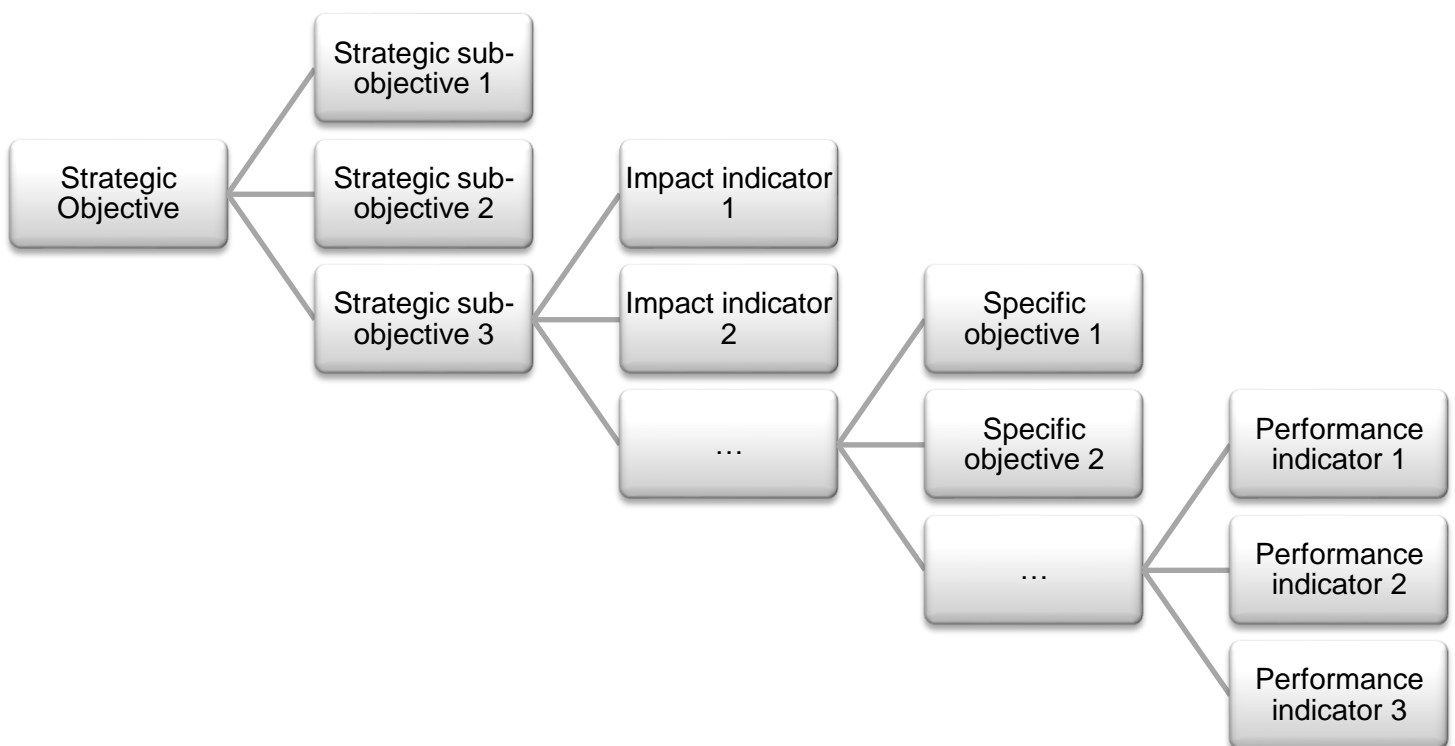


Scheme 3. Correlation between strategic objectives, strategic sub-objectives, impact indicators and specific objectives

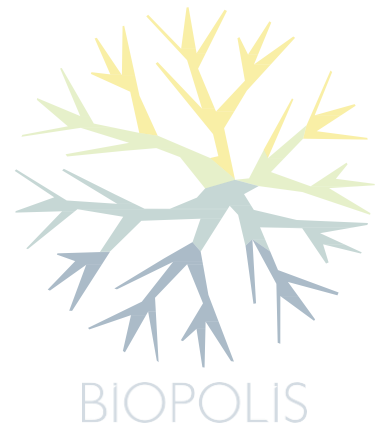


2.4. Performance indicators

Lastly, for each **specific objective [SO]**, three **performance indicators** were established in order to assess the achievement of these objectives.



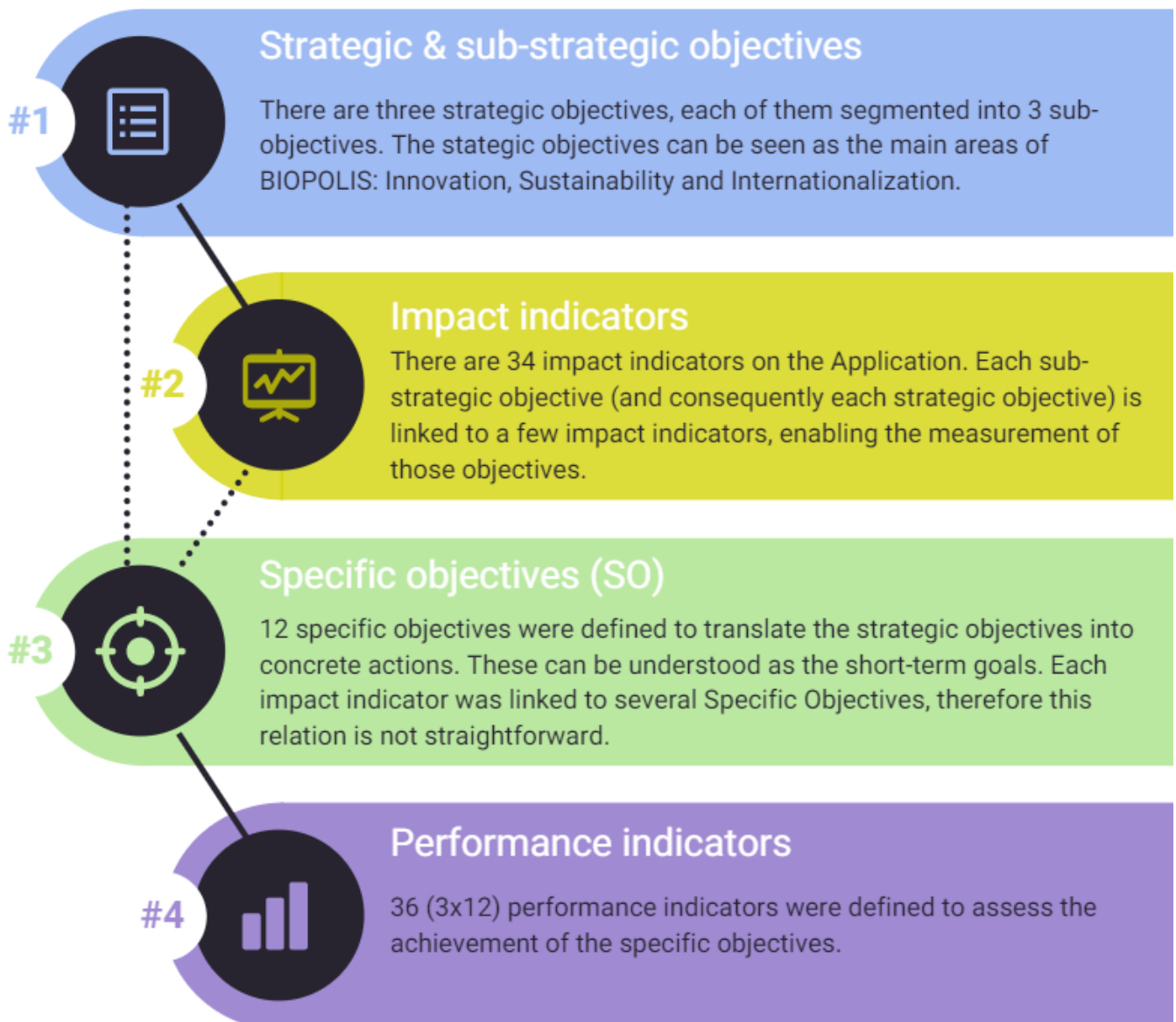
Scheme 4. Correlation between strategic objectives, strategic sub-objectives, impact indicators, specific objectives and performance indicators



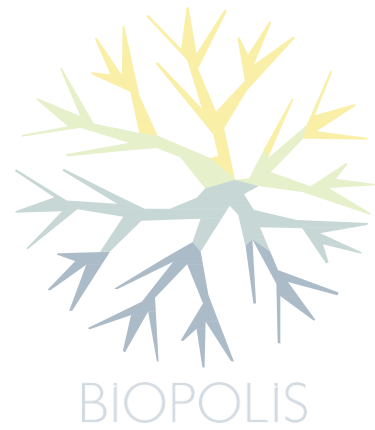
2.5. Correlation between objectives and indicators

Therefore, the Application refers **strategic objectives**, **impact indicators** (directly linked to the strategic objectives), **specific objectives** and **performance indicators** (directly linked to the specific objectives).

The connection between the four variables is as described in the following scheme:



Scheme 5. Overview of the Correlation between all variables



3. Interpretation of data

3.1. Egg model

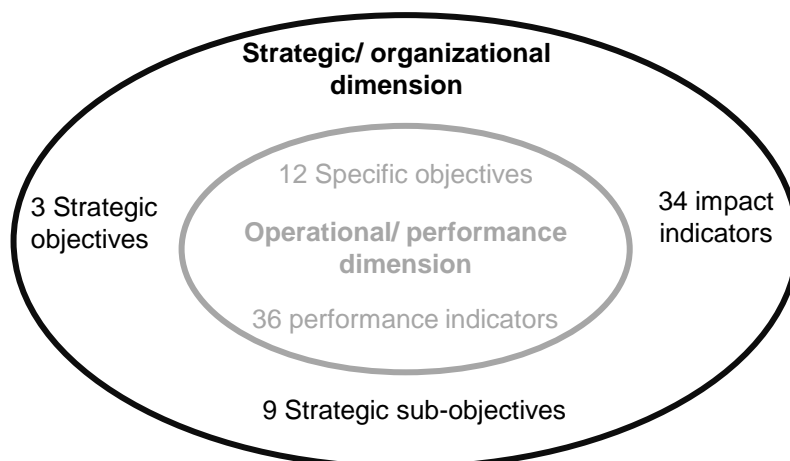
BIOPOLIS project is based on 3 major pillars: **innovation**, **sustainability** and **internationalization**. These pillars are reflected in its strategic objectives and will be measured annually through the impact indicators. Furthermore, these impact indicators will contribute to the Innovation Index of Portugal (IIP). Their contribution, however, is not identical, with some indicators exhibiting a higher significance which one can understand through the European Innovation Scoreboard. The 3 strategic objectives are divided into 9 sub-objectives measured by 34 impact indicators. These represent a **strategic dimension**, an holistic approach of the project and its purpose.

On the other hand, the Application presents us an **operational dimension**, a performance approach whose goal is to evaluate daily activities and the achievement of milestones, rather than annual assessment. This approach is expressed through 12 specific objectives measured by 36 performance indicators.

Despite the fact these two dimensions are interconnected since the achievement of the strategic objectives depends on the success of the specific objectives, their link is not straightforward.

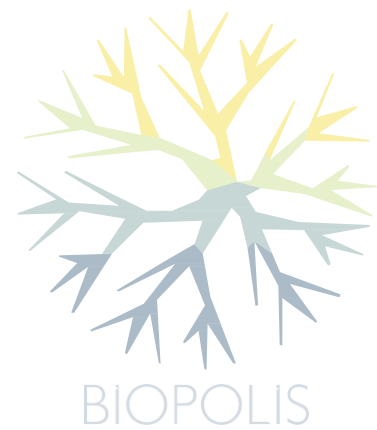
For example, the first strategic sub-objective *Tap into Portugal's potential in Research and Innovation* is measured, not merely but also, by the impact indicator *Financial self-sufficiency (balance between revenues and costs)*. This impact indicator is indirectly linked to the specific objectives [SO] 1, 4, 6, 11, 12. In fact, in order to accomplish *financial self-sufficiency*, there is a need to establish strong governance [SO1], to reinforce research capabilities [SO4], to strengthen partnerships with end-users [SO6], to upgrade CIBIO into a reference CoE [SO11], and to achieve full financial sustainability [SO12]. All these SO combined will enable the attainment of *financial self-sufficiency*.

Considering this point of view, in which everything is connect we can build an egg model:



Scheme 6. Egg model

Nevertheless, other methodologies can be used to analysed the data and monitor the key performance indicators.



3.2. Significance

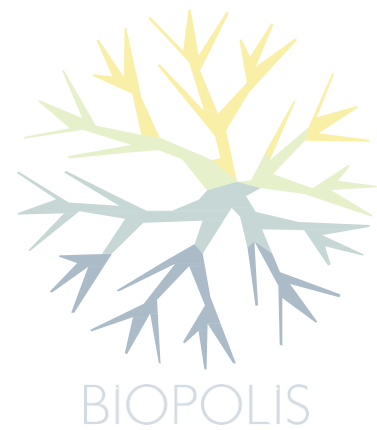
Returning to the previous example, it is true that in order to accomplish *financial self-sufficiency*, there is a need to establish strong governance, to reinforce research capabilities, to strengthen partnerships with end-users, to upgrade CIBIO into a reference CoE and to achieve full financial sustainability – it is the combination of all of these SO that will fuel the *financial self-sufficiency*.

Nonetheless, it is possible to conclude that one of these specific objectives has a **higher significance** than the others for the achievement of the impact indicator.

In fact, considering the strategic sub-objective (*Tap into Portugal's potential in Research and Innovation*), all of the specific objectives play a contributory role. However, looking specifically at the **impact indicator** *financial self-sufficiency*, it's clear that the specific objective [SO] 12 *to achieve full financial sustainability* will have a greater significance.

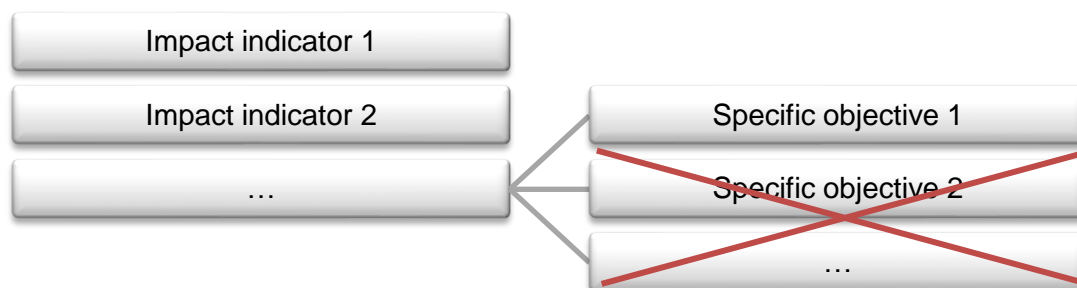
Strategic sub-objective	Impact indicator	Specific objectives	Performance indicators
Tap into Portugal's potential in Research and Innovation	Financial self-sufficiency (balance between revenues and costs)	to establish strong governance [SO1]	(i) Background qualifications and experience of the hired directors and administration officers; (ii) Delivery times and quality assurance of operations; (iii) Employee satisfaction
		to reinforce research capabilities [SO4]	(i) Growth (%) in research projects funded and amount awarded. (ii) Growth (%) in quantity and quality of scientific outputs (e.g. papers). (iii) Growth (%) in contracts with industry and other stakeholders
		to strengthen partnerships with end-users [SO6]	(i) No. of stakeholders involved in the AP. (ii) Growth (%) in the No. of projects with AP partners. (iii) Research and Innovation funding generated through the AP.
		to upgrade CIBIO into a reference CoE [SO11]	(i) No. of consultancy contracts with public and private end users; (ii) No. of participations in advisory panels; (iii) No. of policy briefs produced
		to achieve full financial sustainability [SO12]	(i) Annual balance sheet and return on capital; (ii) No. of patents registered and commercialised; (iii) No. and balance sheet of spin-offs based on innovative ideas developed in the project

Table 1. Allocation of one specific objective to the first impact indicator



This exercise can be repeated for each impact indicator, so the impact indicators, previously linked to more than one specific objective, become assigned to just one.

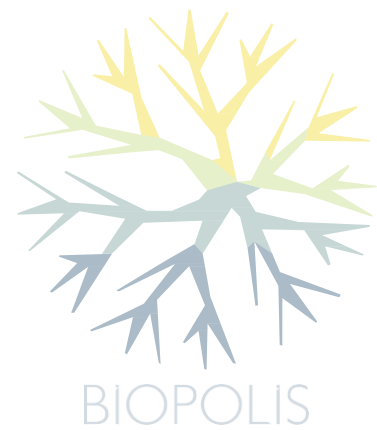
The methodology applied is based on the specific objective's effect on the achievement of that particular impact indicator – the ones with lower significance will be ignored.



Scheme 7. Methodology

All variables were considered and the results are presented in the following table:

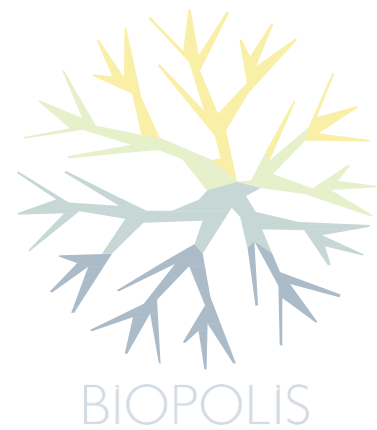
	Impact indicators	Most significant specific objective [SO]
1	Financial self-sufficiency (balance between revenues and costs)	[SO12] To achieve full financial sustainability, with a successful fundraising strategy based on the regular participation in EU and other research projects, IP revenues, industry contracts, among others.
2	Annual no. of projects funded by a foreign agency (non-UE) or private entity	[SO12] To achieve full financial sustainability, with a successful fundraising strategy based on the regular participation in EU and other research projects, IP revenues, industry contracts, among others.
3	Percentage of funding for research obtained from EU programmes	[SO12] To achieve full financial sustainability, with a successful fundraising strategy based on the regular participation in EU and other research projects, IP revenues, industry contracts, among others.
4	No. of Invited Chairs funded by business corporations	[SO1] To establish strong governance, organizational and administration structures, with adequate staff, and to implement the management of the CoE through efficient and fair strategies and procedures (e.g., human resources, finances, infrastructures and equipment).
5	Annual No. of private or public academic and business using the platform facilities	[SO6] To strengthen partnerships with end-users, creating and implementing a strong Affiliates Programme (AP), thereby effectively reinforcing the “quadruple helix” model of innovation, boosting interactions and mutual trust with end-users, and promoting dissemination and exploitation of results.



	Impact indicators	Most significant specific objective [SO]
6	Annual No. of courses for technology and knowledge updating	[SO3] To reinforce the outreach structure, with specialised staff devoted to communication, dissemination and exploitation (CD&E), advanced training, knowledge transfer, and stakeholder engagement, which implement outreach programmes following efficient strategies and procedures.
7	Annual No. of projects in fundamental research nationally funded	[SO12] To achieve full financial sustainability, with a successful fundraising strategy based on the regular participation in EU and other research projects, IP revenues, industry contracts, among others.
8	Annual No. of projects in fundamental research internationally funded	[SO8] To upgrade ICETA-CIBIO into a highly competitive R&D&I CoE, with the ability to attract and retain high-level young and senior researchers, to participate in international networks of leading institutions, and to be involved in (and coordinate) large projects funded by the EU and other institutions.
9	Annual No. of international scientific meetings organized by CoE researchers	[SO7] To expand the international network of partnerships with leading institutions worldwide, and with institutions from least developed countries through a network of TwinLabs, positioning BIOPOLIS at the forefront of collaborative partnerships between Europe, Africa and South America.
10	No. of scientific publications in top ranked journals (SCI impact factor >10)	[SO9] To upgrade ICETA-CIBIO into a CoE positioned as a key player in the fields of environmental biology, ecosystem research and agrobiodiversity, with high scientific impact, and high international scientific visibility.
11	No. of TwinLabs established in low- and middle-income countries	[SO7] To expand the international network of partnerships with leading institutions worldwide, and with institutions from least developed countries through a network of TwinLabs, positioning BIOPOLIS at the forefront of collaborative partnerships between Europe, Africa and South America.
12	No. of students from low- and middle-income countries enrolled in post-graduation	[SO7] To expand the international network of partnerships with leading institutions worldwide, and with institutions from least developed countries through a network of TwinLabs, positioning BIOPOLIS at the forefront of collaborative partnerships between Europe, Africa and South America.
13	No. of contracts with the public administration regarding biodiversity and ecosystems	[SO11] To upgrade ICETA-CIBIO into a reference CoE for the management and sustainable use of biodiversity (including agrobiodiversity) and ecosystems, providing advanced scientific and technical advice to end users.
14	No. of contracts with key actors in the agrifood sector and with SMEs for the exploitation of results	[SO11] To upgrade ICETA-CIBIO into a reference CoE for the management and sustainable use of biodiversity (including agrobiodiversity) and ecosystems, providing advanced scientific and technical advice to end users.
15	No. number of innovative solutions developed to address environmental challenges	[SO11] To upgrade ICETA-CIBIO into a reference CoE for the management and sustainable use of biodiversity (including agrobiodiversity) and ecosystems, providing advanced scientific and technical advice to end users.



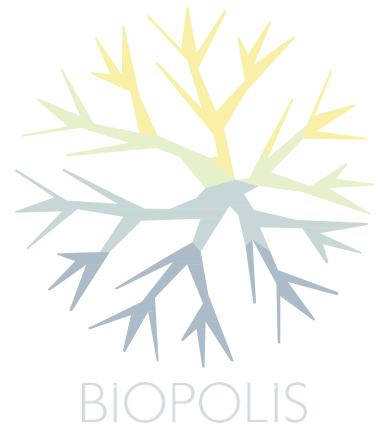
	Impact indicators	Most significant specific objective [SO]
16	No. of articles on news outlets about BIOPOLIS activities	[SO9] To upgrade ICETA-CIBIO into a CoE positioned as a key player in the fields of environmental biology, ecosystem research and agrobiodiversity, with high scientific impact, and high international scientific visibility.
17	No. of scientific dissemination publications edited or authored by BIOPOLIS	[SO9] To upgrade ICETA-CIBIO into a CoE positioned as a key player in the fields of environmental biology, ecosystem research and agrobiodiversity, with high scientific impact, and high international scientific visibility.
18	No. of non-academic people involved in scientific outreach activities or enrolled in exchange training programmes with business and industry	[SO10] To upgrade ICETA-CIBIO into a reference CoE for “quadruple helix” partnerships in environment, biodiversity and agriculture, thereby assuring its role in the dissemination and exploitation of research and innovation results.
19	No. of joint activities with regional and local authorities on societal issues	[SO10] To upgrade ICETA-CIBIO into a reference CoE for “quadruple helix” partnerships in environment, biodiversity and agriculture, thereby assuring its role in the dissemination and exploitation of research and innovation results.
20	No. number of outreaching events organised for the general public and number of participants	[SO10] To upgrade ICETA-CIBIO into a reference CoE for “quadruple helix” partnerships in environment, biodiversity and agriculture, thereby assuring its role in the dissemination and exploitation of research and innovation results.
21	No. of patents, open innovative solutions, technical guidelines, and manuals derived from BIOPOLIS research	[SO11] To upgrade ICETA-CIBIO into a reference CoE for the management and sustainable use of biodiversity (including agrobiodiversity) and ecosystems, providing advanced scientific and technical advice to end users.
22	No. of stakeholders enrolled in the CoE’s Affiliates Programme	[SO12] To achieve full financial sustainability, with a successful fundraising strategy based on the regular participation in EU and other research projects, IP revenues, industry contracts, among others.
23	No. of innovative and marketable outputs of partnerships with business corporations	[SO6] To strengthen partnerships with end-users, creating and implementing a strong Affiliates Programme (AP), thereby effectively reinforcing the “quadruple helix” model of innovation, boosting interactions and mutual trust with end-users, and promoting dissemination and exploitation of results.
24	No. of new businesses, start-ups and spinoffs initiated	[SO6] To strengthen partnerships with end-users, creating and implementing a strong Affiliates Programme (AP), thereby effectively reinforcing the “quadruple helix” model of innovation, boosting interactions and mutual trust with end-users, and promoting dissemination and exploitation of results.
25	No. of Invited Chair established by private corporations	[SO12] To achieve full financial sustainability, with a successful fundraising strategy based on the regular participation in EU and other research projects, IP revenues, industry contracts, among others.
26	No. of new top-ranked researchers attracted	[SO2] To upgrade the research structure, a hiring of staff composed of international talented researchers at different career stages, supported by skilled technical staff, and organised in robust research units implementing ambitious programmes of research and innovation



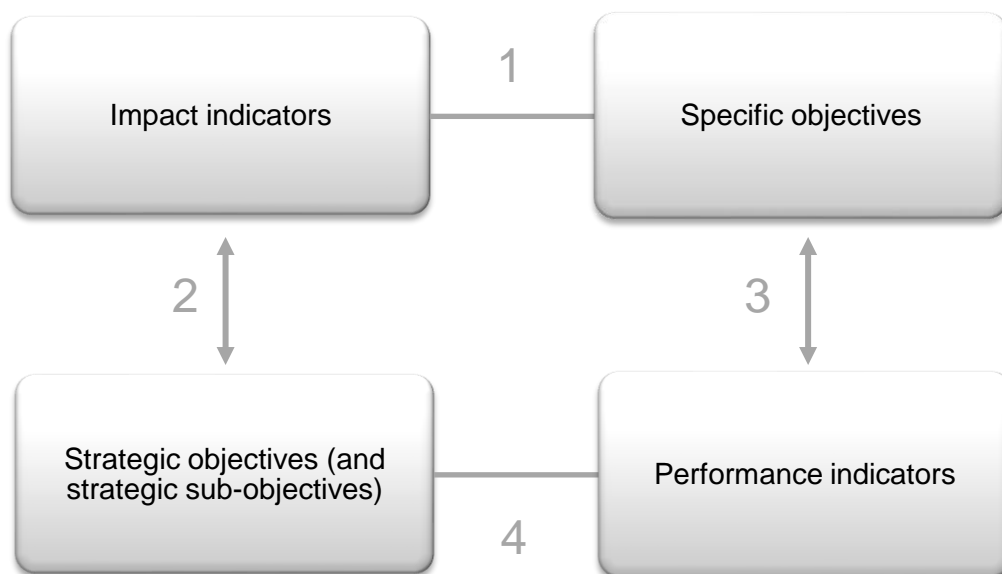
	Impact indicators	Most significant specific objective [SO]
27	Percentage of permanent staff from abroad	[SO2] To upgrade the research structure, a hiring of staff composed of international talented researchers at different career stages, supported by skilled technical staff, and organised in robust research units implementing ambitious programmes of research and innovation
28	Percentage of the staff enrolled in mobility programs	[SO2] To upgrade the research structure, a hiring of staff composed of international talented researchers at different career stages, supported by skilled technical staff, and organised in robust research units implementing ambitious programmes of research and innovation
29	No. of collaborations with foreign top ranked institutions	[SO8] To upgrade ICETA-CIBIO into a highly competitive R&D&I CoE, with the ability to attract and retain high-level young and senior researchers, to participate in international networks of leading institutions, and to be involved in (and coordinate) large projects funded by the EU and other institutions.
30	No. of international consortia led by BIOPOLIS	[SO4] To reinforce research capacities, competences and international visibility, enhancing the ability of researchers to attract regular funding through national and international research and innovation projects, to produce high-quality scientific outputs, and to engage in problem-solving research with business partners and other end users.
31	% of post-graduation students of from other nationalities	[SO5] To reinforce the on-going doctoral programme, establish a post-doctoral programme, and reinforce the advanced training and continuous development programmes, contributing to enhance leadership of BIOPOLIS in advanced training.
32	No. of students annually enrolled in the CoE's post-graduation programmes	[SO5] To reinforce the on-going doctoral programme, establish a post-doctoral programme, and reinforce the advanced training and continuous development programmes, contributing to enhance leadership of BIOPOLIS in advanced training.
33	No. of doctoral thesis submitted per year	[SO5] To reinforce the on-going doctoral programme, establish a post-doctoral programme, and reinforce the advanced training and continuous development programmes, contributing to enhance leadership of BIOPOLIS in advanced training.
34	No. of employees from national or international organizations trained at BIOPOLIS	[SO5] To reinforce the on-going doctoral programme, establish a post-doctoral programme, and reinforce the advanced training and continuous development programmes, contributing to enhance leadership of BIOPOLIS in advanced training.

Table 2. Linkage of each impact indicator with just one specific objective [SO]

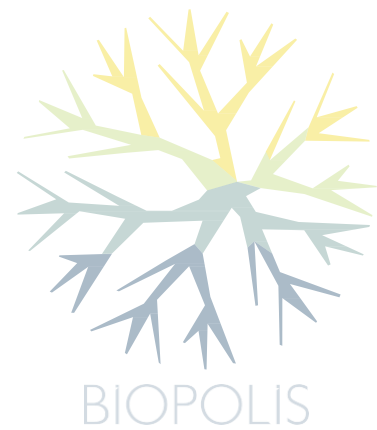
Applying this methodology, it was possible to connect the impact indicators with just one specific objective.



Each impact indicator is now connected with just one specific objective (1). As the impact indicators are linked to the strategic objectives (2), and the specific objectives are associated to the performance indicators (3), we are able to connect the strategic objectives (and strategic sub-objectives) with the performance indicators (4) through the specific objectives.



Scheme 8. Correlation of the strategic objectives with the performance indicators

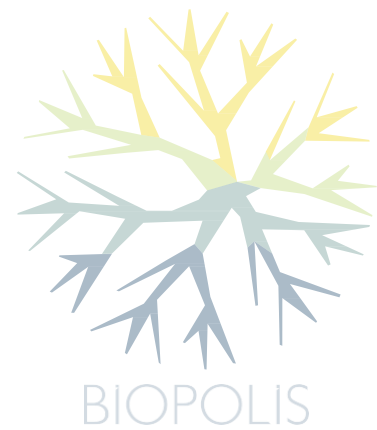


4. Results

4.1. Performance indicators

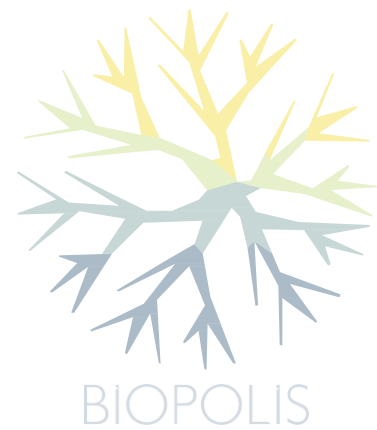
Strategic objectives	Strategic sub-objectives	Specific objectives	Performance indicators
A. Excellence towards innovation	A.1. Tap into Portugal's potential in Research and Innovation	SO 12	(i) Annual balance sheet and return on capital; (ii) No. of patents registered and commercialised; (iii) (iii) No. and balance sheet of spin-offs based on innovative ideas developed in the project.
		SO 1	(i) Background qualifications and experience of the hired directors and administration officers; (ii) Delivery times and quality assurance of operations; (iii) Employee satisfaction.
	A.2. Build up Human and logistic capacities	SO 6	(i) No. of stakeholders involved in the AP; (ii) Growth (%) in the No. of projects with AP partners; (iii) Research and Innovation funding generated through the AP.
		SO 3	(i) Growth (%) in traffic of websites and social media; (ii) Growth (%) in No. of CD&E publications produced; (iii) Growth in No. of people attending CD&E events.
	A.3. Tackle cutting-edge research problems in the frontiers of current knowledge	SO 12	(i) Annual balance sheet and return on capital; (ii) No. of patents registered and commercialised; (iii) No. and balance sheet of spin-offs based on innovative ideas developed in the project.
		SO 8	(i) No. of top-level researchers attracted and retained; (ii) No. of participations in large international consortia; (iii) Growth (%) in the success rate of project applications.
		SO 7	(i) Growth (%) in the No. of partnerships with international leading institutions; (ii) No. of TwinLabs established; (iii) Growth (%) in the No. of international research projects.
		SO 9	(i) Growth (%) in funding through international grants; (ii) Growth (%) in No. of publications in Q1 journals; (iii) Growth (%) in citation metrics.

Table 3.1. Performance indicators to measure strategic objective A



Strategic objectives	Strategic sub-objectives	Specific objectives	Performance indicators
B. Empower Economy and Sustainability for a better society	B.1. Develop solutions to societal changes	SO 7	(i) Growth (%) in the No. of partnerships with international leading institutions; (ii) No. of TwinLabs established; (iii) Growth (%) in the No. of international research projects.
		SO 11	(i) No. of consultancy contracts with public and private end users; (ii) No. of participations in advisory panels; (iii) (iii) No. of policy briefs produced.
	B.2. Enhance appreciation of science, biodiversity and ecosystems by society	SO 9	(i) Growth (%) in funding through international grants; (ii) Growth (%) in No. of publications in Q1 journals; (iii) Growth (%) in citation metrics.
		SO 10	(i) No. of joint projects with industry; (ii) Annual value of contracted services; (iii) No. of exchanges between research and industry staff.
	B.3. Promote specialised jobs, economic growth and investment at the national and regional levels	SO 11	(i) No. of consultancy contracts with public and private end users; (ii) No. of participations in advisory panels; (iii) No. of policy briefs produced.
		SO 12	(i) Annual balance sheet and return on capital; (ii) No. of patents registered and commercialised; (iii) No. and balance sheet of spin-offs based on innovative ideas developed in the project.
		SO 6	(i) No. of stakeholders involved in the AP; (ii) Growth (%) in the No. of projects with AP partners; (iii) Research and Innovation funding generated through the AP.

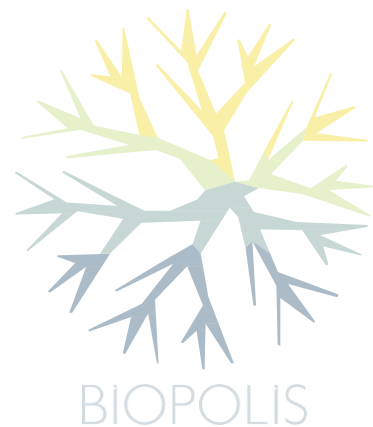
Table 3.2. Performance indicators to measure strategic objective B



Strategic objectives	Strategic sub-objectives	Specific objectives	Performance indicators
C. Internationalization in research and training	C.1. Raise the critical mass of highly skilled researchers and international visibility of the country and region	SO 2	(i) Share (%) of top-level researchers applying to open positions; (ii) No. Of top-level researchers contracted; (iii) No. and qualifications of field and lab. technicians contracted.
	C.2. Improve international experience, networking capacities and participation in cross-border science networks	SO 8	(i) No. of top-level researchers attracted and retained; (ii) No. of participations in large international consortia; (iii) Growth (%) in the success rate of project applications.
		SO 4	(i) Growth (%) in research projects funded and amount awarded; (ii) Growth (%) in quantity and quality of scientific outputs (e.g. papers); (iii) Growth (%) in contracts with industry and other stakeholders.
		SO 5	(i) No. of participants in advanced training programmes; (ii) Share (%) of participants from advanced countries; (iii) No. of stakeholders involved.
C.3. Train a new generation of highly-skilled researchers and practitioners	SO 5	(i) No. of participants in advanced training programmes; (ii) Share (%) of participants from advanced countries; (iii) No. of stakeholders involved.	

Table 3.3. Performance indicators to measure strategic objective C

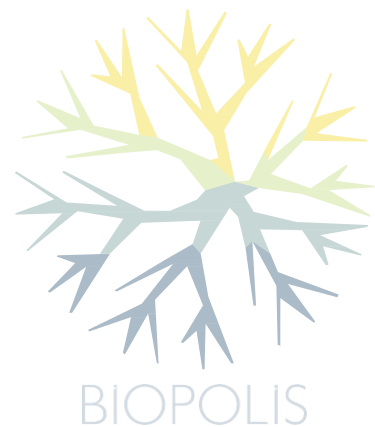
The previous tables provide the **key performance indicators** that should be used to evaluate the status of the project when it comes to pursuing its strategic objectives.



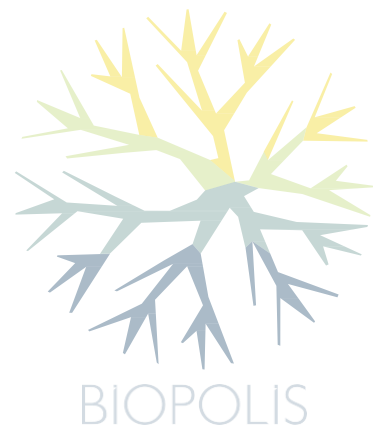
4.2. Activity KPIs

Besides finding the right performance indicators to measure the strategic objectives, Activity KPIs were defined in order to establish milestones to achieve the performance indicators. These Activity KPIs will, therefore, work as interim KPIs.

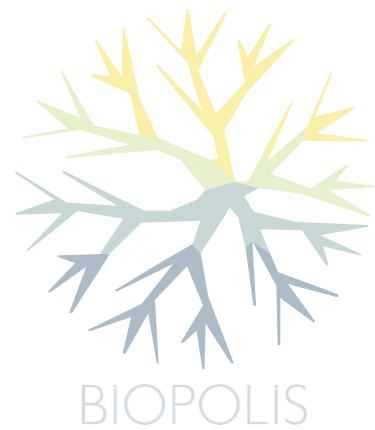
Strategic objectives	Strategic sub-objectives	Specific objectives	Performance indicators	Activity KPIs
A	A.1	SO 12	(i) Annual balance sheet and return on capital; (ii) No. of patents registered and commercialised; (iii) No. and balance sheet of spin-offs based on innovative ideas developed in the project.	(i) Gross Profit Margin percentage (%); (ii) Number of patents' applications; (iii) Number of research projects
		SO 1	(i) Background qualifications and experience of the hired directors and administration officers; (ii) Delivery times and quality assurance of operations; (iii) Employee satisfaction.	(i) Percentage (%) of new hires with PhD degree; (ii) Percentage (%) of on-time delivery (OTD); (iii) Turnover
	A.2	SO 6	(i) No. of stakeholders involved in the AP; (ii) Growth (%) in the No. of projects with AP partners; (iii) Research and Innovation funding generated through the AP.	(i) Number of stakeholders invited to the AP; (ii) Number of projects with AP partners initiated; (iii) Number of research and innovation ideas
		SO 3	(i) Growth (%) in traffic of websites and social media; (ii) Growth (%) in No. of CD&E publications produced; (iii) Growth in No. of people attending CD&E events.	(i) Number of visits per month in websites and social media; (ii) Number of ongoing publications; (iii) Number of registrations for CD&E events
	A.3	SO 12	(i) Annual balance sheet and return on capital; (ii) No. of patents registered and commercialised; (iii) No. and balance sheet of spin-offs based on innovative ideas developed in the project.	(i) Gross Profit Margin percentage (%); (ii) Number of patents' applications; (iii) Number of research projects



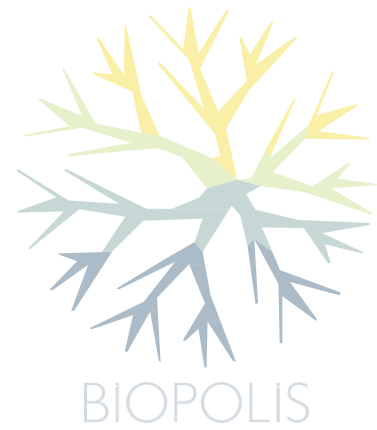
Strategic objectives	Strategic sub-objectives	Specific objectives	Performance indicators	Activity KPIs
A	A.3	SO 8	(i) No. of top-level researchers attracted and retained; (ii) No. of participations in large international consortia; (iii) Growth (%) in the success rate of project applications.	(i) Percentage (%) of top-level researchers that remain for more than 1 year; (ii) Number of applications in large international consortia; (iii) Percentage (%) of applications' approval
		SO 7	(i) Growth (%) in the No. of partnerships with international leading institutions; (ii) No. of TwinLabs established; (iii) Growth (%) in the No. of international research projects.	(i) Number of invitations to establish partnerships with international leading institutions; (ii) Number of TwinLabs planned(projected); (iii) Number of international research projects ideas.
		SO 9	(i) Growth (%) in funding through international grants; (ii) Growth (%) in No. of publications in Q1 journals; (iii) Growth (%) in citation metrics.	(i) Number of applications to international funds submitted; (ii) Number of calls for papers answered for Q1 journals; (iii) Number of citations of BIOPOLIS publications
B	B.1	SO 7	(i) Growth (%) in the No. of partnerships with international leading institutions; (ii) No. of TwinLabs established; (iii) Growth (%) in the No. of international research projects.	(i) Number of invitations to establish partnerships with international leading institutions; (ii) Number of TwinLabs planned(projected); (iii) Number of international research projects ideas.
		SO 11	(i) No. of consultancy contracts with public and private end users; (ii) No. of participations in advisory panels; (iii) No. of policy briefs produced.	(i) Number of proposals for consultancy contracts presented; (ii) Number of invitations for advisory panels; (iii) Number of ideas for policy briefs.



Strategic objectives	Strategic sub-objectives	Specific objectives	Performance indicators	Activity KPIs
B	B.2	SO 9	(i) Growth (%) in funding through international grants; (ii) Growth (%) in No. of publications in Q1 journals; (iii) Growth (%) in citation metrics.	(i) Number of applications to international funds submitted; (ii) Number of calls for papers answered for Q1 journals; (iii) Number of citations of BIOPOLIS publications
		SO 10	(i) No. of joint projects with industry; (ii) Annual value of contracted services; (iii) No. of exchanges between research and industry staff	(i) Number of meetings with industry; (ii) Average value of the proposals for contracted services presented; (iii) Number of joint activities involving research and industry staff scheduled
	B.3	SO 11	(i) No. of consultancy contracts with public and private end users; (ii) No. of participations in advisory panels; (iii) No. of policy briefs produced.	(i) Number of proposals for consultancy contracts presented; (ii) Number of invitations for advisory panels; (iii) Number of ideas for policy briefs.
		SO 12	(i) Annual balance sheet and return on capital; (ii) No. of patents registered and commercialised; (iii) (iii) No. and balance sheet of spin-offs based on innovative ideas developed in the project.	(i) Gross Profit Margin percentage (%); (ii) Number of patents' applications; (iii) Number of research projects
		SO 6	(i) No. of stakeholders involved in the AP; (ii) Growth (%) in the No. of projects with AP partners; (iii) Research and Innovation funding generated through the AP.	(i) Number of stakeholders invited to the AP; (ii) Number of projects with AP partners initiated; (iii) Number of research and innovation ideas
	C	C.1	SO 2	(i) Share (%) of top-level researchers applying to open positions; (ii) No. Of top-level researchers contracted; (iii) No. and qualifications of field and lab technicians contracted



Strategic objectives	Strategic sub-objectives	Specific objectives	Performance indicators	Activity KPIs
C	C.2	SO 8	(i) No. of top-level researchers attracted and retained; (ii) No. of participations in large international consortia; (iii) Growth (%) in the success rate of project applications.	(i) Percentage (%) of top-level researchers that remain for more than 1 year; (ii) Number of applications in large international consortia; (iii) Percentage (%) of applications' approval
		SO 4	(i) Growth (%) in research projects funded and amount awarded; (ii) Growth (%) in quantity and quality of scientific outputs (e.g. papers); (iii) Growth (%) in contracts with industry and other stakeholders.	(i) Number of applications led by BIOPOLIS submitted; (ii) Number of ongoing scientific outputs; (iii) Number of meetings (online and offline) with stakeholders
		SO 5	(i) No. of participants in advanced training programmes; (ii) Share (%) of participants from advanced countries; (iii) No. of stakeholders involved.	(i) Number of candidates in advanced training programmes; (ii) From those, percentage (%) of candidates from advanced countries; (iii) Number of stakeholders invited
	C.3	SO 4	(i) Growth (%) in research projects funded and amount awarded; (ii) Growth (%) in quantity and quality of scientific outputs (e.g. papers); (iii) Growth (%) in contracts with industry and other stakeholders.	(i) Number of applications led by BIOPOLIS submitted; (ii) Number of ongoing scientific outputs; (iii) Number of meetings (online and offline) with stakeholders



5. Conclusion

“The right set of KPIs will shine a light on the key aspects of performance and highlight areas that may need attention”

Bernard Marr & Co.

At the Application stage performance indicators were already defined – please refer to Table 1.1a of the Technical Annex. Nevertheless, these were merely allocated to the Specific Objectives [SO].

Furthermore, impact indicators were also specified in the Application - please refer to the table 2.1b. These were directly linked to the strategic objectives and indirectly linked to the specific objectives (since they were connected to several specific objectives).

Therefore, the goal of this deliverable was to establish direct relations between all variables in order to define the key performance indicators whose aim is to measure the achievement of BIOPOLIS strategic objectives.

Through the specific objectives [SO], since this was the only variable related to the others, it was possible to connect the performance indicators with the strategic objectives.

In order not to bias the analysis, performance indicators are repeated in some strategic objectives. Other option would be to choose some indicators for some objectives for them not to be repetitive. However, with the methodology followed, there is a guarantee of precision.

After this first analysis, Activity KPIs were defined. These that will serve as intermediary KPIs, enabling the assessment of the accomplishment of the performance KPIs. While the performance ones are supposed to be analysed annually, the activity KPIs can be used at any time.

