

OECD Review of Policy Indicators for Portugal



OECD REVIEW OF POLICY INDICATORS FOR PORTUGAL

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Public Governance and Territorial Development Directorate



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1. See Schumann (forthcoming).

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INTRODUCTION

Focus on results

Every policy should have an objective. Even though this statement seems obvious, it is not always clear what policies intend to achieve and much less so if they actually succeed in achieving the objective. However, in recent years there has been a trend to defining clear objectives of policies and measuring their performance in terms of achieving them. Instead of implementing policies and hoping that they will have the desired consequences, systematic attempts are made to measure their consequences and adjust them for greater effectiveness. Within this process, indicators are a central tool to assess the effectiveness of policies.

The European Commission actively supports the move towards systematic monitoring and evaluation of policies. For the programming period 2014 – 2020, it has introduced a results-based imperative in its cohesion policy framework. All funded policies have to be monitored for their effectiveness. In this context, Portugal has developed indicators that aim at monitoring progress in core policy fields supported by EU cohesion funds.

This report presents an evaluation of the indicators and provides advice on using the indicators in a broader policy context. Within the policy making process, indicators can play several related but distinct functions. In their most basic function, they provide information on the state of affairs in a policy field. In a more elaborate setting, they serve to monitor the consequences of policy interventions and to document progress towards predefined policy objectives. Obviously, all functions are connected to each other. Nevertheless, indicators that monitor policy interventions and performance of policies have to satisfy additional requirements, such as corresponding to the objectives of the policy they are supposed to monitor. The indicators that are evaluated in this report are generally intended for policy monitoring and accordingly, the report will primarily focus on this usage.

The first part of the report provides a general overview on how to devise high quality indicators and how to use them effectively at the sub-national level and in the context of EU cohesion policy. The second part provides an evaluation of the indicators that have been proposed by Portugal in response to the monitoring requirements of the Partnership Agreement for the programming cycle 2014-2020. While the evaluation takes the context of the European Cohesion Policy into account, it goes beyond the scope of EU programmes and analyses the effectiveness of the proposed indicators for the policy making process more generally.

The motivation behind policy indicators

By definition, policies should be outcome oriented. Yet, it is never possible in advance to say with certainty what the effects of a policy will be. Ideas that sound good in theory often disappoint in practice, whereas others turn out to be unexpectedly successful. Even policies that have been tried in the past can have different effects than before when seemingly unrelated circumstances have changed in the meantime. In general, modern policies have such complex effects and are so strongly interdependent that their exact consequences can never be predicted theoretically. Therefore, policies have to be monitored and evaluated to determine what their effects are. Without systematic monitoring and evaluation, it is almost impossible to separate policies that work well from those that do not.

Indicators play a central role in the monitoring and evaluation process by generating regular and objective feedback about progress towards policy objectives. They are quantitative representations of the conditions in a policy field. They can be used as a tool to examine the effects of policies and they provide crucial information for policy makers to judge the effectiveness of policies and to make adjustments where required. Compared to many other feedback mechanisms, well-designed indicators have the advantage that they provide easily comprehensible information. Thereby, they can form a factual basis upon which informed political decisions can be made.

Indicators can also facilitate learning beyond the scope of individual policies. By providing regular feedback on the effectiveness of policies, they contribute to gaining a better understanding of what types of policies are effective and what types do not work well. In the long-run, their use can therefore improve the general quality of policies and contribute towards an increased overall effectiveness also of those policies that are not monitored by indicators. In other words, outcomes-based performance measurement enables policy-makers to learn whether a policy initiative or national strategy is working – i.e. whether it is achieving the results it was designed to achieve. This knowledge is crucial because it enables policy makers to change course if strategies are not working and to achieve objectives through more effective policies.

Beyond their immediate task of informing policy makers, indicators can further contribute to creating transparency and accountability. By representing central outcomes of a policy field in a single number, indicators provide an objective yardstick for the public to judge the progress in a policy area. However, the reduction of outcomes to a single number always implies that complex situations are simplified. While this can make them easier to grasp, it also carries the risk of over-simplifying and thereby obscuring true conditions.²

Despite the obvious importance of indicators, they are no end in itself but rather an instrument to ensure that policies achieve the desired outcomes. The focus of a policy should always be on the policy objective and never on the indicator itself. Concentrating too much on improving the indicator and too little on achieving the objective runs the risk that policies are tailored to do well on the indicator but perform badly in terms of achieving their broader objective. This risk becomes even greater if financial or other performance incentives are based on indicators. Therefore, when using indicators it should regularly be scrutinised whether policies are still aligned with their actual objective.³

The indicators evaluated for this report have been developed to comply with monitoring requirements for projects funded by the European Union. In the longer term, it is important that Portugal develops a performance monitoring framework that applies to all its policies. Only by monitoring all of its policies for their effectiveness can Portugal ensure that they benefit its citizens to the best degree possible.

2. See OECD (2009) and Van Dooren, Bouckaert and Halligan (2015) *Performance management in the public sector* (2nd edition) Routledge: London, for a discussion on the uses of performance indicators.

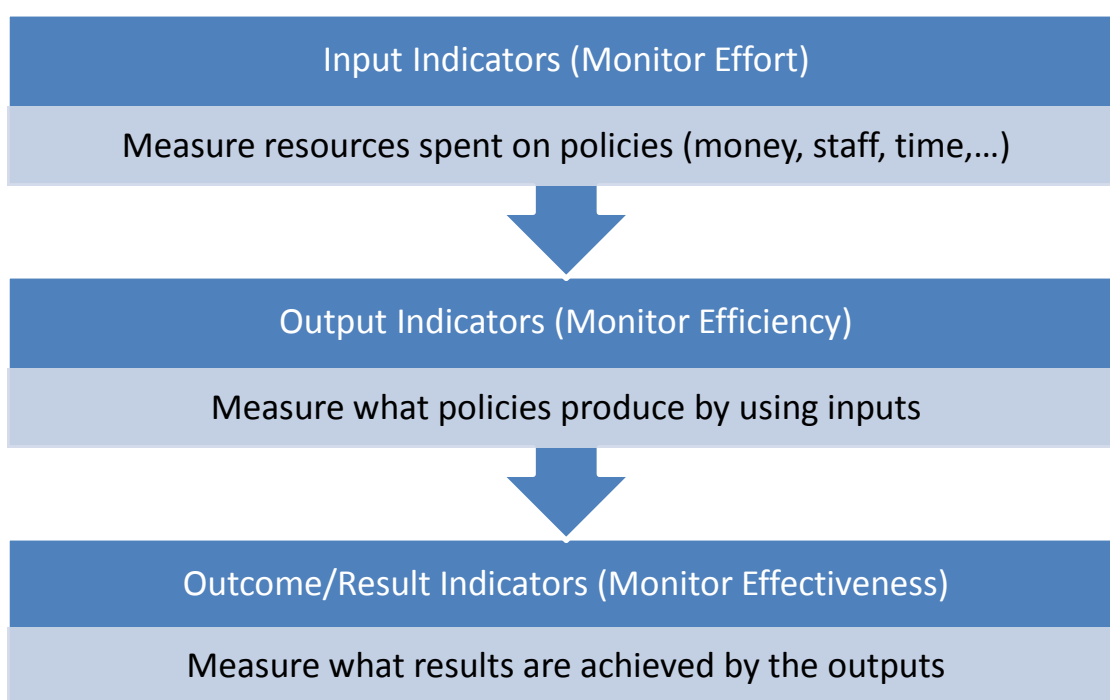
3. For a detailed discussion of the arguments presented in this section, see McCann (forthcoming).

USING INDICATORS TO MONITOR POLICIES

Types of indicators: What is measured?

Indicators can be classified in three general categories according to what is measured; input indicators, output indicators, and outcome indicators. Even though this distinction is well-established and widely mentioned in the related literature, it is worth to summarise it briefly because it is a defining characteristic of an indicator. Input, output and outcome indicators can all be part of a framework to monitor the effectiveness of policies, but it is important that each type of indicator is used to monitor only the aspects of a policy it is designed to monitor. In particular, it is essential to avoid using output indicators in order to measure outcomes. Figure 1 provides an overview of the three types of indicators, followed by a more detailed description of each type.

Figure 1. Types of indicators



Input indicator

Input indicators measure how much resources are used by a policy. A typical input indicator is the amount of money that is spent on a certain policy or the number of people working in an area. Input indicators can provide a measure of the effort that is devoted to pursuing a policy. They do not give any information whether the resources are efficiently spent or whether a policy is effective in achieving an objective. Therefore, the role of input indicators in monitoring is limited to supplementing output indicators and outcome indicators. It is never possible to monitor policies using input indicators alone.

Output indicator

Outputs are the things that are produced by a policy in order to achieve its objective. They are means to achieve a policy objective, but no ends in themselves. Output indicators measure the quantities that are

directly generated by a policy. Typical output indicators might show the number of motorway kilometres built, the number of people trained to fulfil a task, or the area for which environmental protection plans have been developed.

Output indicators do not provide any information whether the outputs of a policy are effective in achieving the desired outcomes of a policy, i.e. if the outputs do what they are supposed to do. Consequently, the primary purpose of output indicators is to monitor if a policy is efficient in producing outputs. They cannot monitor the effectiveness with which the policy addresses its objective.

Outcome/result indicator⁴

Outcomes are the results that are supposed to be achieved through the outputs that are generated by a policy. They are the real motivation behind a policy. Typical outcome indicators might be the reduction in travel time between cities, the increase in customer satisfaction with a service provision, or the number of species no longer threatened by extinction. All these outcomes have in common that they cannot be changed directly. There is no law that can decree that a species is no longer threatened by extinction. In order to affect this outcome, a policy has to produce an output, which is able to influence the outcome in the desired direction.

An outcome indicator always has a normative component in the sense that (within a reasonable range) a movement in one direction is considered a positive development and a movement in the other direction is considered a negative development. Some publications distinguish between outcome indicators that measure inherently desirable outcomes and those that are desirable only because they contribute to a higher level outcome.⁵ This report does not make the distinction and defines outcomes simply as the results that are supposed to be achieved by the outputs of a policy.

Distinguishing outcome from output indicators

Distinguishing outcome from output indicators and using them according to their purpose is a crucial aspect when using indicators to monitor policies. Generally, outputs refer to something that a policy produces directly with the inputs that are provided. In contrast, outcomes are something that should be achieved by the outputs that are produced.

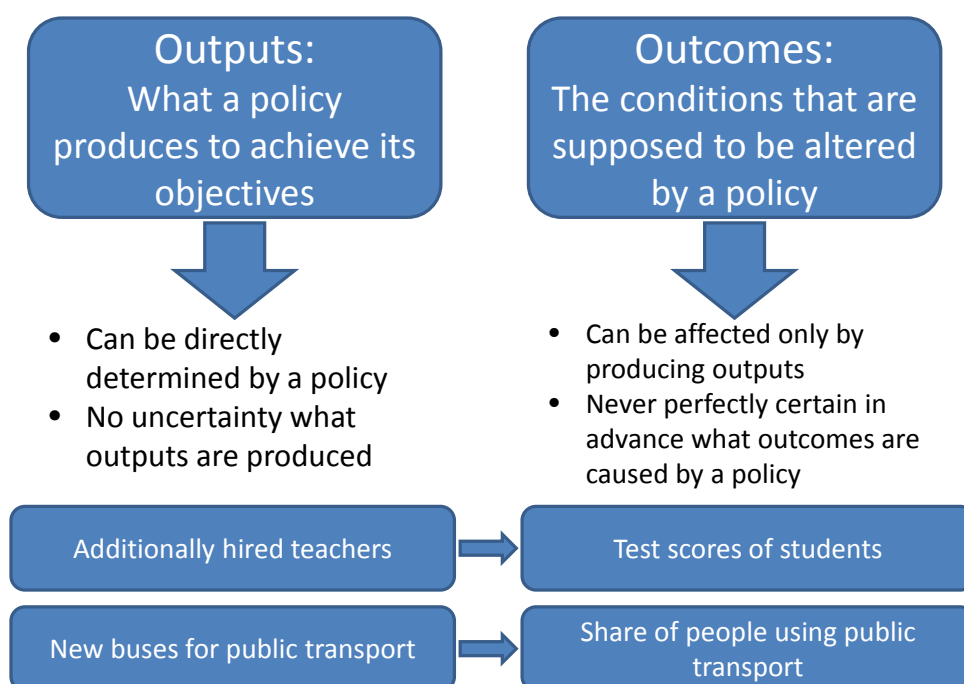
Distinguishing outcome and output indicators is easiest if it is exactly specified *what* a policy produces and *why* it produces it. In this case an indicator that measures the *what* is an output indicator and an indicator that measures the *why* is an outcome indicator. Although this rule is generally valid, it is only useful if the *what* and the *why* are properly specified. The policy objective must clearly distinguish between what a policy produces and what motivates it. If this is not done, there is still a risk that output and outcome measures are confused with each other.

4. The terms “outcome indicator” and “result indicator” usually have an identical meaning. “Outcome indicator” is more commonly used in the literature on indicators, whereas the European Commission speaks of “result indicators”. In keeping in line with most of the existing literature on indicators, this report refers to them as “outcome indicators”.

5. Unfortunately, there is no generally accepted terminology how to refer to them. In some cases, outcome indicators that do not measure an inherently desirable (i.e. normative) outcome are called intermediate outcome indicators. In these cases, outcome indicator without the suffix “intermediate” usually refers to outcome indicators that have an explicit normative component. In other cases, indicators that refer to outcomes with direct normative connotations are called impact indicators and indicators that refer to outcomes without explicit normative components (i.e. those outcomes that only serve to achieve other outcomes) are called outcome indicators.

Usually, there is certainty about what outputs are produced by a policy, but it is generally not certain if the outputs cause a certain outcome. For example, a policy that aims to build new schools is virtually guaranteed to produce new school buildings as outputs. However, it is not clear if the new schools improve the learning outcomes of students. Outcome indicators always measure something that is not perfectly assured to be achieved by a policy (thus the need for them). There might or might not be better learning outcomes as a result of school construction. In contrast, if there is any uncertainty related to outputs, it is usually only regarding the quantity and quality of outputs produced. Even though it is clear that a policy to build schools will produce new school buildings, it might not be clear how many will be built nor of what quality they will be.

Figure 2. Distinguishing outcome and output indicators



Outcomes are often physically immaterial (such as the amount learned by a student, the quality of a product or a service, the health of a group of people, the customer satisfaction, or the performance of an organisation). In contrast, outputs are more commonly material things that exist physically, such as the length of new roads, the number of people hired or the number of facilities build. This distinction can prove helpful in distinguishing outcome and output indicators. However, it is not a strict rule. There are also outcomes that are material and outputs that are immaterial.⁶ For example, many services provided by the state are outputs even though they are immaterial. Therefore, it should not be the only criterion to distinguish the two types of indicators.

6. For example, strategic plans can be outputs of policies, but are immaterial. Conversely, threatened species that have been saved from extinction are material things but are generally outcomes of policies.

Policy Objectives as a prerequisite for meaningful outcome indicators

Indicators that monitor policies are supposed to provide information about their effectiveness. In order to judge their effectiveness, criteria against which to judge policies are needed. This is the role of policy objectives. Indicators are supposed to monitor the effectiveness of policies in achieving their objectives, i.e. in doing the things they were designed to do.

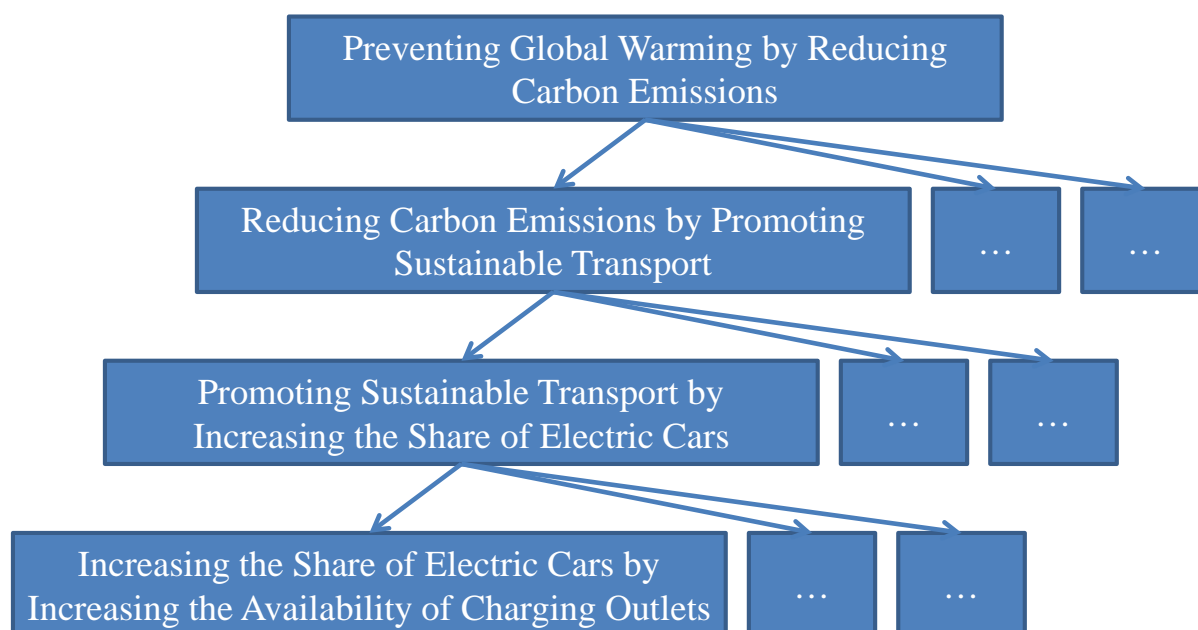
This implies that it is not possible to develop meaningful indicators without having previously specified policy objectives. Usually, every policy has an objective but it is not always made explicit. Even if explicit policy objectives exist, they are not always clear about the outcome that they aim to influence. The more explicit policy objectives are in this respect, the easier it is to develop appropriate outcome indicators. If objectives are ambiguous about the outcomes for which they aim, it makes it difficult to develop appropriate indicators because it is unclear which outcome should be measured. In contrast, if the outcome of an objective is clearly stated and quantifiable, the corresponding outcome indicator often follows immediately from the objective. Even if the outcome of an objective is not directly quantifiable, a clear definition of the outcome nevertheless helps to identify suitable proxies for the outcome that can be used as indicators.⁷

Structuring policy objectives clarifies their importance and their purposes

Not all policy objectives have the same importance. Typically, they can be ordered in a hierarchical fashion where one objective contributes to achieving another objective at a higher level. Being aware about the hierarchical order of objectives can facilitate the development of appropriate indicators. In order to make this point clear, it is useful to consider an example. Figure 3 shows an example of several policy objectives that are ordered hierarchically. The overarching objective is to reduce carbon emissions to prevent global warming. There are many different policies that can contribute to achieving this objective. Among them is the strategy to promote sustainable transport. As shown on the second level, this strategy can also be phrased as a policy objective. Again, there are many different policies that contribute to the promotion of sustainable transport. One of them is to increase the share of electric cars, the objective at the third level. As in the previous cases, many policies can contribute to achieving the objective. Among them are policies aiming at increasing the availability of charging outlets, as specified in the fourth objective. Generally, the lower an objective in the hierarchy, the more easily can it be affected by a single policy.

7. Proxies are measurable variables that are so closely related to non-measurable or non-quantifiable variables that they can be used in place of the non-measurable variable for analytical purposes.

Figure 3. A schematic hierarchy of policy objectives



The graph above is just a schematic representation. In practice, the relation between different policy objectives is usually more complex. Just as a higher level objective requires the contribution of several lower level policies to be achieved, often a lower level policy contributes to achieving several higher level objectives. Increasing the share of electric cars does not only contribute to promoting sustainable transport and reducing carbon emissions, it also increases the resilience of the economy by lowering its dependence on imports of oil and improves the air quality in urban areas by reducing pollutants from exhaust fumes. Furthermore, policy objectives on the same horizontal level are often complementarities – a good performance in one dimension improves the performance in another dimension and vice versa. In other cases, policy objectives may be substitutable – a good performance in one dimension makes it more difficult to achieve a good performance in another dimension.

Each of the four policy objectives shown in Figure 3 can be monitored by an outcome indicator. However, the figure makes clear that the four corresponding indicators would not be directly comparable to each other. The further up an indicator is located on the hierarchy, the more closely it monitors progress in achieving the strategic goals behind a set of policies. The further down an indicator is located in the hierarchy, the more closely it monitors the effectiveness of a specific individual policy. Indicators that fall in between the two ends typically monitor how effective a set of policies is in contributing to an intermediate objective.

An indicator should always measure an outcome that is on the same hierarchical level as the policy objective it is supposed to monitor. In other words, if an indicator is supposed to monitor the objective “Promoting Sustainable Transport by Increasing the Share of Electric Cars”, neither the number of public charging outlets nor the amount of carbon emitted from the transport sector is a suitable indicator. The first is at a level below the objective and measures only one of many aspects related to achieving the objective. The second is at a level above the objective and is influenced by a variety of other policies that are not directly related to the objective. Neither variable is a suitable indicator for the particular objective, but would work well as an indicator for a different policy objective.

Indicators at all levels of the hierarchy described above can contribute to inform policy. When indicators from different levels of the hierarchy are used simultaneously it can help to obtain a better

understanding how different policies contribute to achieve outcomes at different levels. However, it is always important to keep in mind what objective an indicator is monitoring. In particular, simplistic interpretations that do not differentiate between indicators (such as “x indicators are moving in a positive direction and y indicators are moving in a negative direction, therefore...”) should be avoided because they are misleading. Instead, the vertical and horizontal relations between the different outcomes should be carefully considered when interpreting the indicators.

A system of indicators that takes the relations between objectives into account can contribute to a better understanding of the reasons behind policy successes and failures. Whereas individually indicators provide feedback on specific policies, a system of indicators that matches the relations of objectives can provide feedback on entire policy strategies. In particular, it can help to show which policies are successful in contributing to strategic objectives and which are bottlenecks that prevent progress.

Going beyond a system of indicators, programme logic models can be an important step towards a better understanding of performance indicators. They are descriptions of how policies affect outcomes that can include more details than representations entirely based on indicators. Due to this, logic models can help to obtain a better understanding of the reasons why policies work or do not work. If outcome indicators show that a policy is not working, logic models can inform decision makers how to change course effectively. Furthermore, they can provide the basis for a dialogue among involved actors on how to achieve objectives effectively.⁸

Considerations for designing indicators

Indicators⁹ are always tailored to the outcome of the policy that they are supposed to monitor. Therefore, their quality can only be judged in the context of specific policy objectives. Nevertheless, there are some general considerations that should be taken into account when devising indicators.

Avoid using output measures for outcome indicators

The previous section has shown the difference between output and outcome indicators and has argued that both types of indicators have their justification. However, their use needs to match their respective purpose. Outcomes should always be measured by outcome indicators and outputs by output indicators. Although this sounds obvious, one of the most common mistakes in devising indicators is the use of an output measure for an outcome indicator. Therefore, the careful verification that a proposed outcome indicator actually represents an outcome measure and not just an output is an essential part in the development process of an indicator.

Match the indicator to the objective and ensure it is responsive to policy

An ideal indicator captures the essence of the policy objective while minimising the influence of confounding factors. In practical terms, this implies that an indicator should be as little as possible influenced by factors that lie outside of the policy objective, but should not ignore any aspects of the objective. Indicators that are too narrow leave out important information, whereas indicators that are too broad are unreliable because they are influenced by too many factors that are not directly relevant for the policy objective.

8. See for instance the report of the Kellogg Foundation on logic models. Kellogg Foundation, W. K. (2006). Using logic models to bring together planning, evaluation, and action: Logic model development guide. <https://www.wkkf.org/resource-directory/resource/2006/02/wk-kellogg-foundation-logic-model-development-guide>

9. Unless otherwise mentioned, in the following the term “indicators” refers to outcome indicators. This notwithstanding, most of the discussion is also applicable to any other type of indicator.

Indicators need to be well-aligned with objectives in the sense that the outcome that is measured by the indicator is the outcome that a policy is aiming at. In other words, the indicator should measure an outcome that can be reasonably expected to be affected by a well-designed policy. As most policy objectives are complex and often only partially quantifiable, it is normal that there are discrepancies between the outcomes of policy objectives and the outcomes measured by indicators. However, if the differences become too large, there is a risk that an indicator measures an outcome that is not responsive to the policy in question. Such an indicator would be ineffectual for monitoring and should therefore be discarded. In order to find the appropriate indicator for an objective, the hierarchical maps of policy objectives described earlier and programme logic models are helpful tools. They can clarify how objectives and policies are related to outcomes and indicators.

Keep indicators consistent over time

Monitoring developments over time is a central function of indicators. Looking at an indicator for a single time period can provide valuable information, but the full potential of indicators is realised only by analysing how they develop over time.

In order to ensure that consecutive readings of an indicator are comparable, changes in the definition of indicators should be avoided whenever possible. The need to change the definition of indicators can be reduced by considering two aspects when devising them; Indicators should be based on data that is available in regular time intervals and they need to refer to an outcome that remains relevant for the foreseeable future.

Some data is routinely collected by statistical agencies or other public organisations. For such data, regularity is no concern as the data usually becomes available at yearly or higher frequencies. However, other potential data sources do not always become available regularly. Some potential outcomes, such as customer satisfaction, are best measured by surveys. Many surveys are one-off data collections that were not initially designed to be repeated on a regular basis. When considering such data sources for an indicator it should be taken into account whether it is possible to collect the data frequently enough to be useful as an indicator.

Even if data is available regularly, it is not assured that the data will remain relevant in the future. Some outcomes are specific to particular events. Examples of such outcomes are the length of cleaned beaches after the sinking of an oil tanker or the number of re-trained workers that became unemployed in a large bankruptcy. Indicators should refer to such outcomes only if the policy objective is specific to the particular event. In other words, if the policy objective is to contain the environmental damages from the sinking of the oil tanker, the share of cleaned beaches might be a useful indicator. However, if the policy objective is to reduce maritime pollution, the share of cleaned beaches is most likely not a good indicator. Even if it is an important outcome immediately after a disaster, the share of cleaned beaches would become less and less important for the overall objective as time passes and thereby less and less relevant as an indicator.

Use data that becomes available without long time lags

A central function of indicators is to provide continuous and timely feedback to policy makers. To be able to accomplish this task, indicators need to be based on data that becomes available quickly and at a sufficiently high frequency. Often, data becomes available with a considerable time lag. It is not unusual that it takes one year or more for data to be published and even then it is often subject to later revisions, which can change its interpretation substantially. Depending on the time frame of the policy objectives, such time lags can severely affect the potential of an indicator to inform policy decisions. In particular, policies that have short-run objectives or need frequent adjustment require timely feedback because

decisions have to be taken quickly. Indicators that are supposed to provide guidance on such objectives need to become available without much delay.

When judging the quality of potential indicators, the timeliness with which they become available should always be considered. The quicker information becomes available, the faster policy makers can react to it. While in general it is always preferable to get data as soon as possible, there is no universal rule that specifies which time lag is acceptable and which is unacceptable. Timeliness is one of several quality criteria of an indicator. Its importance depends on the policy field that an indicator monitors and can vary depending on how frequently policies need to be adjusted.

Normalise indicators with appropriate denominators

Indicators are supposed to provide policy makers and the public with easily accessible and meaningful overviews of the conditions in different policy fields. Therefore, indicators should convey as much information as possible in a single number. Furthermore, as little additional information as possible should be required for their interpretation.

This implies that indicators should be normalised with suitable denominators. Normalisation in this context refers to the division of the actual outcome variable by another variable. Usually, the aim is to express the indicator per unit of another variable or as share of a larger category. Typical examples of such normalised indicators are “carbon emissions per unit of GDP”, “the number of patent applications per inhabitant”, “the share of students obtaining at least a high school degree”, and “the share of renewables in total electricity consumption”. All these indicators have in common that the outcome could be expressed in non-normalised terms, but for various reasons it is desirable to present them as mentioned above.

The most obvious reason is that it is often easier to understand the importance of a number if it is expressed in normalised form. Most people will find it easier to understand that in 2012 approximately 24 per cent of Portugal’s electricity consumption came from renewable sources than that Portugal consumed approximately 65 terra watt hours (TWh) of electricity from renewable sources. Both measures use the same outcome (i.e. electricity consumption from renewables), but in the first example, the outcome is divided by the total electricity consumption, whereas in the second example it is presented without any further modification.

Second, normalised indicators are better suited for comparisons. Comparing Portugal’s high school graduation rate of 96 per cent to the United Kingdom’s graduation rate of 92 per cent makes sense, but comparing Portugal’s average annual number of approximately 100,000 high school graduates to the United Kingdom’s roughly 550,000 is meaningless due to the different sizes of the countries’ student population.

Third, normalised indicators are less strongly influenced by contextual developments that are not related to the policy that is monitored by the indicator. Often, fluctuations in other factors affect the outcome that is supposed to be monitored. Dividing the outcome by a variable that measures the fluctuating factor removes its influence on the indicator. Carbon emissions for example tend to fluctuate with the business cycle. Due to increased economic activity they rise during booms and decrease during recessions. Using total carbon emissions as an indicator for carbon efficiency of the economy would therefore give the false impression that Portugal is doing badly in this respect during booms and well during recessions. Dividing carbon emissions by GDP (i.e. using carbon emissions per unit of GDP) would provide a measure of carbon efficiency that is less sensitive to overall fluctuations in GDP.

When using denominators that fluctuate independently from the nominator, carefully attention has to be paid to what causes a change in an indicator. It could be the result from changes in the nominator or

changes in the denominator. For example, an increase in the share of businesses that export could be the result of more businesses exporting or it could be the result of non-exporting businesses going bankrupt. Whereas both developments would result in an increase in the indicator, only the first situation would be desirable. If fluctuations in the denominator frequently lead to an improved reading of an indicator despite actually negative developments, it might be preferential to use a denominator that is more stable or to use absolute values instead of fractions.

Although it is advisable in most cases to normalise an indicator, there are exceptions to the rule. In some cases, it is the absolute value that is policy relevant. For example, there might be a sustainable yearly amount of groundwater extraction that allows an aquifer to replenish itself. If the amount is exceeded, the aquifer would dry out. In this case, the absolute amount of groundwater extraction is clearly the more important variable even though groundwater extraction per capita gives a better impression of the efficiency of water usage.

Minimise the cost of data collection

The administrative burden and costs related to collecting and processing relevant data can be significant. They should always be kept as low as possible and be justified by the desired use of the indicator. Whenever possible without sacrificing the quality of an indicator, existing data sources should be used for it. If an indicator requires new data collection, it needs to be weighed up whether the gain in quality due to the new data justifies the costs of collecting it. If the information gain from a new indicator is small or the collection of data very costly, it might even be reasonable to forego the use of an indicator completely.

In this context, it is important to consider not only the costs for the public administration, but also the costs imposed on the private sector and civil society. Data collection and other information provision requirements create significant costs for businesses. Whenever possible, governments should aim at reducing this burden in order to foster private sector activity.

Considerations for using indicators

Use indicators to monitor policies and adjust course when necessary

As stated previously, indicators are an essential tool for monitoring policies and they should be used accordingly. A well-functioning monitoring framework provides feedback that helps to judge its effectiveness and to make course-adjustments when necessary. That said indicators should always be used in combination with other information.

Even though indicators are valuable for judging the effectiveness of a policy, they can never provide a definite answer whether a policy is effective. All outcome indicators are influenced by external factors that are only indirectly related to a policy. It is never possible to know exactly what part of the change in an indicator is due to a policy and what part is due to external factors. Therefore, indicators cannot provide a precise estimate of the consequence of a policy. If an indicator shows a negative development of an outcome, one possible explanation is an ineffective or even counterproductive policy. Another explanation is that the policy works well and the outcome would have been even worse if the policy had not been in place. This shows that indicators always need to be assessed in light of other developments. The information contained in an indicator generates its full value only if it is combined with contextual information. Such information could come from other indicators, but in principle all types of information can be useful to interpret indicators.

Policy monitoring provides valuable feedback to policy makers, but it cannot give a definitive answer regarding the effectiveness of a policy. In order to do so, different approaches are required that are

commonly summarised under the label *policy evaluation*. Policy evaluation is usually based on statistical and econometric techniques that distinguish the impact of a policy from confounding factors, but in some cases interpretative techniques such as focus groups can also be employed. Policy evaluation has typically higher data requirements than policy monitoring and often requires that policies are designed in specific ways that allows them to be evaluated.¹⁰

Ideally, monitoring and evaluation should complement each other. Monitoring is supposed to provide a continuous feedback that shows strengths and weaknesses within policy fields and enables policy makers to react quickly to them. In contrast, the high analytical requirements of policy evaluation imply that it can only be done infrequently and with long time lags. However, a properly conducted policy evaluation can provide a higher certainty about the effectiveness of a policy than monitoring by indicators.

Focus on objectives and use indicators as tools to achieve them

Indicators are tools that can help to ensure that policies achieve their objectives, but they should not be regarded as objectives themselves. Policies should always put priority on achieving an objective, not on achieving a good indicator reading. Policies that focus on indicators instead of objectives cause two problems. First, they might be ineffective or even counterproductive in achieving an objective. Second, they can create the false impression that conditions in a policy field are more favourable than they actually are and make policies wrongly look successful.

Even well designed indicators are rarely perfectly representative of a policy objective. As a consequence, it is often possible to selectively improve an indicator while contributing much less to the actual policy objective. For example, the share of university graduates within a cohort is a reasonable indicator for the objective “Promote Higher Education to Increase the Qualification of the Labour Force”. A sound policy that focuses on the objective could aim at improving conditions at universities or at providing financial support for low income students. A misguided policy that focuses only on the indicator could lower requirements for graduation in order to increase the number of graduates.

These problems can partly be mitigated by the design of indicators. The more closely an indicator tracks the outcome that should be achieved, the less likely it is that a policy, which improves the indicator, is ineffective or counterproductive with respect to the actual objective. Nevertheless, when using indicators, it should always be questioned whether a policy primarily serves to achieve a desired outcome or to improve an indicator.

Choose appropriate benchmark values for indicators

Even well-designed indicators need to be compared against reference values to interpret them. Furthermore, benchmark values can serve as quantitative specifications of objectives. The need for benchmark values can be easily demonstrated with an example. R&D investment of Portuguese businesses is 0.69 per cent of GDP. Although private R&D investment as share of GDP is a perfectly valid outcome indicator, it is not very informative without being put in context. Very few people have an intuitive understanding whether 0.69 per cent of GDP is a large or a small share for R&D spending. In order to understand the implications of the indicator, it has to be compared against relevant reference values.

There are several methods to develop benchmark values. They are not mutually exclusive and, if possible, should all be considered when deriving benchmark values. In some instances, relevant benchmarks are provided by scientific insights. For example, a benchmark for air pollution with particle

10. For an in-depth discussion and advice on techniques for policy evaluation, see the guidance documents provided by the European Commission. http://ec.europa.eu/regional_policy/information/evaluations/guidance_en.cfm#1.

matter PM_{2.5} could be the guideline value for a low risk exposure provided by the World Health Organization (i.e. a daily average not exceeding 25µg/m³ and an annual average not exceeding 10µg/m³). It would be obvious to consider any value below the threshold as satisfactory and any value above the threshold as unsatisfactory.

Benchmarks can also be developed based on historical data in order to compare current performance with past performance. Ideally, benchmarks based on historical data are based on an average of several past observations. This prevents them from being excessively influenced by outliers that were caused by random fluctuations at a single point in time. Furthermore, when the historical data shows a trend, this should be taken into account when developing benchmark values. For example, an indicator that has been growing with 5 per cent per year on average in the past might be expected to continue to grow at this pace without any policy intervention. Any meaningful benchmark value would therefore need to take this regular growth into account.

Comparisons with other countries are another possibility to derive benchmarks. This is especially important if indicators are collected for the first time. In this case, little or no historical data will be available to analyse the development of indicators over time. Possible data sources for international comparisons are the databases of international organisations such as the OECD and the World Bank, of Eurostat and of national statistical offices.

Whenever international data sources are used, particular attention should be paid to the comparability of the data. Often, the definitions behind data series vary from country to country. This can limit the comparability of the data even if it is supposedly the same statistic. For example, national definitions of the unemployment rate differ strongly. Individuals that are considered unemployed in some countries are not counted as unemployed in others. In such cases, it is preferable to use data series with a common definition. If this is not possible, it should be assured that, despite different underlying definitions, the data is comparable across countries.

When deciding with which countries to compare the own performance, two considerations have to be made. On the one hand, well-performing countries should be selected to provide incentives to catch up with the best performers. On the other hand, socio-economic conditions in the comparison countries should not differ too strongly from the own country to allow for meaningful comparisons.

Constructing benchmarks is difficult if no scientific insights regarding appropriate values exist and neither historical data nor data from other countries is available. In this situation, it is appropriate to wait with the formulation of benchmarks and targets until the first data becomes available. If it is imperative to develop benchmark values immediately, available data for similar outcomes and programmes could provide help in establishing them.

Pay attention to policy complementarities

Most policies do not work in isolation. Their effectiveness generally relies on conditions in areas that are not directly related to them and apparently unrelated policies can be crucial for the success or failure of a policy. These so-called complementarities present important opportunities, but also challenges to policy makers. In the best case, policies that address complementary policy fields simultaneously can create virtuous cycles, in which progress in one field leads to progress in another field and vice versa. In the worst case, a well-designed policy can be rendered ineffectual by the lack of a complementary policy.

Ideally, when such complementarities are known to exist, they can be measured by other indicators and policy makers can take them directly into account when making decisions. Often, however, it is not known what complementarities exist. In these cases, it is important not to jump to the conclusion that a

policy does not work if an indicator does not show improvement. It might be the case that a complementary policy is lacking. In general, using systems of indicators that represent the relations of different policy objectives to each other can be helpful in identifying complementarities and to address them jointly.

Learning and capacity building

Indicators are supposed to monitor policies so that they can be altered if they are not working. They also provide the opportunity for learning about the effectiveness of policies in a broader context. By providing continuous feedback on the conditions in a policy field, indicators help to gain a better understanding of how policies work and to build a stock of knowledge about characteristics of successful policies. Thereby, they contribute not only to improving the policies that they monitor, but can also improve future policies. In order to facilitate the learning process, the lessons learned from using indicators should be shared within the public administration.

In order to maximise the learning potential from an indicator system, it is desirable to analyse indicators not only within the on-going policy making process, but also ex-post, i.e. after all relevant policy decisions have been made. Such an analysis can help to repeat successes and avoid repeating mistakes.

Make sure incentives based on indicators are aligned with objectives

Due to their quantitative nature, indicators facilitate the setting of performance incentives. Indicators are objective and unambiguous about whether or not a target has been met. Therefore, many incentive schemes rely on indicators to provide target values.

While incentive-based policies can be valuable tools to maximise efforts from stakeholders to achieve objectives, there is a risk that incentives are misaligned whenever the indicator is not a perfect representation of the desired outcome. In particular, it needs to be ensured that incentivised stakeholders do not try to game the system by taking steps that aim to improve the indicator without promoting the actual policy objective. Evidence shows that highly incentivised performance indicators often lead to attempts to game the system. In some cases, it can therefore be desirable to develop entirely forward looking performance monitoring systems that use indicators only to improve future policies and programmes rather than reward past performance.

Provide background information necessary to understand an indicator

Each indicator should be accompanied by background information that allows an appropriate interpretation of it. The background information should specify the unit of measurement and describe the sample to which the indicator applies. If an indicator is subject to particular caveats or limitations, for example due to the nature of data collection, it should be mentioned, too. In addition to technical aspects, the policy objective for the indicator should be stated along with a brief explanation of why the objective is important. In some cases, an explanation why an indicator is a good measure for an objective can be helpful for readers who are not familiar with a subject.

The background information can also be used to describe the position of the indicator in the hierarchy of objectives. Furthermore, potential complementarities with other indicators could be mentioned. If several indicators are in a complex relation with each other, it can be helpful to represent them schematically in a graph such as the one in Figure 3.

Box 1 provides an example of background information that could be provided for each indicator.

Box 1. Example of background information for an indicator

This box provides a hypothetical example of the background information that could be provided with every indicator. Depending on the intended audience, some aspects could be elaborated in more detail, whereas others could be omitted. For example, if the background information was primarily intended for the general public, more emphasis could be put on why the outcome is important. If it was primarily intended for experts, more information regarding the data collection methods could be provided.

Indicator: Indicator A1: Share of children aged 6 who have at least satisfying language skills.

Corresponding policy objective: Objective A: Ensure a high-quality pre-school education in order to improve the schooling success of disadvantaged children.

Current value / target value: 90.3% / 95.0% by 2020.

Development over the past three years: ↗ (+1.4 percentage points)

Unit of measurement: Percent of children at the age of six that attend a primary school and perform at least satisfactory in the standardised language comprehension test.

Outcome contributes to: Objective B: Reducing the share of early school leavers, Objective C: Improving the education of disadvantaged groups to foster social inclusion.

Outcome is influenced by: Objective D: Increasing the share of vulnerable children enrolled in pre-school education.

Why is it important to measure the outcome: Sufficient language skills are an important determinant of overall school success. Students without adequate language skills experience learning difficulties across many subjects that are hard to remedy at a later point in time.

Caveats: The indicator is based on a representative sample of 5 000 children from 103 schools and has a standard error of 1.2.

Use indicators as a tool to inform the public and ensure transparency

Indicators can be an important tool to convey key facts to the public and to form the foundation of an informed public debate. When they are well-designed, they contain information about fundamental conditions within a policy area in an easily comprehensible number. This makes them ideally suited for communication purposes. They can be used to focus public attention on issues and to showcase government initiatives. Furthermore, publishing them regularly increases transparency and accountability of the administration by providing clear yardsticks of what has been achieved.

In order to use their potential, indicators should be published regularly and be made easily accessible to other user from within the government and the public. Indicators can be made more comprehensible by colour-coding them according to how they have developed. A good example of how colour-coding can improve accessibility is the United Kingdom's "Biodiversity Indicators in Your Pocket (BIYP)" publication and its corresponding website.¹¹ However, colour-coding also creates incentives to manipulate

11. Department for Environment, Food and Rural Affairs (2014), available at <http://jncc.defra.gov.uk/page-4229>.

the indicators to achieve better “colours”. Therefore, it should only be used after careful consideration of the associated advantages and disadvantages.

Indicators as steering tools on the sub-national level

So far, the discussion has implicitly assumed that indicators are used on a national level. While all the issues discussed above apply also to indicators on the sub-national level, further aspects need to be considered. In particular, the role that indicators can play in encouraging cooperation among different sub-national governments should be taken into account.

Sub-national indicators can connect regional policies to national goals

Sub-national indicators can help policy makers to better understand how sub-national policies work, just as national indicators can improve the understanding of national policies. Furthermore, sub-national indicators are valuable for national policy makers because they can show how sub-national policies contribute to national objectives. For example, a local initiative to improve public transport might contribute to the national objective of reducing greenhouse gas emissions. National-level indicators cannot monitor the effects of such local policies because individually the policies are too small to be captured by national indicators. Nevertheless, in their sum they provide important contributions to achieving national goals.

As policies are implemented at different sub-national levels, indicators at corresponding levels have to be developed to monitor their performance. Ideally, national and sub-national policies are monitored by coherent indicators. For example, national and sub-national policies that aim at reducing carbon emissions should be monitored by indicators that use the same methodology to define their impact. While it will never be possible to distinguish exactly between the effects of national and sub-national policies, a set of comparable indicators at different national and sub-national levels contributes to obtaining a better understanding of the likely contributions.

Use sub-national indicators to monitor regionally differing effects of national policies

National policies do not affect all parts of a country equally. Depending on existing conditions, the same policies can cause different outcomes in different regions. A change in the taxation of rental property, for example, is likely to have much stronger effects on urban areas where renting is more common than in the rural countryside where most people own their own houses. Only when such regional differences in outcomes are taken into account is it possible to gain a thorough understanding of the consequences of a policy.

A single indicator for the entire country provides only the national average of an outcome and neglects regional differences. Often, this means it does not capture valuable information.¹² In cases in which policies have very different effects in different regions, national indicators might even be not informative at all. If a policy causes an outcome to improve in half the country and worsen by the same magnitude in the other half of the country, a national indicator would show zero change. Clearly, this would not be an adequate description of the effects of the policy.

For such policies, it is important to use sub-national indicators to monitor them appropriately. The choice of the sub-national level should be determined by the degree of regional variation in the effects of a policy. Ideally, an indicator should be defined for a region for which a policy can be expected to have

12. For example, regional differences in well-being are typically large within a single country. See OECD (2014) in this context.

relatively homogenous effects. In practice, this may not always be possible because some policies have very local effects that vary from neighbourhood to neighbourhood.

Make sure indicators provide appropriate incentives for cooperation

Frequently, coordination gaps occur on sub-national levels of government. In other words, sub-national governments are not cooperating as much with each other as would be socially optimal. Indicators are important in this respect, because they provide varying incentives to cooperate. In some cases, indicators defined at inappropriate sub-national levels could even provide incentives against coordination. Whether an indicator encourages or discourages coordination depends primarily on two factors; the outcome that is measured by the indicator, and the sub-national level for which it is defined.

Indicators vary in terms of how strongly they encourage coordination because not every outcome is equally affected by coordination between sub-national governments. This can be illustrated by an example from the public transport sector. Whenever public transport is provided locally, its quality is strongly affected by the degree of coordination between neighbouring municipalities. However, not every reasonable outcome indicator takes this into account.

The share of residents that lives within 10 minutes walking distance to a bus stop is a meaningful outcome indicator that reflects an important quality of the public transport system. It is easily possible for a municipality to develop a bus network that performs well along this dimension, while at the same time offering poor connectivity to neighbouring municipalities. In contrast, the number of people using the bus network is also a good indicator for the quality of the public transport system, but it has the additional advantage of being strongly affected by the degree of coordination between municipalities. If two municipalities improve the interconnectivity of their bus networks, it does not necessarily affect the share of people living within 10 minutes of a bus stop but will have positive effects on the share of people using buses. Thus, the second indicator provides incentives for better coordination among municipalities whereas the first does not.

Depending on the sub-national level at which they are collected, indicators can provide very different incentives to cooperate between sub-national governments. Measured at the appropriate level, outcome indicators foster cooperation, but measured at the wrong level, they can discourage it. When the benefits of cooperating are equally shared between local governments, outcome indicators at the local level provide incentives to cooperate. However, whenever some of the involved local entities gain more from cooperation than others, indicators measuring outcomes at a higher sub-national level tend to provide more incentives to cooperate. The same is true when the positive effects of coordination concern different outcomes in different municipalities, but the indicator measures only one of them. In such cases, indicators on the local level would highlight the unequal gains from cooperating, whereas indicators on higher sub-national levels would show only a joint gain from cooperating.

An example of such a situation can be attempts to merge several small hospitals into a single one in order to improve the provision of specialised medical care. Such mergers might be necessary because hospitals need to have a certain size to be able to offer efficient specialised care. In regions with low or intermediate population densities, a sufficient size for a hospital might only be achieved by merging several smaller hospitals into a single large one. The decision to close hospitals is likely to be controversial in municipalities where they are located even if it might improve the overall quality of medical care in the region. Primarily, this is because the benefits are unequally distributed between municipalities. Whereas one municipality will gain greatly by becoming the location of a large specialised hospital, the other municipalities will face trade-offs between losing their small hospitals and gaining better access to specialised care. Furthermore, municipalities are asked to give up something tangible (i.e. a hospital in their city) for something intangible (i.e. better care).

In such situations, indicators need to reflect the gains from cooperation adequately. In the example, it would be important to use an indicator that can reflect the quality of medical care provided in the entire region. One consequence could be to use only a single indicator for the entire region instead of using individual indicators for the care provided within each municipality. Indicators that measure only the quality of medical care provided within each municipality would be negatively affected by the closures of the smaller hospitals without capturing the gains of having a large specialised hospital nearby. Thus, such indicators would provide incentives against cooperating, whereas an indicator capturing the quality of medical care provided within the region would provide incentives for cooperation.

The example highlights the importance of considering the incentives for or against cooperation that are provided by indicators. Due to the complexity of each individual situation, it is not possible to provide more general advice regarding the optimal geographical scope of an indicator. For each indicator, the incentives it provides in specific situations have to be analysed and taken into account in its design. Only this can ensure that indicators do not have unintended consequences, but encourage involved actors to cooperate in pursuing desired objectives.¹³

Indicators in the context of EU cohesion policy

Monitoring frameworks are introduced for varying reasons. The indicators that are evaluated in this study are based on requirements by the European Commission. Other monitoring frameworks might be introduced out of entirely national considerations. Often, the different monitoring frameworks serve different purposes and use different methodologies. Although such varying approaches can be justified, it is generally desirable to ensure a minimum level of comparability across different performance monitoring frameworks. Besides allowing the comparison of different policy fields with each other, ensuring a minimum level of comparability also makes it easier to communicate the different monitoring frameworks.

According to the European Commission, outcomes of policies under the European Social Fund (ESF) can be monitored by programme specific outcome indicators.¹⁴ These are indicators that concern very low-level objectives. Typically, they refer to the share of participants in a programme for whom a desired outcome has occurred. Such an indicator could for example be the share of unemployed participants in a training programme that found a new job within six months of participating in the programme.

In contrast, indicators for the European Regional Development Fund (ERDF) and Cohesion Fund (CF) refer to outcomes on a macro level.¹⁵ They are supposed to measure the impact of a programme not just on those individuals or businesses affected by it, but on the entire population the programme is targeted at. For example, a typical ERDF indicator would not look at the share of youths who found a job after attending a training programme targeted at unemployed youths, but at the youth unemployment rate in general.

In addition to the different interpretations that the different types of outcome indicators have, they also have different data requirements. Typical outcome indicators for the ESF only require information about the group of individuals (or businesses, organisations, etc.) that is affected by a programme. This information is usually easy to collect and quickly available. In contrast, typical indicators for the ERDF

13. See Bartolini (2013) for a detailed game theoretical analysis of different coordination problems and the role that appropriate incentives can have in overcoming them.

14. See the guidance document on monitoring and evaluation of the European Cohesion Policy for the European Social Fund (European Commission (2014a), available at ec.europa.eu/social/BlobServlet?docId=7884&langId=en).

15. See the guidance document on monitoring and evaluation for the European Regional Development Fund and the Cohesion Fund (European Commission (2014b), available at http://ec.europa.eu/regional_policy/sources/docoffic/2014/working/wd_2014_en.pdf).

require information for all individuals (or businesses, organisations, etc.) within the country, not just those that are affected by a programme. Such data is more difficult to collect and it typically involves longer time lags until it becomes available.

In order to prevent misinterpretations, the structural differences between the different types of indicators should be highlighted. If possible, it could also be desirable to collect two sets of indicators for key objectives; one on the programme level and one on the macro level. However, before doing so, it should be ensured that the gain from two different sets of indicators justifies the associated costs.

Not only do the requirements for indicators under the ESF and ERDF differ from each other, they are often very different from national performance monitoring and evaluation frameworks. In many cases, the monitoring and evaluation requirements for EU funded programmes are stricter than those practiced nationally.

The monitoring requirements of the European Commission regarding emphasise the importance of ensuring that policies achieve the desired outcomes. This focus is important not just for programmes funded by the EU, but should be the underlying principle of every policy, no matter whether it is funded nationally or by EU sources. The monitoring requirements of the European Commission could be used as an occasion to modernise and extend national performance monitoring frameworks. In this context, experiences from the introduction of outcome indicators for EU programmes could provide valuable lessons how to design a broad monitoring framework based on outcomes.

SCOREBOARD INDICATORS

The role of scoreboard indicators

Scoreboard indicators are the highest level of outcome indicators. They have a special role in a system of indicators. Primarily, they serve communication purposes and are supposed to provide general overviews of the conditions in entire policy fields. In contrast to lower level objectives, they do not aim at documenting the consequences of individual policy measures. Instead, their function is to showcase the effects of broad government strategies.

Because of the generality of scoreboard indicators, it is difficult to derive concrete policy proposals from them. Scoreboard indicators can be useful in demonstrating *if* a general strategy is working, but they cannot provide any information on *why* it is working or not. In order to analyse this question, indicators that are more closely related to individual policies are more appropriate.

Despite their limitations, scoreboard indicators have several advantages. They can serve as a yardstick to judge the performance of the government. They can also be a tool for the government to highlight the importance of its priority policy fields to the public. If scoreboard indicators are widely accepted throughout different governmental agencies, they can also serve as a focal point to concentrate efforts and align different programmes around them.

Identifying strategic objectives

Like all other outcome indicators, scoreboard indicators need to be based on policy objectives. Policy objectives clarify the priorities of the government internally and externally and justify the selection of a particular indicator as a quantitative measure that corresponds to the objective. In the case of scoreboard indicators, the setting of objectives is especially important because scoreboard indicators send a strong signal about the priorities of the government and should therefore correspond to its actual priorities.

Depending on the complexity of the policy field, some objectives for scoreboard indicators require much more detail than objectives for other types of indicators. For example, the objective Promoting Social Inclusion and Fighting Poverty (see Thematic Objective 9 below) contains a wide range of policies and related specific outcomes that can contribute to it. Based on technical criteria alone, it is not possible to judge the importance of the different contributing objectives. Before an appropriate scoreboard indicator can be defined, political decisions regarding the importance of the different specific objectives have to be made and should be spelled out explicitly.

Choosing between composite indicators and unitary indicators

Scoreboard indicators differ from other outcome indicators primarily in their level of detail. As they are expected to summarise entire policy fields, it is often difficult to find a single measure that contains all the relevant information to represent the policy field adequately. Composite indicators that combine several measures into one indicator avoid this problem. However, they also have significant downsides and should be used only carefully.

Some policy fields can easily be represented by unitary indicators. For example, the strategic objective to avoid climate change is reasonably well represented by an indicator that measures CO₂ emissions.¹⁶ However, other strategic policy fields are more difficult to represent by a single indicator. As mentioned above, there is no single unitary indicator that encompasses all the different dimensions of the objective “Promoting Social Inclusion and Fighting Poverty”. In this case, composite indicators could be used to summarise different outcomes into a single indicator.

Despite their advantages, composite indicators can easily be misleading and should therefore be used only after careful consideration. Due to the technical complexities of constructing composite indicators, several problems might occur. First, composite indicators can be misinterpreted if the details of their construction are not taken into account or are not fully understood by the public. Second, composite indicators can be very sensitive to the way they are constructed. Whether they move in a positive or negative direction can be primarily due to their construction and not due to the fundamental developments in the policy fields they monitor. Third, the sensitivity with regard to different specifications can be exploited for political purposes. It is possible to construct seemingly sensible composite indicators that tend to show a politically desired outcome. Instead of fostering transparency, such composite indicators are intentionally misleading and reduce transparency.

The problems mentioned above can be avoided by choosing internationally recognised composite indicators. These tend to use established methodologies and cannot be influenced for political purposes. For example, the PISA score is a composite indicator that aggregates the outcomes of different tests administered as part of the OECD’s PISA study. It is widely regarded as a valid and objective measure of learning outcomes of students and could thus be an appropriate scoreboard indicator.

16. This indicator would ignore the impact of other greenhouse gases, but the simplification could be justified because CO₂ is by far the most important greenhouse gas.

If composite indicators are nevertheless created from scratch, it is important to use adequate statistical methods. Among the concepts that are important for the construction of scoreboard indicators are normalisation, aggregation, weighting and sensitivity analyses. A discussion of them is beyond the scope of this report. Interested readers are referred to the OECD/EU/JRC Handbook on Constructing Composite Indicators that contains a comprehensive discussion of the methods required to construct composite indicators.¹⁷

Scoreboard indicators on the sub-national level

Scoreboard indicators can be used to monitor outcomes on sub-national levels. All caveats that apply to their use on a national level also apply to their use on the sub-national level. Furthermore, several other considerations have to be taken into account. Whereas some scoreboard indicators are suitable outcome measures from the national level to very small sub-national units, others should only be employed at the national level. While it is not possible to generalise which indicator is suitable for use at the sub-national level, several criteria provide guidelines.

The smaller the sub-national unit to which an indicator refers, the stronger it is affected by random fluctuations. This is especially important for indicators that refer to rare outcomes. An example for this could be the murder rate as a potential scoreboard indicator for crime. Most OECD countries have a murder rate in the very low single-digits per 100 000 inhabitants. Measured at the country level, the murder rate provides a fairly reliable average that fluctuates little from year to year. If it were measured at small sub-national units that have on average 10 000 inhabitants, the murder rate would be a highly unreliable measure that is very strongly influenced by random noise. Most sub-national units would report a murder rate of 0, whereas the few where one murder occurred would report a rate of roughly 10 per 100 000 inhabitants.¹⁸ Obviously, such fluctuations are primarily the result of random events that are hardly related to the actual situation in a region. Thus, indicators measuring such rare outcomes are not suitable for use at strongly disaggregated regional levels.

In some instances, an indicator might measure an outcome that is inherently heterogeneous across a country, for example because a public service can only be provided at certain locations. In these cases, the indicator should only be used for sufficiently high sub-national levels. Every sub-national unit should be large enough to be representative of the entire country with respect to the outcome in question. This can be illustrated by an example. The share of people aged 25 with at least a bachelor's degree could potentially be a scoreboard indicator for the state of higher education. It is likely that this share is much higher in cities that have a university than in cities that do not have a university. Disaggregating the indicator to sub-national units that are so small that some of them do not contain a university could therefore create misleading results. These sub-national units would likely have much fewer graduates than those that contain a university. The strong difference in the outcome could be perceived as a sign of undesirable regional disparities, even though it is generally accepted that higher education can only be provided at selected locations.

Lastly, it is important to interpret and attribute regionally disaggregated indicators appropriately according to regional responsibilities for the outcome. A region might have very high levels of carbon dioxide emissions because it is a centre of heavy industries that produce building materials such as steel and concrete. If these materials are used throughout the entire country, it would be misleading to attribute the carbon emissions that occur during their production only to the region where they are produced. The materials are essential for the functioning of the economy of the country and the carbon emissions that

17. See OECD/EU/JRC (2008).

18. The statistical murder rate per 100 000 inhabitants in a region of 10 000 inhabitants is 10 if a single murder occurs in the region (1 murder / 10 000 inhabitants = 10 murders / 100 000 inhabitants).

occur during production should be attributed to regions according to their use of the materials. Essentially, the responsibility for these emissions should be attributed to the consumer-region instead of the producer-region.

Problems of attributing outcomes correctly to regions could also occur in other situations. For example, patents might be developed at research centres but registered under the address of company headquarters that are located in different regions. In this case, it would be important to attribute the patents to the location of the research centre and not to the location of the company headquarter.

Potential themes for scoreboard indicators

This section presents themes from which scoreboard indicators for Portugal's priority policy fields could be chosen. As discussed previously, selecting scoreboard indicators includes a political element because it communicates the priorities of the government. Before deciding on scoreboard indicators, corresponding strategic objectives should be defined by the Portuguese government. If the themes presented below correspond to them, they would provide a suitable basis for scoreboard indicators. If this is not the case, the themes should be considered examples but should not be used for the actual construction of scoreboard indicators.

Portugal has defined the following four priority policy fields:

- Human Capital
- Internationalisation and Competitiveness
- Social Inclusion and Employment
- Sustainable and Efficient Use of Resources

For each of these policy fields, two or three themes for scoreboard indicators are presented along with a short explanation why the themes are important. In the appendix to this report, the evaluated indicators that contribute to the respective themes are listed.

Human capital

Improve the human capital level of the labour force

Human capital levels can be measured differently depending on which skill levels are prioritised. Completed secondary education is a basic measure of educational success. It is a prerequisite to pursue higher education and a requirement for intermediate skilled and high skilled jobs. Without secondary education, most career paths beyond manual labour are difficult to attain.

Public policy can influence the share of the labour force with secondary education in several ways. First, it can ensure high graduation rates of current students. Second, it can offer training and education programmes to workers in older cohorts that do not have the qualification. Third, it can encourage participation of individuals with secondary or higher levels of education that are currently not in the labour force.

Strengthen higher education

Going beyond basic educational success, the share of graduates with a degree in tertiary education is an important measure for the penetration rate of higher education. A suitable indicator could measure the share of individuals with a higher education degree at an age at which most people would have completed

such a degree (for example age 25). Among the different definitions of tertiary education, it might be useful to consider all degrees at ISCED level 5 or higher, as this is the most comprehensive definition of tertiary education.

Competitiveness and internationalisation

Rebalance the economy towards the tradable sector

The size of the tradable sector in the economy is a highly relevant measure of the competitiveness of the national economy. It is more informative than other widely used indicators of international competitiveness because it covers the competitiveness of domestic firms in domestic and in foreign markets. Businesses in the tradable sector face two potential types of competition; when they export they compete with foreign businesses for a share of the foreign market. When they do not export, businesses in the tradable sector still face competition of foreign businesses for a share of the local market.

The size of the tradable sector is a measure that captures the competitiveness of the domestic economy in the domestic market and in foreign markets. This is preferable to focussing only on the amount of exports, which does not take domestic competitiveness into account. The trade balance, another often used measure of competitiveness, is even less suited. As it is the difference between exports and imports, it improves when domestic demand is suppressed even if no improvements in competitiveness occur.

Strengthen public and private research and development

Spending on Research and Development is an important long-run determinant of the competitiveness of an economy. It is influenced by public spending on R&D, but also by private R&D spending. Whereas public R&D spending is an input that can be directly determined by the government, private R&D spending is an outcome that can only indirectly be influenced by public policies. Both types of spending are complementary and show their full effects only if the other type is sufficiently high and effective.

Social inclusion and employment

Reduce poverty

Poverty is one of the most important factors for social exclusion and is therefore potentially relevant as a scoreboard indicator. Several different poverty definitions exist and it might be useful to combine them into a single measure. In particular, it might be useful to combine a measure of income poverty with a measure of material deprivation. Whereas income poverty is an objective measure that is identical for everybody, material deprivation is more subjective and depends on the social circumstances of individuals. Such combined measures have successfully been used in other countries, such as Ireland.

Income poverty is defined as receiving less than a certain percentage of the median household income, whereas material deprivation refers to the inability of affording items and activities of daily life. Information on the latter could be collected through household surveys that ask whether individuals are able to afford items and activities from a standardised list. Only individuals that fall below the income threshold for income poverty and respond that they are unable to afford items from the standardised list would be considered to live in poverty.

Reduce the number of youths at risk of exclusion from the labour market

The share of youths not in employment, education or training captures aspects related to both social inclusion and unemployment. Forced inactivity is a risk factor for social exclusion because it deprives people of regular social contacts and increases the risk of poverty.

The share of youths not in employment, education or training is also informative regarding the state of the labour market for youths. Furthermore, it has important consequences for long-term employment perspectives of a country. Periods of prolonged inactivity reduces the skills and the employability of individuals. This has negative consequences on their careers for the rest of their lives. On average, youths who are exposed to periods of inactivity will find it more difficult to be economically successful in their lives than youths who have a smooth transition between education and work.

Foster employment at all levels of society

The employment rate is one of the most meaningful statistics regarding the state of the labour market. In contrast to the unemployment rate, it is not affected by labour force participation decisions. Whereas the unemployment rate decreases if individuals decide that they do not have any chance of finding a job and do not register as unemployed, the labour force participation rate is unaffected by these decisions. It is therefore a better measure of the state of the labour market than the unemployed rate. Furthermore, the employment rate is directly related to the real dependency ratio (i.e. the ratio of economically active to economically inactive people), which has important consequences for the sustainability of many welfare arrangements.

Sustainable and efficient use of resources

Promote a shift to a low-carbon economy

Carbon emissions are the biggest contributor to climate change and reducing them requires changes in many sectors. Although the climate impact is determined by the total amount of carbon emissions, a more meaningful indicator measures carbon emissions per unit of GDP. This indicator shows the carbon efficiency of resources and better reflects attempts to reduce fossil fuel consumption by switching to alternative sources of energy and by increasing energy efficiency. It is much less affected by business cycle fluctuations than total carbon emissions, which decrease during recessions and increase during upswings because consumption of fossil fuels changes according to the level of economic activity.

Ensure a sustainable use of fresh water resources

Fresh water resources are only partially renewable. Ground water aquifers are often replenished over very long time horizons and sometimes not at all. Thus, in order to guarantee their availability in the future it is important not to extract too much water from them. Furthermore, fresh water extraction can have negative consequences for ecosystems. If excessive amounts are abstracted from rivers, lakes and aquifers, natural habitats that rely on fresh water supplies from these sources are damaged and biodiversity declines.

An important measure that characterises the long-term sustainability of water use is the withdrawal ratio. It is defined as the ratio of extracted fresh water relative to the long-term average water resources that are available. The larger the share of extracted fresh water is, the greater the stress that is put on ecosystems and the more questionable the long-term sustainability of the water usage.

OUTCOME INDICATORS AS A TOOL FOR CONTRACT DESIGN

This chapter discusses contracts that contain outcomes as subjects of the agreement (in the following, called outcome-based contracts). They can be important tools for the public sector to manage some interactions between different governmental actors as well as between the government and the private sector. If they are well-designed and used at the right scale, they have several advantages over other types of contract. Most importantly, they provide incentives to the contractor to focus on the outcome instead of just producing an output. Furthermore, they are useful for delegating responsibility regarding particular outcomes without the need of specifying in detail how to achieve them, thus giving the contractor greater responsibilities. Lastly, they can be a tool to share risks among different actors. By making payments conditional on outcomes, they can distribute the financial consequences of successes and failures between the involved parties.

Despite these advantages, several drawbacks to outcome-based contracts exist and the public sector has started only recently to implement them in practice.¹⁹ One possible reason for the slow uptake of outcome-based contracts is the challenges involved in designing them. In particular, it is difficult to set-up contracts that define outcomes appropriately and do not provide misaligned incentives. As outcome-based contracts give more freedom to the contractor, they also offer greater scope for undesirable actions and might inadvertently encourage the contractor to take such actions. Thus, outcome-based contracts need to be specified in a way that discourages the contractor from taking such actions.

This chapter provides a brief overview of outcome-based contracts focusing on the potential caveats and pitfalls associated with them. It does not advise against the use of outcome-based contracts, but advocates for a cautious use. In general, it is more complex to develop appropriate outcome-based contracts than to use output-based contracts. Not in every case is the extra effort justified by the potential benefits from using them. This problem is compounded by the relative novelty of outcome-based contracts, which implies that governments frequently lack experience with their use.

The subsequent discussion distinguishes between contracts between governmental actors and contracts between the government and the private sector. Contracts between governmental actors have a coordination function, but rarely describe the entire rights and responsibilities of the contractual partners with respect to each other. Beyond the existence of the contract, the contractual partners are generally expected cooperate with each other to some degree. While contracts between levels of governments or government agencies are often legally binding, they can also be declarations of intent that are formalised in a political contract, but are not legally binding. In contrast, contracts between the government and the private sector are generally legally binding. Furthermore, it cannot be assumed that the contractual partners cooperate with each other beyond the terms specified in the contract. This implies that contracts between the government and the private sector need to be more detailed than contracts between governmental actors.

Outcome-based contracts between governmental actors

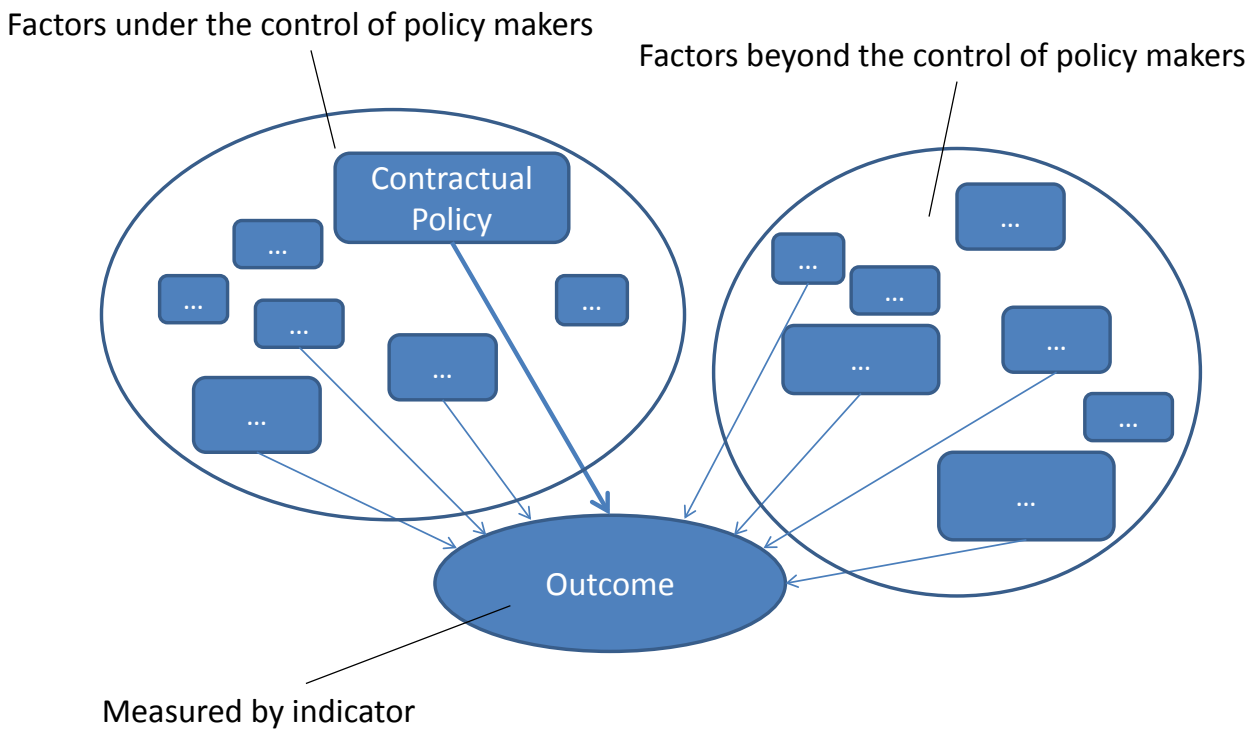
It is possible to distinguish contracts along the same lines as indicators depending on whether the deliverable specified in the contract is an input, an output, or an outcome. Just as it is more difficult to define an outcome indicator for a policy than to define an output indicator, setting up contracts based on outcomes is considerably more difficult than setting up contracts based on outputs. It involves not only the

19. See Ng et al. (2009) for a general discussion of outcome-based contract and an examination of their use by the British Ministry of Defence (MoD).

specification of outputs, but requires also the explicit formulation of a desired outcome and an implicit hypothesis how the outputs will affect the outcome.²⁰

One of the major problems of outcome-based contracts relates to the uncertainty of outcomes. As discussed earlier it is never possible to predict perfectly what the consequences of a policy will be. Sometimes, seemingly appropriate policies do not work in practice and in other cases minor policy reforms have unexpectedly large effects. Whereas it is usually possible to connect an input and an output directly to an individual policy, governments have only indirect control over outcomes. Policy makers can try to achieve a particular outcome but they cannot promise with certainty that they will achieve it even if they implement appropriate policies. This is mainly because outcomes are always influenced by many factors. Some of them are within the control of policy makers and some are beyond their control. Figure 4 illustrates this with a schematic graph.

Figure 4. Determinants of policy outcomes



Typically, the higher the level of the outcome, the more confounding factors beyond a single policy influence it. This implies that high-level outcome indicators are not well suited to be used as yardsticks to determine whether a contract regarding a policy has been fulfilled or not. Even if an individual policy is designed carefully, it does not guarantee positive developments of high-level outcome indicators, because the indicators do not distinguish between the effects of policies and confounding factors. The resulting lack of precision of the indicator regarding the effectiveness of the policy makes it problematic to base a contract on it.

20. Even if an outcome-based contract does not make any explicit reference to an output, the contracting partners generally need a mutual understanding about the outputs that will be produced under the contract in order to be able to reach an agreement.

If outcome indicators are explicitly included in contracts between governments, it might be preferable to use outcomes that are closely connected to individual policies, as policy makers have a greater degree of control over them. For example, if a contract is supposed to delegate responsibility for the efficient use of water to another government agency, an outcome such as *share of water lost to leakage in the network* would be better suitable than an outcome such as the *replenishment rate of aquifers*. Both are valid outcome measures that can be influenced by public policy and could serve as important outcome indicators. However, the first measure is affected by few external factors, whereas the second measure is heavily influenced by rainfall levels. Therefore, it can be much less closely controlled by policy makers than the first measure.

Outcome-based contracts can differ depending on the degree to which they depend on the outcome. In some cases, contract fulfilment depends on achieving a certain outcome. In other cases, outcomes are only used for incentive schemes. Contracts that include outcome indicators as basis for incentive schemes make only a part of the remuneration dependent on the outcome and thereby acknowledge that it is not possible to fully control outcomes. Such contracts typically provide financial incentives for achieving targets, but do not consider non-achievement of targets as non-fulfilment of the contract. This reduces the negative consequences for the contractor if factors beyond its control cause an outcome indicator to develop poorly despite a successfully implemented policy. At the same time, by rewarding good performance they can still encourage high effort to achieve good outcomes. This matters for example for the field of innovation policy. Innovation is a highly unpredictable process that has a high failure rate but can yield great rewards in the case of success. It would therefore be important to set up contracts that avoid too harsh penalties if the desired outcome is not achieved.

No matter whether outcomes are used to determine contract fulfilment or as a basis for incentive schemes, it is important to consider that they can potentially provide misaligned incentives. Outcome-based contracts can encourage higher effort by the contractor than other types of contracts, but they can also provide adverse incentives that encourage undesirable actions. The following section discusses the issue in more detail.

Lastly, it is important to mention that implementing outcome-based contracts in the public sector is not only a question of setting up an appropriate contract. It often includes a transfer of the responsibility for an outcome from one governmental actor to another. In this context, it is important that not only responsibilities are transferred, but also that the government agency tasked with achieving the outcome has the necessary means to achieve them. This includes the legal rights to take the necessary measures, but also the availability of appropriate financial resources and the existence of sufficient institutional capacity to deal with the new tasks.

Outcome-based contracts between the government and the private sector

Contractual arrangements between the public sector and the private sector need to be based on the assumption that any cooperation between the actors extends only to the terms specified in the contract. This implies that outcome-based contracts between the government and the private sector differ from those between governmental actors. In particular, the role of incentives needs to be even more closely scrutinised when outcomes are used in contracts with the private sector.

An example can show how easily an outcome-based contract could provide misaligned incentives. A contract between a government agency and a private company to provide training to unemployed individuals could be based on an outcome, such as the share of individuals that find a job within six months after completing the training. The payment to the company would then depend on the outcome; the higher the share of employed individuals is after six months, the higher is its payment.

This is a typical outcome-based contract. However, without further provisions, the contract would most likely have undesired consequences. As it is based on the share of people who find a job, it provides incentives for the private company to select only those people for trainings that are likely to receive a job offer for training. As a first step, such a contract would therefore have to specify who will be eligible for the training. However, even then, there might be other possibilities for the company to influence the selection of candidates. For example, it could schedule the courses for people it deems less likely to find a job at inconvenient locations or dates. This might induce them not to register for the training. Alternatively, the company could push participants to apply for jobs that are easier to get but are badly matched to their skills. For example, it could encourage highly educated individuals to apply for low-skilled jobs if these positions are easier to find. Similarly, the company could push participants to apply for temporary jobs that do not offer a long-term perspective but will have participants employed at the evaluation date. While all actions would be beneficial for the company because they increase its remuneration, none is desirable from the perspective of the government.

If it is not possible to set up an outcome-based contract that rules out similar actions, it could be preferable to use an output-based contract instead. In the case of the example, such a contract would simply specify that the company has to provide training to a given number of participants and let the government select the participants in the programme. It would not refer to any outcome, such as the number of participants who find jobs. The contract would forego the use of a desirable incentive (i.e. to provide a training that is as effective as possible in helping people to find jobs) but would also not be affected by the undesirable incentives mentioned above.

Compared to outcome-based contracts, standard contracts based on outputs are easier to develop and generally have lower risks of setting misaligned incentives. Nevertheless, good reasons exist to use outcome-based contracts. Whereas output-based contracts only provide incentives to deliver the contractually agreed output, outcome-based contracts create incentives to achieve the outcome. In other words, they provide incentives to achieve the goals that are the rationale for the contract. In many cases, the contractor is better informed how to achieve an outcome than the client (i.e. the government issuing the contract). An outcome-based contract gives the contractor the opportunity to use the methods that work best to achieve the objective (in contrast to simply producing an output no matter its effectiveness in achieving the outcome).

Further considerations for the use of outcome-based contracts

Outcome-based contracts need to be carefully designed, in particular with respect to the incentives that they provide. The general aim of a contract is to provide as strong incentives as possible to the contractor to achieve the outcome related to the policy objective. At the same time, it needs to be ruled out that the contract provides incentives for undesirable actions by either of the contracting partners.

This chapter has mentioned some of the caveats and considerations that need to be taken into account. It cannot provide a complete overview of all aspects related to them. Several issues are important to consider but go beyond the scope of this report due to their complexity. Among them are principal-agent problems due to asymmetric information, moral hazard and incomplete contracts. Furthermore, the report does not discuss any legal issues that might arise. In general, any outcome-based contract needs to be adapted to the legal and institutional framework of a country.

Outcome-based contracts can be innovative solutions to strengthen the outcome-orientation of the public sector. By focussing on the objective behind a contract instead of an output that might or might not contribute to achieving the objective, they can increase the likelihood that policies are successful. Nevertheless, they are not without drawbacks and create risks for undesirable outcomes that are different from those created by other types of agreements

Although conventional contracts also have downsides, governments tend to be more familiar with them and have more experience in how to avoid these downsides. It is important that governments, which are planning to implement outcome-based contracts, pay careful attention to the details of the contract and continue to monitor the performance of the contract once it has been signed. In an early stage, it also implies accepting the potential failure of outcome-based contracts as long as appropriate lessons are drawn from it.

SYNTHESIS OF THE EVALUATION

This section presents a summary assessment of the policy indicators for Portugal and follows the criteria discussed in the report. It is based on a draft version of the indicators as received by the OECD in November 2014. Subsequent changes to the indicators could not be considered for the report even if they have taken place in the final version of the Operational Programmes adopted in December 2014. The detailed evaluation that forms the basis of this summary can be found in Appendix 1. The appendix also contains an overview of the objectives to which the indicators refer and which are necessary to evaluate them.

The evaluation takes into account that the indicators have been developed with the particular purpose of monitoring the effectiveness of policies funded by the *European Regional Development Fund (ERDF)*, the *European Social Fund (ESF)* and the *Cohesion Fund (CF)* of the European Union. Nevertheless, it is assumed that the indicators are supposed to be used in a broader context to inform policies that go beyond those that are directly supported by the European Union.

General assessment

- A large majority of the assessed indicators are valid and relevant outcome indicators that are suitable to monitor the respective policies to which they refer. They can contribute to a better understanding of the effectiveness of the policies that they monitor.
- Some indicators measure outputs rather than outcomes. It is important to distinguish between outcome and output indicators and use each type of indicator according to its purpose. When output measures are used as outcome indicators, it is usually because the objective is hard to quantify or the costs of collecting the required data is prohibitive. If no appropriate outcome indicator can be found this should be acknowledged, as it is generally preferable not to use indicators than to use misleading ones. In such cases, the effectiveness of a policy needs to be monitored using other methods than indicators. However, even then it is still possible to use input and output indicators to monitor the effort and efficiency of a policy.
- Due to the monitoring requirements of the European Commission, the assessed indicators vary strongly in terms of the level of detail that they monitor. Some are high level indicators, whereas others monitor programme specific outcomes. Accordingly, their meaning and their importance differ. In order to avoid misinterpretations, the relevance and purpose of each indicator needs to be stated. Furthermore, it is important to note that outcome indicators defined at different levels may not be compared with each other even if they refer to related policy fields.

- In general, the indicators lack accompanying background information. Without such information, it is often not entirely clear what an indicator measures. Providing background information is an essential part of preparing the indicators for use in a daily context. In the future, it is likely that the indicators will be used by public officials or members of the public who were not involved in the development of the indicators. Providing background information on the indicators will help them to understand the motivations behind them and to interpret them correctly. Thereby, it helps to prevent misinterpretations and to maximise the usefulness of the indicators.

Observations by priority policy field

Human capital

Almost all indicators for the policy priority field *human capital* are well-designed and suitable to measure the outcomes defined in the specific objectives. A small number of indicators do not refer to outcomes, but measures outputs instead. In order to improve these, it is important to define objectives that refer to outcomes instead of outputs.

Competitiveness and internationalisation

With a few exceptions, the indicators in the policy priority field *competitiveness and internationalisation* are appropriate outcome indicators for their specific objectives. They refer to a variety of diverse outcomes and are thus difficult to summarise. When there is scope to improve individual indicators, it is usually a matter of the exact definition or the measurement of an indicator.

Social inclusion and employment

The indicators that cover the policy priority field *social inclusion and employment* vary in terms of their suitability. To a large degree this is due to the understandable difficulties in defining suitable outcomes that are quantifiable and measurable in the field of social inclusion. In order to facilitate the definition of good outcome indicators, it is essential that objectives are precisely formulated and clearly refer to an outcome. Indicators related to employment mostly refer to ESF funded programmes and are thus very programme specific. While this is appropriate for their purpose, they do not provide information regarding the broader state of the labour market.

Sustainable and efficient use of resources

Most indicators in the priority policy field *sustainable and efficient use of resources* appear well-suited for their purpose. For the purpose of evaluating them, but also for use in a daily context, the indicators would benefit from the provision of additional background information. While it is important for all indicators to provide background information, it is especially crucial when the indicators refer to concepts that are difficult to understand for people who are not experts in the field.

The Portuguese system of indicators in a broader perspective

The indicators evaluated in this report have been developed to satisfy the monitoring requirements by the European Commission. Nevertheless, their primary purpose should be to improve policies in Portugal no matter whether they are financed through national sources or by funds from the European Union. In the medium-term, it could be desirable to extend the system of indicators towards a comprehensive monitoring system for all major policy fields in Portugal. This would involve the development of a monitoring and evaluation framework that is compatible with the requirements of the European Commission but whose scope goes significantly beyond it.

In the short-term, the current system of indicators needs to be put into a framework that ensures that insights gained from the indicators are translated into policy reforms. This includes mechanism to regularly analyse the indicators, to communicate the insights to all relevant authorities and most importantly to act upon them. The framework should also specify appropriate benchmark values for indicators that are regularly reviewed. Furthermore, it should include strategies on how the information from the indicators can be used for learning and capacity building and include provisions how to communicate the information gained from the indicators. When designing such a framework, it needs to be ensured that the incentives provided by it correspond to the stated policy objectives.

The purpose of indicators can be summed up using the terminology of this report. They are outputs that are created to achieve the outcome of improving policies. As is the case for all outputs, it is not guaranteed that they will achieve the outcome. Indicators will only improve policies if they are of good quality and embedded in a framework that translates their insights into policies.

The evaluated indicators are generally well-designed and can contribute to improving policies in Portugal. It is important that they are placed in a suitable framework to influence policy. Although it has not been assessed as part of the report, the existence such a framework will prove crucial for the successful implementation of the developed indicators.

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APPENDIX 1 – DETAILED EVALUATION OF THE INDICATORS

This appendix presents the detailed evaluation of the indicators. It is based on the draft of the indicators as of the end of November 2014. Subsequent changes to the indicators could not be considered for the report. The evaluation is organised along the Thematic Objectives (TO) that have been specified by the European Commission for the Cohesion Policy planning period 2014 – 2020. For each Thematic Objective, an overview table presents the specific objectives and their corresponding outcome indicators that have been proposed by Portugal.

The actual evaluation starts with an overview of the specific objectives (SO) that motivates the proposed indicators. Based on the overview of the objectives, the indicators are evaluated. Only outcome indicators are evaluated as part of this project. Output indicators are specific to particular policies and do not possess the same strategic dimension. Following the evaluation of each set of indicators, further indicators that are used in other national or international contexts are discussed. Generally, the suggestions refer to high level outcome indicators that could be used to monitor progress in achieving the Thematic Objective or other broadly defined objectives related to the topic of the Thematic Objective. These indicators do not necessarily refer to policies that are supported by the European Union. Rather, they are supposed to provide additional ideas how to monitor the general performance in the respective policy fields. They could be especially of interest if Portuguese authorities decide to extend the monitoring and evaluation framework beyond policies supported by the European Union.

The performance measurement framework assessed in this report was developed to satisfy the monitoring requirements of the European Commission. However, its primary purpose should be to improve policies and increase their responsiveness to citizens' needs, not to meet externally imposed requirements. In the longer term, it is therefore important that the performance measurement framework is adapted and applied to Portugal's national policy framework. Only when the performance monitoring becomes an integral part of the national policy making process can it contribute effectively to better policies.

Thematic Objective 1: Strengthening research, technological development and innovation

Ind. No.	Specific Objective	Outcome Indicator	Unit
1.1.1 (I)	Increase the scientific output of internationally recognized quality that is targeted at smart specialisation and stimulate the economy through a focus on technology and high-value added, thereby emphasising excellence, cooperation and internationalisation.	Number of top publications in scientific areas encompassed by smart specialisation strategies	Number of publications
1.1.1 (II)		European Patent Office patents per unit of GDP	Number of patents per unit of GDP

Ind. No.	Specific Objective	Outcome Indicator	Unit
1.2.2	Strengthen the integration of research institutions into international R&D networks in the context of structuring, reorganising and improving the effectiveness and efficiency of the national research infrastructure.	Share of private funds (national and foreign) in the public R&D budget (excluding private R&D expenditures).	% R&D budget
1.2.3	Strengthen the knowledge transfer from research institutions to businesses, promoting greater efficiency in R&D and the creation of value.	Share of revenues used for R&D in the private sector	% of revenues
1.2.4	Strengthen cooperation in the form of networks and other partnerships aimed at innovation and internationalisation of businesses and value chains (cluster formation).	Share of businesses (within the categories ACE Rev. 3, B to H, J, M and Q) with 10 or more employees that are engaged in cooperation for innovation	% of businesses
1.2.5	Increase private investment in innovative activities (product, process, organisational and marketing methods), promoting increased production and trade and change the production profile of the economy.	Revenues from the introduction of new products as share of total revenues of innovation active businesses	% of revenues

Overview of the objective

Thematic Objective 1 focuses on research, development and innovation. It encompasses Specific Objectives that aim at improving research, promoting the transfer of knowledge between academia and businesses, and increasing and improving private investment into research, development and innovation (R&D&I).

Some objectives refer to outcomes that are the direct consequence of decisions by actors in public research institutions (**1.1.1 (I + II), 1.2.2**). Others refer to outcomes that are the consequences of decisions taken by businesses and other private sector actors (**1.2.4, 1.2.5**). Therefore, public policy cannot directly influence these outcomes but must instead try to create conditions that induce businesses to take the desired steps. Objective **1.2.3** is affected by private and public sector actors.

Evaluation of the indicators

The indicators proposed under Thematic Objective 1 are relevant measures that are generally appropriate outcome indicators for the Thematic Objective.

Two indicators stand out in the context of the Thematic Objective. Indicators **1.1.1 (I + II)** and **1.2.5** are measures of high-level outcomes that are directly related to the Thematic Objective. In contrast, most of the other indicators refer to lower level outcomes, which can be important contributors to the Thematic Objective, but do not directly reflect progress in achieving it. Indicator **1.1.1 (I + II)** refers to the number of academic publications in high-quality journal, which is a central outcome related to research quality and quantity. Indicator **1.2.5** – revenues from the introduction of products – is a direct measure of the innovation activities of businesses. Both outcomes are higher level outcomes that are the consequence of lower level outcomes, such as **1.2.3** (business investment in R&D). As high-level indicators, **1.1.1 (I + II)** and **1.2.5** have arguably a greater importance but are less clearly linked to an individual policy.

The relation between indicator **1.2.2** and its objective does not become clear. Whereas the objective aims at a better integration of research institutions in international R&D networks, the indicator appears to measure an outcome that is a relevant measure for the integration between research institutions and the private sector and civil society. Indicator **1.1.1 (II)** might better be defined in per capita terms than per unit of GDP. Defined as unit per GDP, the indicator might show the same value for highly innovative region that has a high GDP and for a less innovative region that has a lower GDP. Innovation is a main factor in influencing GDP and both variables tend to move together. If a region becomes more innovative and therefore increases its GDP, the improvement in innovativeness would not necessarily be reflected in an indicator that is defined as patents per unit of GDP.

Further indicators related to the thematic objective

A widely used and regionally disaggregated outcome indicator that measures innovative activities of businesses is the **Number of Patent Applications per Inhabitants**.²¹ It is one of the most widely used indicators of private sector innovative activity.

The *Innovation Union* project of the European Commission²² assembles a composite indicator for the innovative potential of EU countries from 25 individual indicators. Several of these indicators are similar to the ones currently proposed. Others could potentially be used to measure further outcomes in the field of research, development and innovation.

Thematic Objective 2: Enhancing access to, and use and quality of, information and communication technologies

Ind. No	Specific Objective	Outcome Indicator	Unit
2.1 (I)	Improve the availability and encourage the use of online services provided by the public administration and improve the efficiency of management, contributing to an improved performance of the state in its interactions with citizens and	Share of municipalities that allow the online submission of forms.	% of municipalities
2.1 (II)		Share of businesses with 10 or more employees who interacted electronically with public authorities	% of businesses

21. See for example OECD (2013a).

22. See European Commission (2014c).

Ind. No	Specific Objective	Outcome Indicator	Unit
2.1 (III)	businesses.	Share of people aged 16 to 74 who have printed or submitted forms electronically in the past 12 months	% of people

Overview of the objective

Thematic Objective 2 aims at increasing scope and effectiveness of ICT utilisation. It has a single Specific Objectives that focuses on improving the usage and efficiency of online services within the public administrations and in its interactions with the public.

The objective is broadly formulated and actually contains two outcomes that are supposed to be achieved by increasing the availability of online services (i.e. improving interactions with the public, improving the efficiency of management structures). Both are supposed to improve the performance of the state in its interactions with citizens and businesses. Essentially, the objective contains a small hierarchy of policy objectives. The overarching goal is to improve the performance of the state in its interactions with the public, and the two detailed outcomes mentioned are supposed to contribute to it.

It might be desirable to split these outcomes into separate objectives and develop individual indicators for them. This could improve the understanding how the two different outcomes contribute to achieving the overarching objective.

Evaluation of the indicators

Indicators **2.1 (II)** and **2.1 (III)** measure the share of individuals and businesses that interact electronically with the public administration. These are generally valid outcome measures that are well suited to monitor the spread of e-government. Although they are appropriate outcome indicators, they refer only to one of the two outcomes mentioned in the Specific Objective. As mentioned above, it would therefore be useful to split the Specific Objective to clarify to which outcome the indicators refer.²³

In contrast to Indicator **2.1 (II)** and Indicator **2.1 (III)**, Indicator **2.1 (I)** is an output indicator instead of an outcome indicator. Allowing for the online submission of forms is an essential step to increase online interactions between the administration and the public, but it is not guaranteed that the offer to submit online forms is actually taken up by the public. Indicator **2.1 (I)** could therefore be a suitable output indicator that complements the outcome indicators **2.1 (II)** and **2.1 (III)**.

Further indicators related to the thematic objective

Thematic Objective 2 refers to ICT use in general, whereas the Specific Objectives refer to the use of ICT in the context of the public administration. Accordingly, the indicators focus entirely on outcomes related to the public administration. In order to capture the broader scope of the Thematic Objective, indicators that are related to ICT use in all societal and economic contexts could be employed. The *OECD Guide to Measuring the Information Society*²⁴ presents an overview of such measures, discusses their strengths and weaknesses and presents guidelines on how to collect the information. Among the most

23. In fact, the Investment Priority specified by the European Commission that is associated to the policy refers only to the spread of e-government. Thus, the indicators seem appropriate, but their interpretation is complicated by the associated Specific Objective.

24. See OECD (2011).

relevant and straightforward measures that extend beyond the context of the public administration are the **Share of Households with a Computer** and the **Share of Households with a Broadband Internet Connection**.

Thematic Objective 3: Enhancing the competitiveness of small and medium-sized enterprises, the agricultural sector and the fisheries and aquaculture sector

Ind. No.	Specific Objective	Outcome Indicator	Unit
3.1	Promote skilled and creative entrepreneurship.	Share of business creations in high-tech, medium-high-tech and knowledge intensive sectors among total business creations	% of businesses
3.2	Strengthen corporate training for internationalisation, promoting exports and international visibility of Portugal.	Share of exports in the total revenues of SMEs	% of revenues
3.3	Strengthen managerial capacities of SMEs to develop products and services.	Share of businesses (within the categories CAE Rev. 3, B to H, J, M and Q) with 10 or more employees that are innovation-active	% of businesses

Overview of the objective

Thematic Objective 3 targets the competitiveness of small and medium enterprises (SMEs). The Specific Objectives aim at bolstering entrepreneurship; strengthen the capacity for internationalisation and innovation; and improving financing conditions. All Specific Objectives are highly relevant for the Thematic Objective and cover distinct aspects of the competitiveness of SMEs.

Evaluation of the indicators

All indicators are suitable for their objectives. The measured outcomes are generally important and related to the Specific Objectives. As they measure relatively high-level outcomes, it should be verified that they are sufficiently responsive to the policies proposed under the objective. For example, the share of exports in total revenues of SMEs (proposed as indicator 3.2) depends on a variety of factors. Policies that have small scales are unlikely to have a measurable impact because their effects on the outcome would be overshadowed by other developments. If the policies proposed under the respective Specific Objectives are small in magnitude, they might be better monitored by an outcome that is more directly related to the proposed policies. Similarly, indicators 3.1 and 3.3 are high level outcomes that are influenced by the outcomes specified in their objectives, but also by many other factors.

One caveat regarding indicators 3.1 – 3.3 comes from their definition as fractions. As mentioned above, it is generally preferable to define an indicator as a fraction. However, whenever a denominator fluctuates strongly over time, it might be that an indicator increases simply due to a decrease in the denominator, even though no positive development in the numerator has occurred. Therefore, special attention should be paid whether this is occurring. If it happens frequently, it might be preferable to normalise the indicator with a different denominator or forego normalisation completely.

Further indicators related to the thematic objective

A widely known indicator related to the Thematic Objective is the World Bank's *Doing Business* Index and its sub-indices.²⁵ While the indices do not refer explicitly to SMEs, they nevertheless capture many outcomes that are crucial for the competitiveness of a country's SMEs. Three of the sub-indices are particularly relevant in the context of the Specific Objectives. The **Ease of Starting a Business** and the **Ease of Getting Credit** are related to **3.1**, the **Ease of Trading Abroad** is related to **3.2**. However, it should be kept in mind that the *Doing Business* indices refer primarily to the regulatory environment. Thus, even though they capture many of the factors related to competitiveness, they do not cover all relevant dimensions of it.

Thematic Objective 4: Supporting the shift towards a low-carbon economy in all sectors

Ind. No.	Specific Objective	Outcome Indicator	Unit
4.1 (I)	Diversification of the energy supply towards renewable sources, using the domestic potential for renewables.	Renewable energy produced by supported technologies	MW
4.1 (II)	Connecting the electricity grid to the new sources and reducing energy dependence.	Share of renewables in the Madeira region	%
4.1 (III)		Share of renewables in electricity production	%
4.2 (I)	Increasing the energy efficiency of businesses by supporting energy saving measures.	Primary energy consumption of businesses	Tonnes of oil equivalent
4.3 (I)	Increasing the energy efficiency of public infrastructure by implementing energy saving measures in the regional and local administration.	Primary energy consumption of regional and local governments	Tonnes of oil equivalent
4.3 (II)	Increasing the energy efficiency of infrastructure of the central administration.	Primary energy consumption of central administration buildings	Tonnes of oil equivalent
4.3 (III)	Increasing the energy efficiency of the housing sector.	Primary energy consumption of private housing	Tonnes of oil equivalent

25. See <http://www.doingbusiness.org>. Although the *Doing Business* indicators are well known, they are not without criticism. An independent panel appointed by the World Bank listed several shortcomings, among them a narrow information base, the potential to be misinterpreted and shortcomings in its data collection method (see World Bank, 2013).

Ind. No.	Specific Objective	Outcome Indicator	Unit
4.3 (IV)	Increasing the energy efficiency of the housing sector by implementing energy saving and renewable energy projects in social housing.	Share of social housing with energy classification	% of social housing
4.4 (I)	Providing consumers with the information and the tools they require for using energy efficiently. Create the conditions for the development of a smart grid in order to increase synergies and save costs.	Share of energy contracts using smart meters	% of contracts
4.5 (I)	Encourage initiatives aimed at reducing carbon emissions from the economy and society. Support the development of new models of low carbon transport, measures for carbon sequestration and new patterns of energy consumption.	Estimated greenhouse gas emissions	Tonnes of CO ₂
4.5 (II)	Support the implementation of energy efficiency and rationalisation measures in the public transport sector.	Reduction of primary energy consumption in the public transport fleet	Tonnes of oil equivalent
4.5 (III)	Promote the use of environmentally friendly transport.	Number of registered electric vehicles	Number of vehicles
4.5 (IV)		Number of trips in the public transport system	Number of trips

Overview of the objective

Thematic Objective 4 aims at facilitating the transition towards a low carbon economy through a shift towards renewable sources of energy and a general reduction in energy consumption. It contains nine Specific Objectives that can all contribute to the transition to a low carbon economy. The Specific Objectives vary considerably in their scope and their specificity. Objectives related to indicators **4.1 (I + II)**, **4.5 (I)** and **4.5 (III)** are high level objectives with broad and ambitious goals that aim at fundamental changes in the general patterns of energy production and consumption. Most likely, they require a large set of coordinated policies to be successfully addressed. In contrast, the objectives related to the remaining indicators are more narrowly defined low-level objectives that aim at energy savings in clearly defined areas and can be addressed by individual targeted policies.

Evaluation of the indicators

The proposed indicators cover a range of outcomes that are directly or indirectly related to energy consumption and carbon emissions. According to the varying scope of the objectives, the specificity of the proposed indicators varies strongly. Indicators **4.1 (I) – 4.1 (III) and 4.5 (I)** are very general, indicators for **4.3 (I) – 4.4 (I)** very specific. All indicators are generally suitable to monitor the outcomes to which they refer.

Some of the proposed indicators for this Thematic Objective would benefit from being normalised by a relevant denominator (in other words, expressing the indicator as a share or fraction). As discussed earlier, such a normalisation has three advantages. Firstly, shares or fractions are often easier to understand and to communicate than absolute values. For example, using the share of electric vehicles as an indicator for **4.5 (III)** instead of the total number of electric vehicles helps to clarify their overall importance among the stock of all vehicles. Second, normalised indicators are easier to compare across different countries. Third, shares or fractions can prevent indicators from being unduly influenced by factors that are not related to the policy monitored by the indicator. For example, the number of registered cars fluctuates with the business cycle – it increases during booms and stagnates or decreases during recessions. Using the share of electric cars as indicator would remove such confounding factors from the indicator.

Indicators **4.1 (I)** could be normalised by total energy consumption in Portugal. Indicator **4.2 (I)** could be normalised by the GVA of affected businesses in order to obtain a measure of their energy efficiency. In order to make the development over time more obvious, indicator **4.3 (I) – 4.3 (III)** might be normalised by a base year (i.e. 2014 could be represented by the value 100 and all subsequent values are proportional to this). Indicator **4.5 (I)** could be represented as the percentage reduction in carbon emissions.

Further indicators related to the thematic objective

Thematic Objective 4 has the advantage that it refers directly to an outcome that is unambiguous and relatively easily measurable – the amount of carbon emissions of the economy. Accordingly, two indicators are obvious choices to measure progress towards this goal. **Carbon Emissions per Unit of GDP** directly measures the carbon efficiency of the economy and is therefore most closely associated with the Thematic Objective. Furthermore, the indicator has the advantage that it measures the carbon efficiency of the economy without being directly influenced by fluctuations in the economic activity. However, in terms of environmental impact, the absolute amount of emitted carbon is the relevant measure. Therefore, **Total Carbon Emissions** is an indicator that captures the direct environmental impact more closely.

In order to track progress of individual sectors towards achieving the Thematic Objective, other possible indicators could show the carbon efficiency of specific sectors. The *UN Sustainable Development Solutions Network*²⁶ proposes **Carbon Emissions per Kilowatt Hour** as a measure of carbon efficiency in electricity generation and likewise **Carbon Emissions per Vehicle Kilometre** as a measure of carbon efficiency of the transport sector. Following the pattern of normalising carbon emission from a sector with a measure of the output of the sector, indicators of carbon efficiency could be created for almost any sector. However, just as **Carbon Emissions per Unit of GDP** and **Total Carbon Emissions** are both relevant indicators, also **Total Carbon Emissions per Sector** might be used. Total sectoral emissions can

26. See <http://unsdsn.org/resources/goals-and-targets/goal-8-curb-human-induced-climate-change-and-ensure-sustainable-energy/>.

be an important indicator in addition to carbon efficiency of a sector, because in some instances overall emissions from a sector can actually increase due to increases in efficiency.²⁷

Thematic Objective 5: Promoting climate change adaptation, risk prevention and management

Ind. No.	Specific Objective	Outcome Indicator	Unit
5.1 (I)	Strengthen the capacity to adapt to climate change by adopting cross-sectoral and cross-regional measures.	Share of strategies and plans concerning climate change adaption that is implemented	%
5.1 (II)		Regions with tools to identify risks and vulnerabilities	%
5.2 (I)	Improve the resilience against disasters	Increased resilience against disasters and collective threats	%
5.2 (II)	Protect coastal areas and their population from risks, especially due to coastal erosion.	Length of coastline in critical condition where interventions occurred	%
5.2 (III)		Length of coastline in critical condition	%
5.2 (IV)	Improve risk management with a focus on resilience and improve the capacity of the involved organisations.	Number of active forest fires that last more than 24 hours	Number of fires

Overview of the objective

Whereas Thematic Objective 4 is related to climate change mitigation, Thematic Objective 5 deals with climate change adaption and risk management. It contains four Specific Objectives. Three of them are broadly formulated and aim at increased capacity for climate change adaption, better risk management and improved resilience against disasters. In contrast, the objective related to indicator **5.2 (II + III)** is narrower and focuses on the protection of coastal areas against erosion.

All objectives state a desired outcome, which generally facilitates the development of indicators. However, the objectives related to indicators **5.1 (I)** and **5.2 (I)** do not specify who or what is supposed to be targeted by the policies under the objective. It is unclear whether the capacity and resilience of the public administration, businesses or households should be improved, even though this information is crucial to judge the adequacy of an indicator.

Evaluation of the indicators

The indicators under Thematic Objective 5 are mostly suitable to document progress in achieving the Specific Objectives. However, it seems likely that Indicator **5.1 (I)** mostly measures outputs instead of outcomes. Implementing plans to improve the capacity to adapt to climate change is a prerequisite to

27. This can happen because increased resource efficiency lowers the price of a product, which increases the demand for the product. The increase in demand can sometimes outweigh the initial increase in efficiency so that in total more carbon is emitted.

achieve the objective, but it is uncertain if the implemented plans are actually effective in improving the capacity to adapt to climate change.

Indicator **5.2 (I)** appears generally suitable, but it is not obvious what the indicator is supposed to measure. For the suitability of the indicator it is crucial that an appropriate measure of resilience is used. Indicator **5.2 (II)** measures the length of coastline, at which protective interventions occurred. As this provides no information on whether the interventions are successful, it should be considered an output indicator. In this context, Indicator **5.2 (III)** is a more suitable indicator because it shows directly if the interventions were effective in reducing the length of coastline in critical condition. Indicator **5.2 (IV)** measures an important outcome, but it seems to be narrower than the broadly defined objective. If the focus of the Specific Objective is actually the prevention of forest fires, it could be stated more explicitly in the objective. If the objective aims at improved risk management in a broader context, it would be desirable to develop an indicator that captures also the dimensions of risk management that go beyond forest fires.

Further indicators related to the thematic objective

Climate change poses distinct challenges to each country, as the negative consequences vary depending on the climatic and geographic conditions. Indicators therefore need to be specific to the local risks and vulnerabilities. The German Federal Environmental Agency (*Umweltbundesamt*) has developed an indicator framework in order to monitor adaptation to climate change in Germany.²⁸ It proposes more than 100 indicators from ten action fields and evaluates them regarding their information content and the feasibility of collecting them.

The United Kingdom’s Committee on Climate Change (CCC) has developed a set of indicators²⁹ in six different subject areas. Each subject area contains a mix of indicators that describe the current conditions and indicators that focus on adaptation measures. For example, as inland flooding is a major risk associated with climate change in the UK, one indicator describing the current conditions contains the **Number of Buildings in Flood Prone Areas** and another indicator describing adaptation measures contains the **Annual Number of Building Permits Issued in Flood Prone Areas**. Similar measures could for example be used for areas that are at risk of other natural disasters, such as wildfires.

Thematic Objective 6: Protecting the environment and promoting resource efficiency

Ind. No.	Specific Objective	Outcome Indicator	Unit
6.1 (I)		Preparation for reuse or recycling of urban waste	%
6.1 (II)	Increase the recovery of resources through recycling, thereby reducing the amount of waste that is produced and deposited on landfills.	Share of urban waste that is reused or recycled	%

28. See Umweltbundesamt (2010) (<http://www.uba.de/uba-info-medien-e/4031.html>).

29. See <http://www.theccc.org.uk/charts-data/adaptation-indicators/>.

Ind. No.	Specific Objective	Outcome Indicator	Unit
6.2 (I)	Optimise the management of and sewerage infrastructure, thereby ensuring the quality of the service and the sustainability of the system in the urban water cycle.	Share of accommodations served by water supply infrastructure rated at least satisfactory on the Index of Improvements in Water Supply	% of accommodations
6.2 (II)		Share of accommodations served by sewerage infrastructure rated at least satisfactory on the Index of Improvements in Water Supply	% of accommodations
6.2 (III)		Quality of water distributed for human consumption	%
6.2 (IV)	Optimise the management of water resources in particular with respect to utilisation, protection and recovery of water, thereby improving the quality of water bodies.	Share of water bodies that improved from “less than good” to “good or better”	% of water bodies
6.3 (I)	Promoting the cultural and natural heritage of regions and advertise the regions as tourist destinations.	Number of overnight stays in hotels, resorts, apartments and other tourist facilities	Number of overnight stays
6.4 (I)	Improve the knowledge and management of biodiversity, ecosystems and geological resources.	Share of species and habitats with known conservation status (based on the Birds and Habitats Directives)	% of species and habitats
6.5 (I)	Promote the environment and the quality of landscapes and urban areas as distinctive factors of regions.	Satisfaction of residents living in areas with integrated urban development strategies	Scale 1 – 10
6.5 (II)	Restore and clean old industrial sites, thereby mitigating their environmental impact.	Share of contaminated industrial sites designated as priority liabilities where interventions have occurred	% of sites
6.5 (III)		Share of old mining/quarrying sites designated as priority liabilities where interventions have occurred	% of sites
6.5 (IV)		Equipment for monitoring air quality in the CCDR LVT network the meets European quality requirements	%

Overview of the objective

Thematic Objective 6 contains Specific Objectives that focus on environmental protection, resource efficiency and the promotion of natural and cultural assets for tourism. They cover a variety of topics that are related to the Thematic Objective. However, they exclude energy efficiency and carbon emissions because these topics belong to the separate Thematic Objective 4. Similarly, environmental aspects relating to climate change adaptation are summarised under Thematic Objective 5.

All Specific Objectives are clear about their aims and are directly related to desirable outcomes. This facilitates the definition of suitable output and outcome indicators that correspond to the objectives.

Evaluation of the indicators

Almost all indicators proposed under Thematic Objective 6 are well-suited outcome indicators for the respective Specific Objectives. Indicators **6.1 (II)**, **6.2 (I)**, **6.2 (II)**, **6.2 (IV)**, **6.3 (I)**, **6.4 (I)**, **6.5 (I)**, **6.5 (II)**, and **6.5 (III)** are closely related to their objectives, well-defined, measurable and relevant outcomes.

Indicators **6.1 (I)** and **6.2 (III)** are difficult to assess because it does not become obvious from the available information how the respective outcomes are measured. While the indicators might be perfectly suitable outcome indicators, they cannot be evaluated without additional information regarding their measurement.

Indicator **6.5 (I)** is a perception based indicator that would most likely be collected through surveys. While public satisfaction with the quality of the environment is a highly relevant outcome, the required effort to collect it regularly is considerable. When choosing such an indicator, it should therefore be ensured that it can be collected in regular intervals and at reasonable costs for the foreseeable future.

Further indicators related to the thematic objective

Most Specific Objectives under TO6 are related to environmental issues. Nevertheless, they refer to very distinct outcomes. Therefore, no indicators exist that represent the entire Thematic Objective without prioritising some outcomes over others. The OECD has defined *Key Environmental Indicators*³⁰ in 10 areas, several of which are very closely related to issues that are part of Thematic Objective 6. The corresponding report distinguishes between indicators that are currently available in most OECD countries and those that could be developed in the medium term and could provide input for the development of further indicators.

Norway has defined more than 60 environmental objectives and their corresponding indicators. The indicators are published online and the status of each indicator is visualised by a clear colour scheme.³¹ Data collection is currently ongoing and there is data available for approximately one third of the listed indicators. The United Kingdom publishes *Biodiversity Indicators in Your Pocket*³². It contains 25 indicators on biodiversity and a wealth of additional data and indicators. The data is visualised very clearly through colour schemes that show progress and setbacks in the indicators and furthermore distinguishes between short-term and long-term developments.

30. See OECD (2012a).

31. See <http://www.environment.no/Goals-and-indicators/>.

32. See Department for Environment, Food and Rural Affairs (2014).

Thematic Objective 7: Promoting sustainable transport and removing bottlenecks in key network infrastructures

Ind. No	Specific Objective	Outcome Indicator	Unit
7.1	Development of freight transport and logistics infrastructure as part of the TEN-T programme.	Modal share of rail freight	% of total freight
7.2	Development of a low carbon transport and logistics infrastructure.	Number of container tons handled continental ports not part of TEN-T	Tonnes
7.3	Improve the competitiveness of the heavy rail and light rail systems.	Number of trains on the Douro and West lines	Total km travelled by trains on the lines

Overview of the objective

Thematic Objective 7 covers three Specific Objectives regarding the state of Portugal's transport system. It aims at developing core parts of the transport network within the EU's TEN-T programme, at increasing links between the core and the peripheral network and at strengthening rail transport and other forms of low carbon transport.

The Specific Objectives concern policy outcomes at different levels on the hierarchy of objectives. Some are aimed at a general improvement in the transport system, whereas others focus on specific areas, such as rail or sea transport. All Specific Objectives have in common that they are explicit about their goals, thus facilitating the development of outcome indicators.

Evaluation of the indicators

Almost all indicators proposed under the Thematic Objective measure outcomes related to the state of the transport system. Indicator **7.1** is a suitable indicator for its objective because the TEN-T programme of the European Union focuses on the improvement of rail infrastructure in Portugal.

Indicator **7.2** measures a relevant outcome, but at a narrower level than specified by the objective. Whereas the outcome has the broad aim of developing a low carbon transport and logistics infrastructure, the indicator only captures a partial aspect of it. In addition the importance of container shipping that is captured by the indicator many other factors can contribute to reducing carbon emissions in the transport sector.

Similarly to the previously mentioned indicators, indicator **7.3** is narrower than its specific objective. Whereas the objective aims at a general improvement in the competitiveness of rail infrastructure, the indicator focuses only on the number of trains on two individual lines. Furthermore, number of trains is only an imperfect measure of the success of the train lines. A better measure could be the modal share of freight between locations served by the train lines.

Further indicators related to the thematic objective

The U.S. *Interagency Partnership for Sustainable Communities*³³ defines sustainable transport as transport that meets environmental, social, and economic goals. Within each of these fields there are indicators that measure core aspects. The U.S. Environmental Protection Agency provides 12 sample indicators in their *Guide to Sustainable Transport Measurement*³⁴. Among them is the **Average Carbon Intensity of Transport** as measured by the daily amount of emitted carbon of the transport sector and **Public Transport Availability** (using different measures of availability).

Eurostat provides a small set of core indicators related to sustainable transport.³⁵ It contains the **Energy Consumption of Transport Relative to GDP**, the **Modal Splits of Passenger Transport**, the **Modal Split of Freight Transport** (the modal split indicates the share of people or goods that use each type of available transport), **People Killed in Traffic Accidents** and **Price Indices for Transport**.

Thematic Objective 8: Promoting employment and supporting labour mobility

Ind. No.	Specific Objective	Outcome Indicator	Unit
R.08.01 .01.E	Sustainably re-integrate the unemployed and inactive into the labour market.	Share of employees that obtain support six months after the end of the programme	% of participants
R.08.01 .02.E		Share of employees that remain employed with a company 6 months after the end of the programme	% of participants
R.08.01 .03.E		Share of participants that are in an internship at a local government 6 months after the end of the programme	% of participants
R.08.02 .01.E	Integrate youths into the labour market by increasing access to opportunities and job duration.	Share of youths that obtain support six months after the end of the programme	% of participants
R.08.02 .02.E		Share of youths that are employed six months after participating in support programme	% of participants
R.08.02 .01.C.IE J	Increase the employability of young people and integrate them into the labour market in a sustainable way through the	Long-term unemployed reaching the end of the intervention supported by IEJ (ICC)	% of participants

33. The partnership is a collaboration between the Department of Housing and Urban Development, the Department of Transport and the Environmental Protection Agency of the United States. See <http://www.sustainablecommunities.gov/> for further information.

34. See EPA (2011).

35. See <http://epp.eurostat.ec.europa.eu/portal/page/portal/sdi/indicators/theme7>.

Ind. No.	Specific Objective	Outcome Indicator	Unit
R.08.02 .02.C.IE J	development of relevant skills. In particular, focus on those not in employment, education or training (NEET).	Long-term unemployed who have started to study, to participate in training programmes, to work or to be self-employed since the end of the participation in the intervention (ICC)	% of participants
R.08.02 .03.C.IE J		Long-term unemployed who receive an offer of employment, continuing education, apprenticeship or internship	% of participants
R.08.02 .04.C.IE J		Unemployed reaching the end of the intervention supported by IEJ (ICC).	% of participants
R.08.02 .05.C.IE J		Unemployed who have started to study, to participate in training programmes, to work or to be self-employed since the end of the participation in the intervention (ICC).	% of participants
R.08.02 .06.C.IE J		Unemployed who receive an offer of employment, continuing education, apprenticeship or internship.	% of participants
R.08.02 .07.C.IE J		Inactive people participating in the intervention who receive an offer of employment, continuing education, apprenticeship or internship.	% of participants
R.08.02 .08.C.IE J		Inactive people participating in the intervention reaching the end of the intervention supported by IEJ.	% of participants
R.08.02 .09.C.IE J		Share of participants who are in full employment 6 months after completion of the training.	% of participants
R.08.02 .10.C.IE J		Participants in training programmes who have an internship or apprenticeship 6 months after the end of the programme	% of participants
R.08.02 .11.C.IE J		Participating employees who are in an apprenticeship 6 months after the end of the programme	% of participants
R.08.02 .12.C.IE J		Participants who are self-employed six months after the end of the programme	% of participants

Ind. No.	Specific Objective	Outcome Indicator	Unit
R.08.03 .01.E	Encourage business foundation and self-employment among unemployed, disadvantaged and inactive individuals.	People supported that are employed or self-employed 12 months after the end of the support	% of supported individuals
R.08.04 .01.E	Increase the quality of employment by supporting greater flexibility in working hours, foster the labour market integration of parents and in particular mothers and support gender mainstreaming of employers. Improve the compatibility of work with family life for women and men.	Supported businesses that implement plans and evaluations of gender equality	% of businesses
R.08.04 .02.E		Share of employees that obtain support six months after the end of the programme	% of employees
R.08.04 .03.E	Increase the number of economically independent women by supporting self-employment and business creation by women.	Share of supported women who set up a business or start self-employment within 6 months after the end of the training	% of participants
R.08.04 .04.E	Improve the employability of the unemployed and individuals at risk of unemployment by increasing their adaptability through the development of relevant skills.	Unemployed participants who acquired skills or professional credentials	% of participants
R.08.05 .05.E		Employees who keep their job for at least 6 months after participating in a training	% of participants
R.08.07 .01.E	Modernise institutions that are supporting the labour market – in particular the public employment service – to maximise effectiveness and	Share of job seekers and employers that register their job search online	% of job seekers and employers
R.08.07 .02.E	Improve the institutional capacity of social partners with a seat on the CPCS.	Surveyed associations who recognised an improved performance of the social partners.	%
R.08.08 .01.E	Encourage business foundation and self-employment among unemployed, disadvantaged and inactive individuals.	Jobs created	Number

Ind. No.	Specific Objective	Outcome Indicator	Unit
R.08.09 .01.E	Promote the economic recovery of endogenous resources in areas of low density, through the stimulation of specific strategies to promote territorial competitiveness	Multiplier effect of public investment on private investment	Number

Overview of the objective

Thematic Objective 8 aims at improving labour market conditions in a variety of different sub-fields. Within the Thematic Objective, there are eleven Specific Objectives and 27 indicators. Approximately half of the Specific Objectives aim directly at increasing employment levels, generally through better training of labour force participants, but also through other measures such as supporting self-employment. The other half focuses on various issues such as gender equality, institutional improvements related to the labour market and support for particularly highly qualified employees.

Most objectives are specific and aim at clearly defined outcomes for particular sub-populations. Among all Specific Objectives, the one relating to indicators **R.08.01.01.E** – **R.08.01.03.E** is the most general one, as it essentially aims at a broad based reduction in unemployment. Almost all objectives are directly connected to an inherently desirable outcome, thus facilitating the development of suitable outcome indicators.

Evaluation of the indicators

Most indicators within Thematic Objective 8 are very specific to particular policies. They refer to individuals or businesses that have been supported by a particular support programme, such as a training to increase their skills. The indicators are defined as the respective share of people, businesses or organisations who participated in these programmes. For example, many indicators use the percentage of people who are in employment six months after the end of a training programme out of all participants in the training programme. Only the population who participated in the training are considered in the indicator. Such a definition has several important advantages and disadvantages.

The most important advantage of these indicators is that they are a good measure of the effect of a policy on those who are directly affected by it. Furthermore, the indicators clearly measure outcomes as it is a priori unclear what happens to people affected by a policy. Although the indicators cannot measure the causal impact of a policy, they are closer to such a measure than anything short of proper impact evaluations.³⁶ By focussing only on the participants of a support programme, many of the confounding factors that would affect other indicators are excluded. The indicators are therefore a good measure of the effectiveness of the particular programmes they monitor.

However, there are also disadvantages associated with such indicators. They do not capture the actual impact of a policy because they do not capture its scale. The indicators do not contain any information on

36. It is impossible to measure the causal effect of a policy using only an indicator because one does not know what would have happened in the absence of the policy. More concretely, an indicator can show what percentage of people who received a training are in employment. However, it does not show how many of those people would have been in employment without receiving the training. Therefore, one does not know how many people are in employment because they received the training. In order to find the causal effect, policy evaluations and in particular randomised trials are required.

how many people have participated in a particular support programme. A programme that succeeds in employing 50,000 out of its 100,000 participants would have the same indicator value as a programme that succeeds in employing 50 out of its 100 participants. None of the indicators provides any information on the actual impact of a policy on the labour market.

Another drawback is related to the fact that the indicators focus only on individual policies, whereas most specific objectives are broadly defined. This leads to a disconnection between objectives and their indicators because the effects of many other policies that affect the objectives are not captured by the indicators. Furthermore, unless the policies monitored by the indicator are expected to be in place over long time horizons, the indicators are not suitable to provide meaningful comparisons over time. Their definition would change every time the exact policy changes.

The discussion above shows that there are no perfect indicators. Depending on their particular role in the policy making process, indicators should be defined differently. In the current case, it might be desirable to keep the indicators in their current form as a way to monitor the effectiveness of individual programmes, but also to add another set of indicators that provide a better impression of the progress in achieving the Specific Objectives. These could focus on the bigger picture and could monitor the impact of sets of policies instead of individual policies.

Within their narrow focus, the indicators for Thematic Objective 8 are suitable outcome indicators. Whenever possible it is desirable to focus on a meaningful outcome (such as the employment status of individuals) instead of simply measuring the share of people who complete a training programme or similar interventions. The share of people who complete a training programme does not provide any information on the effectiveness of the programme and should therefore be considered an output measure instead of an outcome measure.

For Indicator **R.08.09.01.E**, further information regarding its definition and how it is supposed to be measured needs to be provided. The multiplier effect of public investment is an important concept in economic theory, but it is very difficult to quantify in practice. The quality of such an indicator would depend crucially on its exact definition.

Further indicators related to the thematic objective

The **Employment Rate** is a meaningful high-level outcome indicator. Using employment rates in contrast to unemployment rates has the advantage that they are not affected by labour force participation decisions, whereas unemployment rates will decrease when people drop out of the labour force. In other words, if an individual becomes too discouraged to look actively for work, he or she would not be captured in the unemployment statistic anymore and the unemployment rate would decrease even though no new jobs were created. In contrast, the employment rate is not affected by such decisions and is therefore a more robust measure of the state of the labour market. Furthermore, the employment rate can be calculated for different sub-populations (such as people over the age of 55, people without high-school degree, people with university degree, etc.) to provide more detailed information on their labour market situation.

A frequently used measure that puts a particular emphasis on the situation of the unemployed is the **Average Duration of Unemployment** (the measure is for example part of the *Indicators of Well-being in Canada*³⁷ that are published by the Canadian government). This measure essentially shows the ease with which unemployed can find a new job. It therefore combines general information on the state of the labour market with information on the conditions for the unemployed, a particularly vulnerable sub-population.

37. See Employment and Social Development Canada (2014).

Thematic Objective 9: Promoting social inclusion and fighting poverty

Ind. No.	Specific Objective	Outcome Indicator(s)	Unit
R.09.01.01.E	Strengthen interventions that enhance social inclusion according to their relevance and by promoting volunteering.	Entities that participate in accredited voluntary initiatives	%
R.09.01.02.E	Strengthen social cohesion and increase the number of people and vulnerable regions that are covered.	Share of participants (including CLDS) who are covered by active employment support or training programmes	%
R.09.01.03.E		Participants in the choice programme between 6 and 24 years of age, who have successfully completed the school year or were reinstated in school, training or employment.	%
R.09.01.04.E	Strengthen interventions that enhance social inclusion according to their relevance and by promoting volunteering.	Share of participants from disadvantaged groups who were certified at the end of the model training programme	%
R.09.01.05.E		Share of participants from disadvantaged groups that are certified at the end of the training programme	%
R.09.01.06.E	Promote a wide range of initiatives and organisations that encourage social inclusion and use innovative or experimental approaches.	Share of participants that are employed in the social sector 6 months after the end of the programme	%

R.09.01.09.E	Strengthen interventions that enhance social inclusion according to their relevance and by promoting volunteering.	Share of participants with disabilities that have been certified at the end of the training programme	%
R.09.03.02.E	Promote equal opportunities, a reduction of gender stereotypes, intercultural and interreligious dialogue, and the inclusion of marginalized communities. Combat discrimination, domestic violence and gender and human trafficking, through an integrated prevention strategy, and in particular through public awareness programmes, training and support of stakeholders, monitoring, protection and empowerment of victims.	Share of participants in strategic training sessions that completed their training	%
R.09.03.03.E		Share of victims that gave a positive evaluation of the support they received	%
R.09.06.01.E	Foster the creation of strategies for local socio-economic development by the respective communities.	Share of supported individuals that remain employed 12 months after the end of the support	%
R.09.07.01.E	Improve and adapt the current network of social and healthcare facilities to meet the needs of the population.	Degree of user satisfaction with supported interventions	Scale 1 – 10
R.09.07.03.E		Users enrolled in USF	%
R.09.08.01.E	Promote social inclusion in deprived urban areas through physical, economic and social regeneration programmes.	Satisfaction of residents in interventions areas	Scale 1 – 10
R.09.10.01.E	Foster the creation of strategies for local socio-economic development by the respective communities.	Multiplier effect of public investment on private investment	Number

R.09.04. 02.E	Broaden the scope of work of social and health services, adapting them to emerging needs and enhancing the transition from institutional care to community-based care.	Share of participants who complete training sessions for health and social service professionals	%
R.09.04. 06.E	Improve access and quality of health systems, social programmes, the provision of care, and the protection of children.	Completed social and health services projects aimed at diversification and quality improvements.	%
R.09.05. 01.E	Promote entrepreneurship and social innovation to improve the responsiveness of organisations in the social sector (OES) and contribute to their economic and financial sustainability, in particular through the adaption of new business models and funding schemes. This also includes improving the institutional capacity of partners on the National Council for the Social Economy (CNES) in order to obtain a multiplier effect for entities of this sector.	Share of supported innovation and social entrepreneurship projects that are completed with the help of financial instruments	%
R.09.05. 02.E		Surveyed organisations that perceive an improvement in the performance of CNES partners	%

Overview of the objective

Thematic Objective 9 aims at the promotion of social inclusion and a reduction of poverty and discrimination through economic and non-economic means. The Specific Objectives contain a diverse mix of policy goals that aim at intervening at different levels. Some policies are focussed on the capacity of the administration, others are addressed directly at individuals, and again others focus on NGOs and similar civil society organisations.

Some of the Specific Objectives explicitly suggest methods to achieve the objectives. Corresponding to the variety of policy goals, a wide spectrum of methods are proposed in this context. In some cases, the Specific Objectives call for infrastructure investments, while in other cases they refer to staff training programmes or organisational restructuring.

In the context of Thematic Objective 9, it is especially important to develop precisely defined outcomes. Several Specific Objectives use terms such as “social inclusion” that are not clearly defined or have several competing definitions. Therefore, they leave scope for interpretation regarding their aims and motivations. While this does not affect the merits of the objectives, it creates ambiguity about the aims of the objective. This ambiguity in turns makes it difficult to develop adequate outcome indicators. Well-defined outcomes are generally easier to quantify than ambiguous concepts. Furthermore, precise

definitions reduce the risk of developing indicators that measure outcomes that do not correspond to the objective.

Evaluation of the indicators

Defining outcome indicators for Thematic Objective 9 is difficult, because many Specific Objectives refer explicitly or implicitly to outcomes that are hard to quantify and to measure. Concepts such as social inclusion (indicators **R.09.01.01.E**, **R.09.01.04.E** – **R.09.01.05.E**, **R.09.01.06.E**, **R.09.01.09.E** and **R.09.08.01.E**) and discrimination (indicators **R.09.03.02.E** – **R.09.03.03.E**) often do not have obvious quantitative measures that can be used to capture progress towards policy objectives in these areas. Developing indicators for these concepts therefore implies translating qualitative perceptions into quantitative expressions, which can be challenging.

Several indicators refer to the share of individuals who successfully completed training and awareness programmes. Depending on the underlying definition of “successful completion”, such indicators can be output or outcome indicators. The indicators can only be considered outcome indicators, if it is ensured that successful completion and certification has tangible effects on the objective. If successful completion merely means attending the programme to the end, the indicator would be an output indicator that has unknown consequences on the desired outcome. This goes back to the fundamental difference between output and outcome indicators. Outcomes are never ensured to be achieved by an output. For example, participants of a programme to promote gender equality might or might not change their attitudes regarding gender roles. Thus, simply measuring the number of participants of such programmes is not informative whether or not they are effective in achieving the objective. Therefore, the indicators can be considered outcome indicators only if successful completion implies that a measurable change in attitudes has occurred.

In some cases, it is not obvious how the indicator is related to the policy objective (indicators **R.09.06.01.E**, **R.09.10.01.E**). This does not necessarily imply that the indicators are not suited to monitor the policy objective. However, it would be helpful to be more precise regarding the relation between objective and outcome. With respect to Indicator **R.09.10.01.E**, the same caveat as for indicator **R.08.09.01.E** applies.

In particular when outcomes are difficult to quantify it is important to be precise about the intended outcomes in the policy objectives. For example, instead of stating in an objective that social cohesion should be improved it might be useful to describe the desired change in outcomes more precisely. This can help to devise suitable measures by reducing uncertainty due to ambiguous objectives. If it is nevertheless impossible to develop a suitable outcome measure, it might be advisable for the sake of clarity to use no outcome indicator at all rather than an output indicator that cannot measure progress in the outcome. However, even in these cases, precise policy objectives should be specified to allow for a monitoring of the effectiveness of policies through other means.

Further indicators related to the thematic objective

The OECD suggests three methods to develop internationally comparable **indicators of discrimination of immigrants**:³⁸ comparisons of the salaries of natives and immigrants after statistically controlling for observable characteristics of individuals; self-reported perceptions of discrimination from surveys; and results from correspondence testing.³⁹ However, it recognises potential difficulties with the

38. See OECD (2012b).

39. Correspondence testing is the practice of sending hypothetical job applications to randomly selected employers who are unaware that the job applications do not come from real job seekers. The applications are identical except for

implementation of such indicators and recommends to carefully considering their suitability to the particular circumstances.

The *Australian Social Inclusion Board*⁴⁰ defined a set of indicators of social inclusion. Among them are the **Rate of Homelessness**, the **Rate of Teenage Mothers**, **Housing Affordability** (defined as the share of households that spend more than 30 per cent of their net incomes on housing) and the **Share of Household at Persistent Risk of Poverty** (defined as the share of households who had household incomes of less than 60 per cent of the median during at least one of the last three years).

The Share of Households with Incomes 60 per cent Below the Median is often used as a measure for the number of **People at Risk of Poverty**. As this only takes relative incomes into account, it is often augmented by share of people living in **Material Deprivation**, which refers more directly to absolute purchasing power. Ireland for example bases the measure on a list of 11 basic items and activities.⁴¹ People who cannot afford two or more of those items and activities are considered to be living in material deprivation. The overlap of the people who are at risk of poverty and those who live in material deprivation is considered the **Share of People in Consistent Poverty**.

Government at a Glance by the OECD contains indicators that are related to inclusion in access to public services.⁴² For example, it provides measures of **Out-of-pocket Expenditures for Public Services**, for **Tuition Fees as Per Cent of Disposable Income** and the **Share of Legal Cases for Which Legal Aid Has Been Granted**. Even though these indicators represent only one out of many aspects of social inclusion, they are important because they are very responsive to public policy.

Thematic Objective 10: Investing in education, skills and lifelong learning

Ind. No.	Specific Objective	Outcome Indicator(s)	Unit
R.10.01 .01.E	Combat early school leaving through greater efficiency of the education and training system.	Graduates with offers for training at ISCED3-level	%
R.10.01 .02.E	Increase educational attainment and reduce dropout rates.	Graduates with offers for training at ISCED2-level	%
R.10.01 .03.E	Improve the quality and efficiency of the pre-school, primary and secondary education system.	Supported students at ISCED2 level that are retained the following school year.	%

the names of the job applicants. Some applications contain names with an obvious native connotation whereas others contain names with an obvious foreign connotation. The difference between the share of hypothetical job seekers with native names and those with foreign names that are invited to a job interview is a measure of discrimination.

40. The Australian Social Inclusion Board was an advisory body to the national government of Australia that was founded in 2008 and disbanded in 2013.

41. See <http://www.socialinclusion.ie/poverty.html>.

42. See OECD (2013b).

R.10.01 .04.E	Promote the educational success of students. Reduce the number of school dropouts. Help to struggling students (including those who already dropped out of education) to recover their educational career.	Share of schools progressing, approaching or exceeding the target value among all schools covered by projects that combat school failure.	%
R.10.01 .05.E	Increase enrolment in pre-school, primary school, and secondary school enrolment of children with special educational needs or from disadvantaged socio-economic context.	Share of children in pre-schools associated with development contracts	%
R.10.01 .06.E	Invest in factors that improve the quality, effectiveness and efficiency of the education system.	Teachers in primary and secondary education programmes that concluded training	%
R.10.01 .07.E		Students per school-psychologist or psychologist technician	Number of students per psychologist
R.10.02 .01.E	Increase the number of graduates with higher education degrees and improve guidance to the labour market for graduates.	Students supported by the School Social Action programme who completed the school year (ISCED level 5, 6 or 7)	%
R.10.02 .02.E	Increase the number of graduates by creating conditions for continued education at the ISCED level 5.	Certified students from senior technical professional courses (ISCED level 5)	Number
R.10.02 .03.E	Increase the number of PhDs and postdocs. Creating conditions for the completion of the respective study programs, a quality improvement framework and the improve the efficiency of higher education, in order to strengthen research, technological development and innovation in regional areas of smart specialization	Completed doctoral degrees	Number

R.10.03 .01.E	Improve the level of qualification of the adult population and strengthen guidance for young people not in employment, education or training.	Certificates from adult education and training courses	Number
R.10.03 .02.E		Supported students who obtained new qualifications	%
R.10.03 .03.E		Number of graduates with dual education, ISCED level 3 degrees	%
R.10.03 .04.E		Adults certified in RVC processes	%
R.10.04 .01.E	Increase the number of young graduates in teaching methods and improve their training in the workplace.	Graduates from ISCED level 3 dual certification courses	%
R.10.04 .02.E		Graduates from ISCED level 4 courses	%
R.10.04 .03.E	Increase the number of graduates in teaching methods and improve their training in the workplace	Teachers who have completed further training in the specified teaching methods	%
R.10.05 .01.E	Further modernise facilities for pre-school, primary, and secondary education and for vocational training. Thereby improve schooling and training conditions in these areas.	Share of students in primary and secondary schools that have been redeveloped	% of students
R.10.05 .02.E		Share of children in pre-school	% of children
R.10.05 .03.E		Share of EB1 students that have been integrated into the normal school system	%

Overview of the objective

Thematic Objective 10 contains a range of measures that aim at increasing the capacity and quality of the education system. It focuses on different types of education, ranging from pre-school education to post-graduate education and on-the-job training. Generally, most Specific Objectives under this Thematic Objective are clearly defined and unambiguous about the goals that are supposed to be achieved. However, the Specific Objective for indicators **10.01.06.E** and **10.01.07.E** should not refer to an investment programme. Instead, it should spell out the goals that are achieved by the investment programme.

In general, it is noticeable that despite their emphasis on the quality of education, no objective mentions learning outcomes of students directly.

Evaluation of the indicators

Most indicators are suitable outcome indicators to monitor the Specific Objectives proposed under Thematic Objective 10. By measuring the number of graduates at different stages of the educational career, indicators **R.10.02.02.E**, **R.10.02.03.E**, **R.10.03.03.E**, **R.10.03.04.E**, **R.10.04.01.E**, and **R.10.04.02.E** reflect one of the central outcomes of any education system. Most other indicators are equally relevant.

Indicator **R.10.01.07.E** is an output indicator instead of an outcome indicator. It does not measure if school psychologists are effective in improving the efficiency and effectiveness of the education system. Similarly, indicator **R.10.01.06.E** could also be considered an output indicator because it is not clear whether the training programme is an effective tool for achieving the objective. Instead of measuring outputs, the indicators should try to capture the goals that are supposed to be achieved by increasing the share of teachers that concluded training programmes and by increasing the number of school psychologists per student.

Although the indicators mentioned above are relevant outcome measures, they have a narrow focus and no indicator within the Thematic Objective refers to learning outcomes. As learning outcomes are a central focus of education policy, the inclusion of measures of learning or skills would ensure that another important dimension in this policy field is captured.

Education is a crucial element in improving the human capital of a country. However, it is a priori not ensured that all education and training courses are effective in conveying relevant qualifications. Therefore, a direct measure of the skills of the labour force would provide further information on whether relevant skills are taught. Similarly, it might be desirable to use measures of learning outcomes for students at other stages of their education career. This does not imply that these measures should replace indicators that focus on graduation rates, but they could provide valuable additional information on the quality of the education system.

Further indicators related to the thematic objective

As mentioned above, obvious candidates for further indicators are measures that focus on skill acquisition and learning outcomes. Such measures can potentially come from standardised tests taken during an ongoing education. Furthermore, recurring international evaluations such as the **OECD's PISA study**⁴³ provide an assessment of the development over time and furthermore allow for an international comparison in outcomes. They are well suited for international comparisons, but – due to their low frequency – are better in monitoring general trends over long time horizons than in monitoring the effects of individual policies.

The **OECD's PIAAC study**⁴⁴ is similar to the PISA study but measures skills of the adult population and could serve as a useful complement to the measures provided by the PISA study.

The Department for Education (DfE) in the United Kingdom uses several indicators to measure educational attainment of students and the performance of schools.⁴⁵ These indicators are generally based on student performance in standardised exams at different stages of their education career.

Basic educational attainment is measured by the share of students who achieve selected minimum learning outcomes at different ages. Obviously, these measures vary by grade and age. For example, for students aged 11, the indicator measures the **share of students who have basic reading and writing proficiency**.

Similarly, the DfE uses measures to monitor the share of students who perform above average. At age 16, for example, the indicators uses **the share of students who receive at least satisfactory grades in five**

43. See <http://www.oecd.org/pisa>.

44. See <http://www.oecd.org/site/piaac/>.

45. See <https://www.gov.uk/government/collections/dfe-input-and-impact-indicators>.

core subjects (Maths, English, history or geography, a science, a foreign language) in the British GCSE exams (the final lower secondary exams).

Thematic Objective 11: Enhancing institutional capacity and an efficient public administration

Ind. No.	Specific Objective	Outcome Indicator	Unit
11.1.1	Improve the provision of public services by increasing their capacity or by training employees in the public administration.	Share of most qualified participants in a training programme that belong to the civil service	% of employees
11.1.2	Train employees who are part of the redevelopment system to increase their job flexibility.	Employees who work in different functions in the public administration 24 months after being trained for better transferability as share of all employees	% of employees
11.2.1		Supported institutions that are involved in the promotion of capacity building and regional development	Number

Overview of the objective

Thematic Objective 11 focuses on the public administration and its capacity for service provision. It contains Specific Objectives that refer to capacity building within public institutions and to redeveloping their structure.

Evaluation of the indicators

Outcome indicators related to institutional capacity are difficult to define because capacity is in general difficult to quantify. Accordingly, the proposed indicators vary in their suitability. Indicator **11.1.2** is an appropriate outcome indicator that shows if the training programme is effective in achieving greater flexibility among public employees. In contrast, indicator **11.2.1** measures an output not an outcome.

Indicator **11.1.1** is an outcome measure, but it is only partially related to the objective. In order to develop an indicator that is more closely aligned with the objective, it could be helpful to define more precisely in the outcome how public service provision should be improved and try to measure this improvement with an indicator.

Further indicators related to the thematic objective

Many existing indicators related to institutional capacity are output indicators because institutional capacity is very difficult to quantify in a way that is comparable across institutions and coherent over time. The indicators that attempt to measure institutional capacity as an outcome are mostly perception based composite indicators and are generally subjective measures. Furthermore, they often lack transparency because they are composite indicators based on multiple aggregates. In other words, they

aggregate measures that are already aggregates of individual opinions and perceptions. This makes it difficult to assess what such indicators measure and how they are related to objectives.⁴⁶

The OECD's *Government at a Glance* provides several indicators that refer to the efficiency of the public sector.⁴⁷ They are generally high-level indicators such as the **Cost-Collection Ratio of Tax Revenues** (i.e. the administrative costs of tax collection divided by all collected tax revenues). Other useful indicators that are presented in *Government at a Glance* do not measure institutional capacity directly, but are strongly related to it. Among them are measures of **Public Trust in Government** and **Regulatory Enforcement**.

The Governance Report⁴⁸ and its associated data set published by the Hertie School of Governance assemble more than 150 different indicators related to public governance from different sources. The indicators vary in quality, but frequently provide innovative attempts to measure outcomes related to governance.

Staff surveys offer another possibility to assess institutional capacity. Employees in the public administration have a good understanding of the strengths and weaknesses of their organisation. Conducting structured surveys across representative groups of employees at regular intervals offers a cost effective way to utilise their knowledge.

APPENDIX 2 – INDICATORS CONTRIBUTING TO SCOREBOARD THEMES

The following tables provide lists of the evaluated indicators that are likely to contribute to each of the suggested themes for scoreboard indicators. The policies supported by the European Union only cover a small part of all the policies that influence the scoreboard indicators. As a consequence, the tables below do not include all factors that affect the suggested scoreboard indicators. Many relevant outcomes are not related to EU funded programmes and thus are not covered by the proposed indicators. In order to produce a comprehensive list of outcomes that affect scoreboard indicators, it would be necessary produce a complete mapping of objectives such as the one stylised in figure 3.

In many cases, it is not obvious whether or not an indicator contributes to a scoreboard indicator. Indicators contribute to higher level objectives with varying degrees of directness and varying degrees of certainty. For example, it is obvious that a reduction in the energy consumption of housing contributes to a reduction in carbon emissions. However, in other cases the relation is less immediate. Improving preschool education is likely to positively affect the number of university graduates, but it takes almost two decades for a preschool student to graduate from university, so there will be a 20 years gap between both outcomes. Furthermore, the exact magnitude by which an improvement in preschool education affects the number of university graduates is highly uncertain.

Even when the timing is more immediate than in the previous example the chain of causality can be unclear. For example, programs to foster gender equality might increase the employment rate because they

46. See Oman and Arndt (2010).

47. See OECD (2013b).

48. See Hertie School of Governance (2014) or www.governancereport.org.

encourage an increase in the labour force participation of women. While it is probable that such an effect exist, the exact mechanism by which gender equality affects the labour market are not conclusively established. Therefore, it is difficult to predict how improved gender equality affects labour market outcomes.

The lists below include only indicators that are likely to influence the scoreboard themes directly. In other words, they exclude indicators that plausibly affect a scoreboard theme but do so either by affecting other outcomes or through uncertain channels. However, due to the uncertainties involved, the lists below provide only an indication how indicators contribute to scoreboard themes and should be updated by Portuguese authorities according to their assessment of the situation.

Human capital

Increase the human capital level of the labour force

Indicator No.	Outcome Indicator
R.08.01.01.E	Share of employees that obtain support six months after the end of the programme
R.08.01.02.E	Share of employees that remain employed with a company 6 months after the end of the programme
R.08.01.03.E	Share of participants that are in an internship at a local government 6 months after the end of the programme
R.08.02.01.C.IEJ	Long-term unemployed reaching the end of the intervention supported by IEJ (ICC)
R.08.02.02.C.IEJ	Long-term unemployed who have started to study, to participate in training programmes, to work or to be self-employed since the end of the participation in the intervention (ICC)
R.08.02.03.C.IEJ	Long-term unemployed who receive an offer of employment, continuing education, apprenticeship or internship
R.08.02.04.C.IEJ	Unemployed reaching the end of the intervention supported by IEJ (ICC)
R.08.02.05.C.IEJ	Unemployed who have started to study, to participate in training programmes, to work or to be self-employed since the end of the participation in the intervention (ICC)
R.08.02.06.C.IEJ	Unemployed who receive an offer of employment, continuing education, apprenticeship or internship
R.08.02.07.C.IEJ	Inactive people participating in the intervention who receive an offer of employment, continuing education, apprenticeship or internship
R.08.02.08.C.IEJ	Inactive people participating in the intervention reaching the end of the intervention supported by IEJ

R.08.02.09.C.IEJ	Share of participants who are in full employment 6 months after completion of the training
R.08.02.10.C.IEJ	Participants in training programmes who have an internship or apprenticeship 6 months after the end of the programme
R.08.02.11.C.IEJ	Participating employees who are in an apprenticeship 6 months after the end of the programme
R.08.02.12.C.IEJ	Participants who are self-employed six months after the end of the programme
R.08.03.01.E	People supported that are employed or self-employed 12 months after the end of the support
R.08.04.03.E	Share of supported women who set up a business or start self-employment within 6 months after the end of the training
R10.01.01.E	Graduates with offers for training at ISCED3-level
R.10.01.02.E	Graduates with offers for training at ISCED2-level
R.10.01.03.E	Supported students at ISCED2 level that are retained the following school year.
R.10.01.04.E	Share of schools progressing, approaching or exceeding the target value among all schools covered by projects that combat school failure.
R10.01.05.E	Share of children in pre-schools associated with development contracts

Increase the number of highly educated individuals

Indicator No.	Outcome Indicator
R.10.02.01.E	Students supported by the School Social Action programme who completed the school year (ISCED level 5, 6 or 7)
R.10.02.02.E	Certified students from senior technical professional courses (ISCED level 5)
R.10.02.03.E	Completed doctoral degrees

Internationalisation and competitiveness

Rebalance the economy towards the tradable sector

Indicator No.	Outcome Indicator
1.2.3	Share of revenues used for R&D in the private sector
1.2.4	Share of businesses (within the categories ACE Rev. 3, B to H, J, M and Q) with 10 or more employees that are engaged in cooperation for innovation
1.2.5	Revenues from the introduction of new products as share of total revenues of innovation active businesses
3.1	Share of business creations in high-tech, medium-high-tech and knowledge intensive sectors among total business creations
3.2	Share of exports in the total revenues of SMEs
3.3	Share of businesses (within the categories CAE Rev. 3, B to H, J, M and Q) with 10 or more employees that are innovation-active

Strengthen public and private research and development

Indicator No.	Outcome Indicator
1.1.1 (I)	Number of top publications in scientific areas encompassed by smart specialisation strategies
1.1.1 (II)	European Patent Office patents per unit of GDP
1.2.2	Share of private funds (national and foreign) in the public R&D budget (excluding private R&D expenditures).
1.2.3	Share of revenues used for R&D in the private sector
1.2.4	Share of businesses (within the categories ACE Rev. 3, B to H, J, M and Q) with 10 or more employees that are engaged in cooperation for innovation
3.1	Share of business creations in high-tech, medium-high-tech and knowledge intensive sectors among total business creations
3.3	Share of businesses (within the categories CAE Rev. 3, B to H, J, M and Q) with 10 or more employees that are innovation-active
R.10.02.03.E	Completed doctoral degrees

Social inclusion and employment

Reduce Poverty

Indicator No.	Outcome Indicator
R.08.01.01.E	Share of employees that obtain support six months after the end of the programme
R.08.01.02.E	Share of employees that remain employed with a company 6 months after the end of the programme
R.08.01.03.E	Share of participants that are in an internship at a local government 6 months after the end of the programme
R.08.02.01.E	Share of youths that obtain support six months after the end of the programme
R.08.02.02.E	Share of youths that are employed six months after participating in support programme
R.08.02.01.C.IEJ	Long-term unemployed reaching the end of the intervention supported by IEJ (ICC)
R.08.02.02.C.IEJ	Long-term unemployed who have started to study, to participate in training programmes, to work or to be self-employed since the end of the participation in the intervention (ICC)
R.08.02.03.C.IEJ	Long-term unemployed who receive an offer of employment, continuing education, apprenticeship or internship
R.08.02.04.C.IEJ	Unemployed reaching the end of the intervention supported by IEJ (ICC)
R.08.02.05.C.IEJ	Unemployed who have started to study, to participate in training programmes, to work or to be self-employed since the end of the participation in the intervention (ICC)
R.08.02.06.C.IEJ	Unemployed who receive an offer of employment, continuing education, apprenticeship or internship
R.08.02.07.C.IEJ	Inactive people participating in the intervention who receive an offer of employment, continuing education, apprenticeship or internship
R.08.02.08.C.IEJ	Inactive people participating in the intervention reaching the end of the intervention supported by IEJ
R.08.02.09.C.IEJ	Share of participants who are in full employment 6 months after completion of the training

R.08.02.10.C.IEJ	Participants in training programmes who have an internship or apprenticeship 6 months after the end of the programme
R.08.02.11.C.IEJ	Participating employees who are in an apprenticeship 6 months after the end of the programme
R.08.02.12.C.IEJ	Participants who are self-employed six months after the end of the programme
R.08.03.01.E	People supported that are employed or self-employed 12 months after the end of the support
R.08.04.01.E	Supported businesses that implement plans and evaluations of gender equality
R.08.04.02.E	Share of employees that obtain support six months after the end of the programme
R.08.04.03.E	Share of supported women who set up a business or start self-employment within 6 months after the end of the training
R.08.04.04.E	Unemployed participants who acquired skills or professional credentials
R.08.05.05.E	Employees who keep their job for at least 6 months after participating in a training
R.08.07.01.E	Share of job seekers and employers that register their job search online
R.09.01.01.E	Entities that participate in accredited voluntary initiatives
R.09.01.02.E	Share of participants (including CLDS) who are covered by active employment support or training programmes
R.09.01.03.E	Participants in the choice programme between 6 and 24 years of age, who have successfully completed the school year or were reinstated in school, training or employment.
R.09.01.06.E	Share of participants that are employed in the social sector 6 months after the end of the programme
R.09.06.01.E	Share of supported individuals that remain employed 12 months after the end of the support
R.10.01.01.E	Graduates with offers for training at ISCED3-level
R.10.01.02.E	Graduates with offers for training at ISCED2-level
R.10.01.03.E	Supported students at ISCED2 level that are retained the following school year.
R.10.01.04.E	Share of schools progressing, approaching or exceeding the target value among all schools covered by projects that combat school failure.
R.10.01.05.E	Share of children in pre-schools associated with development contracts

R.10.03.01.E	Certificates from adult education and training courses
R.10.03.02.E	Supported students who obtained new qualifications
R.10.03.03.E	Number of graduates with dual education, ISCED level 3 degrees
R.10.03.04.E	Adults certified in RVC processes

Reduce the number of youths at risk of exclusion from the labour market

Indicator No.	Outcome Indicator
R.08.02.01.E	Share of youths that obtain support six months after the end of the programme
R.08.02.02.E	Share of youths that are employed six months after participating in support programme
R.08.02.01.C.IEJ	Long-term unemployed reaching the end of the intervention supported by IEJ (ICC)
R.08.02.02.C.IEJ	Long-term unemployed who have started to study, to participate in training programmes, to work or to be self-employed since the end of the participation in the intervention (ICC)
R.08.02.03.C.IEJ	Long-term unemployed who receive an offer of employment, continuing education, apprenticeship or internship
R.08.02.04.C.IEJ	Unemployed reaching the end of the intervention supported by IEJ (ICC)
R.08.02.05.C.IEJ	Unemployed who have started to study, to participate in training programmes, to work or to be self-employed since the end of the participation in the intervention (ICC)
R.08.02.06.C.IEJ	Unemployed who receive an offer of employment, continuing education, apprenticeship or internship
R.08.02.07.C.IEJ	Inactive people participating in the intervention who receive an offer of employment, continuing education, apprenticeship or internship
R.08.02.08.C.IEJ	Inactive people participating in the intervention reaching the end of the intervention supported by IEJ
R.08.02.09.C.IEJ	Share of participants who are in full employment 6 months after completion of the training
R.08.02.10.C.IEJ	Participants in training programmes who have an internship or apprenticeship 6 months after the end of the programme

R.08.02.11.C.IEJ	Participating employees who are in an apprenticeship 6 months after the end of the programme
R.08.02.12.C.IEJ	Participants who are self-employed six months after the end of the programme
R.10.01.01.E	Graduates with offers for training at ISCED3-level
R.10.01.02.E	Graduates with offers for training at ISCED2-level
R.10.01.03.E	Supported students at ISCED2 level that are retained the following school year.
R.10.01.04.E	Share of schools progressing, approaching or exceeding the target value among all schools covered by projects that combat school failure.
R.10.01.05.E	Share of children in pre-schools associated with development contracts
R.10.05.02.E	Share of children in pre-school
R.10.05.03.E	Share of EB1 students that have been integrated into the normal school system

Foster employment at all levels of society

Indicator No.	Outcome Indicator
R.08.01.01.E	Share of employees that obtain support six months after the end of the programme
R.08.01.02.E	Share of employees that remain employed with a company 6 months after the end of the programme
R.08.01.03.E	Share of participants that are in an internship at a local government 6 months after the end of the programme
R.08.02.01.E	Share of youths that obtain support six months after the end of the programme
R.08.02.02.E	Share of youths that are employed six months after participating in support programme
R.08.02.01.C.IEJ	Long-term unemployed reaching the end of the intervention supported by IEJ (ICC)
R.08.02.02.C.IEJ	Long-term unemployed who have started to study, to participate in training programmes, to work or to be self-employed since the end of the participation in the intervention (ICC)
R.08.02.03.C.IEJ	Long-term unemployed who receive an offer of employment, continuing education, apprenticeship or internship
R.08.02.04.C.IEJ	Unemployed reaching the end of the intervention supported by IEJ (ICC)

R.08.02.05.C.IEJ	Unemployed who have started to study, to participate in training programmes, to work or to be self-employed since the end of the participation in the intervention (ICC)
R.08.02.06.C.IEJ	Unemployed who receive an offer of employment, continuing education, apprenticeship or internship
R.08.02.07.C.IEJ	Inactive people participating in the intervention who receive an offer of employment, continuing education, apprenticeship or internship
R.08.02.08.C.IEJ	Inactive people participating in the intervention reaching the end of the intervention supported by IEJ
R.08.02.09.C.IEJ	Share of participants who are in full employment 6 months after completion of the training
R.08.02.10.C.IEJ	Participants in training programmes who have an internship or apprenticeship 6 months after the end of the programme
R.08.02.11.C.IEJ	Participating employees who are in an apprenticeship 6 months after the end of the programme
R.08.02.12.C.IEJ	Participants who are self-employed six months after the end of the programme
R.08.03.01.E	People supported that are employed or self-employed 12 months after the end of the support
R.08.04.01.E	Supported businesses that implement plans and evaluations of gender equality
R.08.04.02.E	Share of employees that obtain support six months after the end of the programme
R.08.04.03.E	Share of supported women who set up a business or start self-employment within 6 months after the end of the training
R.08.04.04.E	Unemployed participants who acquired skills or professional credentials
R.08.04.05.E	Employees who keep their job for at least 6 months after participating in a training
R.08.07.01.E	Share of job seekers and employers that register their job search online
R.08.08.01.E	Jobs created
R.09.01.02.E	Share of participants (including CLDS) who are covered by active employment support or training programmes
R.09.01.03.E	Participants in the choice programme between 6 and 24 years of age, who have successfully completed the school year or were reinstated in school, training or employment.

R.09.06.01.E	Share of supported individuals that remain employed 12 months after the end of the support
R.10.01.01.E	Graduates with offers for training at ISCED3-level
R.10.01.02.E	Graduates with offers for training at ISCED2-level
11.1.2	Employees who work in different functions in the public administration 24 months after being trained for better transferability as share of all employees

Sustainable and efficient use of resources

Promote a shift to a low-carbon economy

Indicator No.	Outcome Indicator
4.1 (I)	Renewable energy produced by supported technologies
4.1 (II)	Share of renewables in the Madeira region
4.1 (III)	Share of renewables in electricity production
4.2 (I)	Primary energy consumption of businesses
4.3 (I)	Primary energy consumption of regional and local governments
4.3 (II)	Primary energy consumption of central administration buildings
4.3 (III)	Primary energy consumption of private housing
4.3 (IV)	Share of social housing with energy classification
4.4 (I)	Share of energy contracts using smart meters
4.5 (I)	Estimated greenhouse gas emissions
4.5 (II)	Reduction of primary energy consumption in the public transport fleet
4.5 (III)	Number of registered electric vehicles
4.5 (IV)	Number of trips in the public transport system
7.1	Modal share of rail freight

Ensure a sustainable use of water resources

Indicator No.	Outcome Indicator
6.2 (I)	Share of accommodations served by water supply infrastructure rated at least satisfactory on the Index of Improvements in Water Supply
6.2 (II)	Share of accommodations served by sewerage infrastructure rated at least satisfactory on the Index of Improvements in Water Supply
6.2 (III)	Quality of water distributed for human consumption
6.2 (IV)	Share of water bodies that improved from “less than good” to “good or better”



programa
operacional
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FUNDO SOCIAL EUROPEU
Gestão, Construção e Inovação



QUADRO
DE REFERÊNCIA
ESTRATÉGICO
NACIONAL
PORTUGAL 2007-2013



GOVERNO DA
REPÚBLICA PORTUGUESA



UNIÃO EUROPEIA
Fundo Social Europeu
Fundo Europeu
de Desenvolvimento Regional