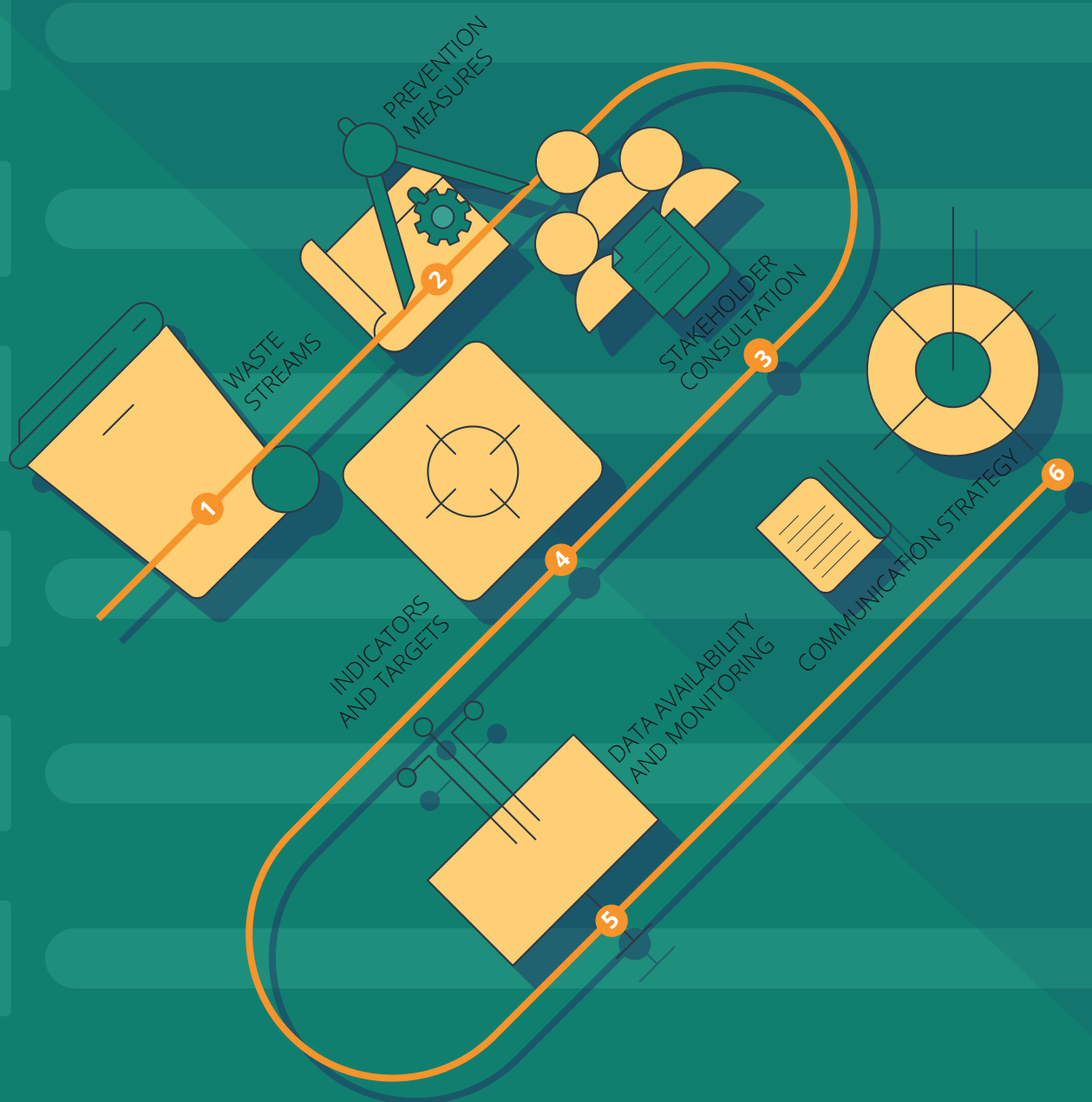


Guidance for evaluating waste prevention programmes

Guidelines by the EEA and Eionet



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Preamble

- This guide was created with the purpose of providing **guidance** and practical advice and highlighting case studies to help all EEA member countries **evaluate** their waste prevention programmes.
- Evaluation is a key part of assessing the **relevance**, **effectiveness** and **efficiency** of waste prevention programmes. It is also important to evaluate the alignment of each programme with relevant new policies and legislation.
- This guide details how to review the main elements of a waste prevention programme, such as **waste streams**, prevention **measures**, **stakeholder** involvement, **indicators** and **targets**, **data** availability and monitoring, and **communication** and awareness raising, with a view to aligning and strengthening future waste prevention programme iterations.

1 Background and scope

1.1 Background

Preventing waste is one of the top priorities of waste policy in the European Union with potential economic and environmental benefits. In the EU Waste Framework Directive (WFD), as well as in the EU's 2020 action plan for a circular economy (EC, 2020; as part of the European Green Deal), national environmental legislation and other strategic documents, **waste prevention** is defined as being the primary option in the waste hierarchy, above reuse and recycling. Currently, Europe is intensifying its efforts for moving up the steps of this hierarchy.

The 2008 **WFD** (EU, 2008; Directive 2008/98/EC) required EU Member States to establish national waste prevention programmes (WPPs) and to evaluate them every 6 years at least and revise them as appropriate. The main objective of these programmes is to present a coordinated national approach to waste prevention,

Waste Framework Directive

Article 29(1) '... establish waste prevention programmes setting out at least the waste prevention measures as laid down in Article 9(1)...

...programmes shall be integrated either into the waste management plans or into other environmental policy programmes as appropriate, or shall function as separate programmes. If any such programme is integrated into the waste management plan or into those other programmes, the waste prevention objectives and measures shall be clearly identified.'

Article 29(2) '... where relevant, describe the contribution of instruments and measures listed in Annex IVa to waste prevention ... evaluate the usefulness of the examples of measures indicated in Annex IV or other appropriate measures. ... also describe existing waste prevention measures and their contribution to waste prevention.'

Article (2a) '... shall adopt specific food waste prevention programmes within their waste prevention programmes.'

Article 30(1) 'Member States shall ensure that the waste management plan and waste prevention programmes are evaluated at least every sixth year and revised as appropriate ...'.

delineating targets and policies, and aiming to decouple economic growth from the environmental impacts associated with waste generation. The deadline set in this directive for the EU Member States to establish WPPs was in 2013, so countries have evaluated (or are in the process of evaluating) the first or second versions of their WPPs, and some experience has been gained from these evaluation exercises.

The WFD has recently been revised (EU, 2018) and now puts even more emphasis on the importance of waste prevention, and calls for changes to existing WPPs. The amendments identify clear measures that countries should put in place in the revised versions of their WPPs. The circular economy action plan, launched in 2020, supplements the policy framework at the EU level by exploring further policy interventions aimed at waste prevention (e.g. the consideration of setting waste prevention targets for selected waste streams). As a result of these recent developments, countries are now revising their respective WPPs to align them with the new WFD requirements and the aspirations of the circular economy action plan.

When establishing a WPP, Member States must describe existing waste prevention measures and their contribution to waste prevention. Where relevant, the contribution of instruments and measures listed in Annex IVa of the WFD should be described. Annex IV contains examples of measures, the expediency of which should be assessed within the framework of a country's WPP.

1.1.1 Why is the evaluation of waste prevention programmes so important?

Generally, a WPP is not only a plan that defines measures, but also a process through which the effectiveness of these measures is constantly evaluated, thereby allowing the plan to be adapted to changing requirements at regular intervals. Consequently, such a programme includes measures that have already been implemented, measures that have been adapted and new measures.

The evaluation of a WPP is therefore of great importance. On the one hand, an evaluation is required by the WFD. On the other hand, an evaluation gives added benefits by:

- maintaining the network of and contact with relevant stakeholders, thereby engaging their involvement in the (further) development and implementation of waste prevention measures;
- generating new ideas;
- gathering important information about which measures worked and which did not, allowing informed decisions to be made about which measures should continue and which should be stopped;
- collecting information with regard to changing framework conditions (i.e. regulatory, economic, social);
- allowing the possibility of assessing appropriate qualitative and quantitative targets and indicators;
- determining the degree of implementation per measure;
- monitoring progress;
- analysing the sufficiency of the data collected and identifying new data needs.

Finally, the results of the evaluation can be used in developing a new WPP: the information gathered and the lessons learned should be the main basis for the development of a new WPP based on the adjustment of the existing, expiring programme. The evaluation can help to redefine the overall scope, objectives and strategy of the implementation of waste prevention measures; allow the qualification of specific measures and inform decisions about whether or not to continue implementing them; assess the adequacy of the data collection framework; and determine the relevance of the stakeholders involved.

1.2 Scope and aim

The purpose of this document is to provide practical guidance including guiding principles to the EEA member countries for the evaluation of their WPPs. The results of an evaluation should feed into the preparation of new WPPs.

The target groups of this guidance are the EEA member countries and relevant groups such as policymakers and national environment protection agencies (EPAs), which are responsible for the review process and the preparation of new WPPs, typically done by the respective ministries of environment.

The elements that are usually part of a WPP and that will be considered in this document in terms of their evaluation are listed below:

- **Waste streams and priority areas.** These constitute the core of a WPP's scope and prescribe the main elements to focus on when setting actions for waste prevention. Countries can choose to focus on specific waste streams, rather than economic sectors, in line with the requirements of the WFD. The selection (or exclusion) of specific sectors can depend on a variety of factors including political decisions, the strategic importance of certain resources for the country (e.g. biomass in northern countries) or in the global agenda (e.g. food waste, plastic and used textiles), and public demand. However, the relative importance of waste streams and sectors can change over time and so their level of priority should be re-assessed during the evaluation of a WPP and eventually adapted.
- **Measures.** Different (policy) measures can be implemented to prevent waste in specific sectors or from specific waste streams. The evaluation of their effectiveness and efficiency can be very challenging, especially given the difficulties in distinguishing the different contributions to waste prevention made by the different measures.
- **Stakeholders' involvement.** The involvement of stakeholders is crucial in all phases of the development and implementation of a WPP for achieving results and must also be considered in the evaluation process.
- **Indicators, targets and data.** Indicators and targets are useful for benchmarking progress and for setting goals that should be achieved through the implementation of the WPP. Choosing indicators and targets is not always simple, as a prerequisite for selecting meaningful indicators and calculating targets is the availability of data.
- **Communication strategy.** Communication is important to raise awareness and facilitate the implementation of the WPP. Especially during the evaluation process, the design of a new (customised) communication strategy could be important, in particular with regard to the development of a new WPP.

This document is structured in such a way that it can apply to all EEA member countries, and it is valid for stand-alone WPPs as well as for WPPs integrated into national waste management plans. It proposes a stepwise approach to conducting a WPP evaluation.

2 Evaluating a waste prevention programme

The starting point for developing any waste prevention programme (WPP) is to define its vision and strategic objectives (EC, 2012). Defining the vision involves processing stakeholders' needs and interests into a common vision of the direction that waste prevention should take. The vision is normally a long-term strategy that remains in place for this policy area for 5-10 years. Once the vision has been defined, the strategic objectives that should be achieved by the implementation of the WPP are delineated. The objectives describe in more detail the pathways involved in realising the WPP's vision.

To define the vision and strategic objectives of a WPP, various factors are taken into account: broader national and international policy priorities (such as the level of importance of waste prevention in broader environmental policymaking), strategic national and international interests, stakeholder views and interests,

and consistency with other waste legislation and strategies.

Therefore, the evaluation of an expiring WPP should always start by considering whether the vision and strategic objectives remain valid or whether they need to be updated. There are no generic recommendations on how to evaluate the validity of the WPP's strategy, as this depends on national contexts and national influencing factors. However, during the WPP evaluation process, the starting point should be to examine policy developments and strategic priorities, stemming from EU policymaking processes. It is, therefore, recommended that every WPP evaluation should start with a revision of its 'policy background' sections and then the vision and strategic priorities should be adjusted accordingly. Changes in national waste prevention strategy can also influence the structure of the WPP (see Box 2.1).

Overall, for the evaluation of the vision and strategic objectives of a WPP, it is recommended that:

- EU and national policy developments are examined and consolidated by translating them into strategic objectives for waste prevention;
- relevant stakeholders, including high-level policymakers, are consulted, to ensure that changes in their views and interests are understood;
- the requirements and objectives of waste prevention that stem from other policies and strategies related to waste or the circular economy are examined.

In general, the evaluation of an expiring WPP should be based on a predefined set of principles. For each of the WPP elements examined below, the focus is on answering the following four questions:

1. Is the content of the WPP element still **relevant**?
2. Has the WPP element been implemented **effectively**?

Box 2.1 Evaluation process for updating the structure and design of a waste prevention programme

During the evaluation process, whether the structure of the expiring waste prevention programme (WPP) is still valid or whether it needs to be updated/improved should also be considered. The structure of a WPP could, for example, be built around waste streams, prevention measure types or WPP sections (streams, measures, indicators, etc.)

How could this be done?

- Comments/constructive criticism from the last consultation phase of the expiring WPP could be considered.
- Based on these comments, readability, alignment with new priority topics, and design and structure could be reviewed.
- Necessary amendments could then be suggested and discussed with relevant experts from public institutions and other stakeholders.
- The new structure to use when drafting the new WPP could then be developed and finalised

3. Has the WPP element been implemented **efficiently**?
4. Is the WPP element **consistent** with other WPP elements and with requirements stemming from other policy areas?

These questions are not equally relevant for all WPP elements examined below. However, they are used throughout the document as guiding principles for a WPP evaluation.

The review and subsequent evaluation of WPP elements cannot happen in isolation. Interlinkages exist among the different elements, which necessitates a coordinated evaluation of all elements together. For example, the review of waste prevention targets needs to take into account the monitoring mechanisms in place, so that the attainment of the targets can be assessed. Therefore, although this guidance covers the evaluation of WPP elements separately, in practice, all WPP elements should be evaluated in a coordinated and structured manner.

However, some of the WPP elements are interlinked to a greater degree than others. When waste prevention targets are set and supportive policy measures are developed, monitoring mechanisms are devised that consist of indicators and data collection processes so that progress towards targets can be reported. Therefore, some elements of the WPP are mutually interconnected, which should be taken into account when performing an evaluation of a WPP. In this respect, Sections 2.2, 2.3 and 2.4 of this guidance describe processes that should be regarded as one for the purposes of an evaluation.

The guidance also includes illustrations and infographics on the stepwise approach to a WPP evaluation proposed. A stepwise approach is considered more helpful than a very prescriptive approach. However, as this guidance takes a generic approach, countries will need to adapt it to their own national contexts.

2.1 Waste streams

Many waste streams and waste materials can be relevant for waste prevention, but it is not feasible for WPPs to target all of them. Different waste streams have differing degrees of environmental relevance and, therefore, WPPs should address the waste streams for which specific waste prevention measures could have the largest impact. However, a WPP's strategic objectives, which influence the selection of priority

waste streams, are also affected by economic, social and political factors.

2.1.1 *Quantity generated and environmental significance of waste streams*

The evaluation of the relevance of waste streams can start with an investigation of the dynamics of waste generation. The evaluation should consider both waste streams that were included in the expiring WPP and those that are included in national statistics and might have become relevant during the period covered by the expiring WPP (current examples include plastics and used textiles).

Priority should be given to large and also fast-growing waste streams, as waste prevention will have significant potential to be effective in reducing waste generation for these streams. Robust and long time series of waste generation data are necessary for evaluating the relevance of waste streams in terms of quantity.

The environmental impact of the management of waste is also an important factor to consider when evaluating the relevance of waste streams for targeting for waste prevention. The environmental impact is shaped by both the quantity of a stream and the treatment of the waste generated. On the other hand, environmental considerations around the natural resources (such as critical raw materials) embedded in products can also play a role in evaluating the waste prevention relevance of certain waste streams.

Overall, changes in production and consumption systems can result in changes in waste management systems, and new evidence can emerge from data collected. For instance, this has been the case with the recent COVID-19 pandemic, which has resulted in a dramatic increase in the consumption and littering of disposable masks and gloves used for health protection, with a considerable environmental impact.

2.1.2 *Policy and social factors*

Changes in the broad economy or in broad policy areas can make certain waste streams a priority (for example, if a government decides to focus on discouraging fast fashion, it might use waste prevention to complement product-related policy initiatives). These changes might take place at the national or international level.

A review of broad EU or national policy priorities (e.g. priority sectors in the 2020 circular economy action plan) or the targets adopted might reveal

mandatory requirements for including a waste stream in a WPP. The review will also help to identify whether or not the streams that have been relevant so far are still important. This information will help to map

Box 2.2 Evaluation of priority waste streams in Ireland

Ireland carried out a review of developments in international and national policy focus areas since its last waste prevention programme (WPP) implementation and also reviewed waste generation statistics. It compared priorities emerging nationally from this review and these statistics with the current WPP's focus areas and priorities. The relevance of the expiring programme, future policy requirements and significant areas of future waste generation were identified.

This information helped to map focus areas for future iterations of the WPP. Recommendations were presented both internally and to an expert review panel. From this, emerging and significant priority waste streams and stakeholders were identified as follows: construction and demolition waste; plastics; local waste prevention; resources and raw materials; and agriculture

focus areas for the future actions of a WPP, as the Irish experience has shown (see Box 2.2).

During the period of implementation of a WPP, the public awareness of and focus on environmental issues might change. Relevant stakeholders might also shift their interests to new areas or new sectors of the economy. For example, online sales with home delivery have skyrocketed in recent years (and even more dramatically during the recent lockdowns imposed as a result of the COVID-19 pandemic), with a consequent increase in the amount of packaging waste.

Extraordinary events such as the COVID-19 pandemic might also cause a shift in interest for specific products and resulting waste materials (e.g. hygiene products and single use plastics). During the WPP evaluation, these shifts need to be taken into account to select waste prevention measures targeting priority waste streams that have wide public support.

2.1.3 Economic and technological developments

The decision on whether priority waste streams of the expiring WPP are still relevant needs to be based on broad economic developments in national and international production and consumption systems. Factors such as trends in the consumption of specific product types (and corresponding waste streams) can inform of the future relevance of a waste stream (for example increasing consumption of electronics and textiles). Changes in import reliance and other national strategic objectives (e.g. changes in the strategic importance of critical raw materials or in the demand for secondary raw materials by the national economy) can help focus the evaluation of waste stream relevance.

On the other hand, technological changes (such as in product design, with the aim of improving reparability) and research into (the availability of support programmes and measures to implement waste-preventing concepts and technologies; the design, production and distribution phases of goods; or providing advice to companies) can also help to determine the relevance of a waste stream in terms of targeting it for waste prevention.

2.1.4 Implementation of successful measures

Considering the success (or failure) of the measures implemented for a specific waste stream can play a role in deciding whether or not to include the stream as a priority in the next WPP. Considering whether the measures have been successful in reducing the generation of waste from that stream or whether more efforts are needed could help to determine whether or not that waste stream should remain a priority. Note that changes in the generation of waste streams might be a result of a shift in economic activity rather than a result of the implementation of successful measures (e.g. a reduction in construction would result in a decrease in the generation of construction and demolition waste).

Often the question arises of how to select specific (new) priority areas/waste streams for an updated WPP based on the evaluation. The factors mentioned above are a good basis for making a decision. However, as countries differ, the factors to be taken into account may be of differing importance. Therefore, each country should decide on its own priorities on the basis of the factors listed above. When trying to identify the factors that really matter, a good starting point is to consider waste streams that account for large proportions of total waste or waste streams with mandatory prevention targets.

To evaluate the relevance of waste streams for inclusion as priorities in a WPP, the following factors should be considered:

- Large and fast-growing waste streams should remain a priority.
- Waste streams from production and consumption systems with high life cycle environmental impacts should be considered.
- Streams with mandatory requirements addressing waste prevention are a priority.
- Waste streams with sustained public and stakeholder interest should remain a priority.
- Waste streams from production and consumption systems that are important from an economic perspective should remain a priority.
- The success or failure of prevention measures for a waste stream should be considered to determine whether the waste stream should remain a priority or not.

2.2 Assessments of the success or failure of measures

WPPs normally contain lists of measures that are intended to support the achievement of particular targets related to preventing waste generation in relation to a specific waste stream, material or economic activity. These measures are usually grouped together by target and can be of different natures, namely regulatory, economic, awareness-raising, informational or voluntary agreements. The Waste Framework Directive (WFD) as amended in 2018 also includes categories of measures that countries should implement at the national level to support waste prevention.

The evaluation of measures is useful for helping policymakers to decide whether to continue, improve, modify or cancel a specific measure. This evaluation can be broad, taking into account socio-economic parameters, but this section focuses mainly on evaluating measures with respect to their relevance, effectiveness and efficiency in terms of waste prevention.

2.2.1 Success and impact of measures

Waste prevention measures are rolled out during the implementation period of the WPP and can

then be evaluated in terms of both their successful implementation and their impact. A measure, for example an information campaign, can be assessed as having been 'implemented/successful' if, for example, it was run successfully, many people took part and several events were organised; however, this does not consider its impact, for example whether or not people are more willing to adopt waste prevention practices as a result. The implementation of measures is easily monitored and assessed (and enforced), as this can be assessed through knowledge of if and how a measure has been implemented or through data collection (e.g. by measuring the number of schools targeted by an information campaign or the market share of companies subscribing under a voluntary agreement).

On the other hand, the impact of measures is, in most cases, more difficult to assess. Normally, waste prevention targets are supported by groups of measures that vary in nature and, if the target is achieved, it is difficult to quantify the contribution of each individual measure to the success. Exceptions exist when there is a direct link between a specific measure and a target, and these cases normally relate to legally binding policy initiatives such as bans of materials (regulatory) or the imposing of fees (economic). Box 2.3 provides an example of such an initiative.

Box 2.3 The case of plastic carrier bags and fees

Recently, many European countries have implemented economic measures to reduce the consumption of plastic carrier bags and the subsequent generation of waste. Countries have established fees that must be paid upon the purchase of plastic bags to prevent citizens from purchasing unnecessary bags and to promote the reuse of bags. This measure has proven to be very successful in reducing the consumption of bags in all countries where it has been implemented.

The evaluation of this measure's success was straightforward, as countries collect data on plastic bags as items sold. This data set was used to assess the impact of the economic measure on consumption and therefore, by proxy, plastic carrier bag waste generation.

More information can be found in EEA (2019).

2.2.2 Qualitative or quantitative evaluation

An evaluation of both the implementation and the impact of measures can be done in a quantitative or qualitative manner. Quantitative measurements of success related to impact need to be confined to the measurement of specific waste prevention targets such

as waste generation from a particular waste stream or waste material/product. The implementation of a measure can be evaluated quantitatively through a variety of metrics and proxy (i.e. indirect) indicators, specific for each measure. These metrics and indicators depend on the nature of the measures implemented and some examples include:

- the number of visitors to an awareness campaign website;
- the number of companies/the market share of companies subscribing to a voluntary scheme;
- the number of schools reached by an education campaign;
- dedicated funds for implementing a measure;
- dedicated funds for research projects on waste prevention.

Other tools and processes available for a more qualitative assessment of measures include surveys and stakeholder consultations. Surveys of targeted stakeholders can provide information on both the implementation and the impact of measures (e.g. as a follow-up activity to an information campaign). Moreover, stakeholder consultations, such as workshops, can inform policymakers about stakeholders' views on the measure, its uptake, the behavioural change it might have triggered, etc. Stakeholders can be chosen based on the target group of the initiative, persons responsible for its implementation, the wider public, etc. Stakeholder consultations can also reveal information on wider aspects related to the measure in question.

The success or failure of waste prevention measures should not be assessed solely on the basis of the impact that the measures have had with respect to the defined prevention targets. Positive or undesirable impacts on other aspects of society and the economy should also be taken into account, such as increased administrative burden or economic benefit from specific economic activities.

When performing an evaluation of measures, it is important to be aware of the limitations involved. First, the link between individual measures and results in terms of waste generation is difficult to establish. Moreover, measures targeting behavioural change among citizens or businesses are more difficult to assess, as people's behaviour is hard to measure or there might be a time lag between a measure's implementation and its effect.

The following actions are proposed:

- try to collect data related to the measure;
- try to establish a link between these data and the measure (measurability);
- establish whether or not these data can be used to reach a conclusion on the measure's success;
- consider whether or not proxy indicators related to implementation could be used instead;
- perform surveys and consult stakeholders to assess their views on the success of the measure;
- take into account any side effects that have an impact on other parts of society and the economy;
- conclude on the measure's success.

2.3 Stakeholder involvement

For the evaluation of the expiring WPP and the drafting of a new WPP, a stakeholder consultation process can play an important role in enhancing the involvement in, the acceptance of and the commitment to waste prevention among relevant stakeholders specifically, as well as among the public in general. The main benefits of stakeholder involvement include:

- enabling the development of a comprehensive overview of all waste prevention measures undertaken by a broad variety of stakeholders;
- bringing in practical experience on the success and failure of previous waste prevention measures and identifying the need for new measures;
- facilitating the exchange of best practice;
- fostering a broad consensus among stakeholders on the challenges for waste prevention lying ahead;
- enabling open discussions on identifying areas with large potential for improvement and on possible appropriate waste prevention measures, stimulating new and relevant ideas;
- creating a sense of responsibility and commitment among stakeholders to follow up on the

implementation of the measures that were developed with their input;

- creating a multiplier effect, through which measures are passed on and promoted to other relevant stakeholders for implementation.

For these activities, as well as to support the stakeholder process in general, a considerable budget needs to be allocated. However, this can be justified by the fact that the process plays an important role in and offers valuable input for every stage of the preparation of a WPP.

2.3.1 Stakeholder consultation process

A stakeholder consultation process might be implemented as described below.

To begin, the selection of stakeholder experts should seek to include all those with the expertise and knowledge required to review a WPP as well as those who might be interested in the WPP. Ideally, the stakeholders might be involved in implementing the measures or be the target group of specific measures. Target groups thus consist of:

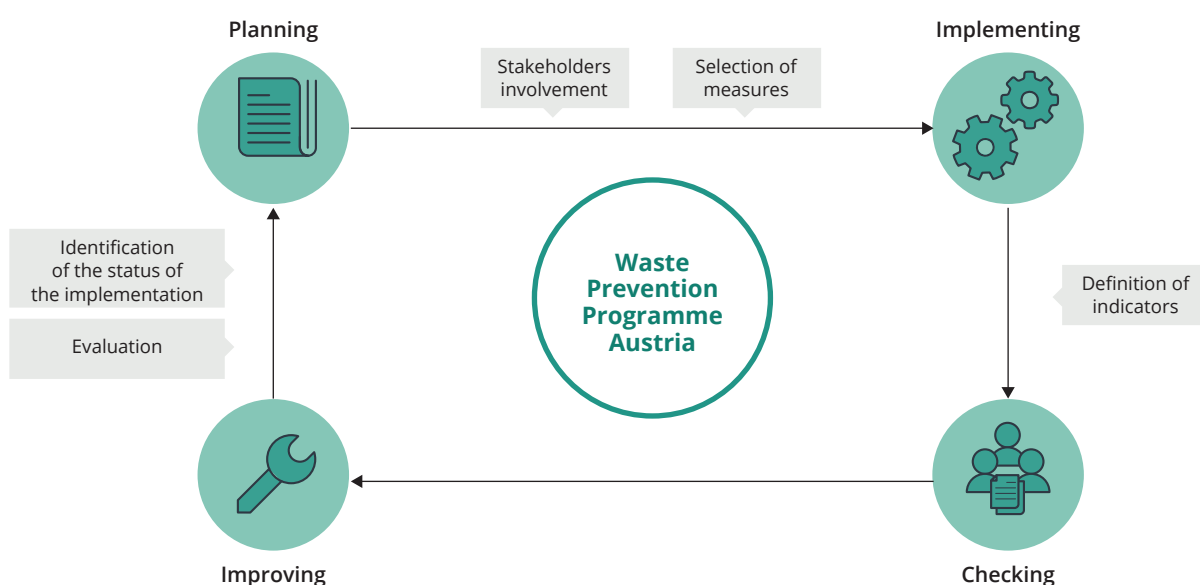
- representatives from public administration at all levels, including representatives from different ministries at the national level (mainly from the areas of the environment and industry/economy, but also, for instance, from agriculture), as well as representatives from regional and local governments;

- representatives of official institutions such as waste management associations, sectoral industry and chambers of commerce, and other experts in the waste management sector;
- members of interest groups from civil society, established by organisations such as consumer groups and non-governmental organisations (NGOs);
- academia and consultancy representatives;
- experts involved in product design;
- representatives from the business sector, i.e. those that have implemented specific waste prevention measures;
- representatives from zero waste groups;
- experts involved in the implementation of regional WPPs or from other countries.

A defined set of criteria is not always used to select these stakeholders, as the personal networks of those conducting the stakeholder process and recommendations of other stakeholders can also play important roles in compiling and enlarging the abovementioned group of experts, which could serve as a starting point for stakeholder involvement.

The process for developing the WPP presented in Figure 2.1 consists of four main phases, of which two

Figure 2.1 Overview of the process for developing a WPP, including the phases most relevant for stakeholder involvement, namely 'improving' and 'planning'



are most relevant for the stakeholder consultation process, namely 'improving' and 'planning'.

After the implementation of the previous WPP, the **first main phase** consists of **evaluating and improving on the progress made during the implementation period**. To this end, a kick-off workshop should be organised with representatives from the governmental institutions responsible for the implementation of the WPP and its measures, and stakeholders from the groups identified above. An evaluation should be carried out to identify which measures of the previous WPP have already been implemented successfully, which measures are currently being implemented and which measures are to be implemented in the near future. Measures that were implemented independently from the WPP in previous years should be identified as well. The outlook and forecasts must also be part of the discussion, e.g. the main challenges facing the waste and resource economy in the coming years. Information on these aspects can be further expanded through one-to-one interviews with selected experts.

In the **second phase, planning for the new WPP** can be initiated with an analysis of the challenges and the main areas offering potential for waste prevention, to determine which sectors the next WPP should focus on (see Section 2.1). The outcome of this analysis, and the resulting proposal for new waste prevention measures, should be discussed again, i.e. in a second stakeholder workshop, during which stakeholders should also be given the opportunity to suggest further possible measures. The selected measures can then be grouped into sets and ultimately into the WPP, the result of which should be presented and discussed in a stakeholder workshop. Finally, after drafting a report on the WPP, it should be presented to stakeholders once again for review and feedback.

2.3.2 Contact with stakeholders

There are different ways to get in touch with stakeholders. The stakeholder consultation process can be built on workshops and exchanges, in which all or most stakeholders are invited to participate, to discuss general topics relevant to all. Another possibility is to rely on for example a smaller established review group that consists of internal and external experts. This could be complemented by a range of smaller meetings focusing on specific topics with a selected group of relevant participants, as well as by one-to-one interviews for detailed discussions.

The following actions are proposed:

- select the stakeholder experts in such a way as to engage a broad spectrum of parties and use recommendations of other stakeholders in compiling and enlarging the group;
- try to use different tools/instruments to get in contact with stakeholders, e.g. workshops, established review groups, written exchanges with questionnaires, exchanges by phone or one-to-one interviews, or exchanges in smaller groups by topic;
- not only discuss evaluating and improving on the progress made during the implementation period but also turn focus to the future, to identify the challenges for the waste management sector in the coming years.

2.4 Indicators and targets

WPPs in general are based on a framework that includes objectives, targets and indicators linking to national efforts to prevent waste. WPP objectives differ across Member States; however, most aim to support the decoupling waste from economic growth (EEA, 2015). Targets are also formulated in different ways and are based on available supporting data such as economic, sectoral, material or specific waste stream data. WPP targets define the desired aims over a set period of time and they are usually based on a combination of quantitative and qualitative factors. Targets are sometimes related to an indicator or a set of indicators, which can be used as a means to measure progress towards achieving the targets.

Quantitative targets are usually expressed in terms of absolute waste generation, per person waste generation or the waste intensity of specific waste types or sectors (e.g. the generation of total waste expressed per unit of gross domestic product (GDP) or gross value added (GVA)). **Qualitative waste prevention targets** are usually expressed in terms of a set of activities such as stakeholder engagement, policy implementation or economic support mechanisms. **WPP indicators and benchmarks** refer to the measures undertaken to achieve and evaluate progress towards each target and are linked to specific data sets. Indicators can be of different natures, for example output-based indicators (e.g. waste generation), decoupling indicators (e.g. waste

generation per unit GDP) or response indicators (e.g. number of waste prevention events implemented). Each indicator should be evaluated in terms of its appropriateness for monitoring the corresponding target (i.e. its effectiveness).

When reviewing targets and indicators, it is important to compare progress with benchmark data such as waste generation data for a baseline year. The main challenges in evaluating the relevance and effectiveness of targets and indicators in an expiring WPP include the following:

- unclear or absent targets and indicators;
- lack of availability of easily accessible, accurate and reliable baseline-year data;
- gaps in data collection for indicators (lack of availability, timeliness, changes in reporting structures, etc.);
- difficulties in specifically attributing any changes identified (e.g. reduction in waste generation) to WPP implementation.

2.4.1 Reviewing targets and indicators

A review provides an opportunity to address the abovementioned challenges and to set or improve targets and indicators for future WPP activities. The process of reviewing previous WPPs should include the following:

Part A:

1. review progress towards achieving the targets of the WPP through an analysis of indicators and comparisons with benchmarks.

Part B:

1. consider the appropriateness of targets and indicators in terms of serving the overall objectives set in the expiring WPP;
2. review the effectiveness of the targets, indicators and benchmarks used in terms of their ability to be easily accessible, accurately assessed and reliable;
3. analyse the suitability of the indicators for monitoring progress towards corresponding targets;
4. review the effectiveness and accuracy of the baseline data that may have been used to set targets and assess knowledge or data gaps;

5. evaluate the alignment of targets, indicators and benchmarks with current and future legislation related to waste prevention.

2.4.2 Setting or revising targets and indicators

Recent EU policy and legislation around the circular economy (action plans and revised legislation) could provide a basis for setting appropriate indicators and targets for waste prevention across Member States.

Appropriate targets and indicators for a revised WPP are those that are easy to observe, monitor and communicate. Targets should be linked to the waste hierarchy (in particular reuse targets) and be based on waste generation or economic/consumption data that

Box 2.4 Case study: German Environment Agency — evaluation of benchmarks and indicators for measuring the success of waste prevention measures

In 2019, an evaluation of benchmarks and indicators for measuring the success of waste prevention measures was completed through a literature review of WPPs. The main aim of this review was to (1) analyse the systems of existing indicators with regard to the WPP; (2) recommend a suitable set of indicators for addressing the WPP's main objective and operational objectives; and (3) develop a data collection approach.

The study analysed consistent indicator sets through a systematic review, which led to the classification of existing sets of indicators. Through a literature review and classification exercise, suitable indicators that addressed the main objective, operational targets and sub-targets of the WPP were identified. This resulted in a set of more than 400 indicators, which were further adjusted to remove duplications, specific recycling targets and national targets that were not transferable to the German WPP. This resulted in 90 waste prevention indicators, which served as a starting point for developing a set of potential indicators for a revised WPP. This study also identified challenges such as lack of sufficient data availability and challenges in identifying robust and credible indicators. Indicators, both qualitative and quantitative, were recommended for the revised German WPP, such as recording the number of federal states that carry out their own activities in the field of reuse and repair, and recording the number or percentage of measures implementing eco-design, setting out eco-design requirements for waste prevention.

For more information on this case study, as well as a full list of indicators and targets, see Wilts et al. (2019).

are readily available from national statistical offices or environment ministries or agencies. An indicator or set of indicators should be well defined and should be able to clearly demonstrate progress towards achieving each specified target. Targets can be quantitative or qualitative and indicators should be chosen and used in a revised WPP to monitor each type of target as appropriate. Box 2.4 outlines an example of an evaluation of benchmarks and indicators.

The following actions are proposed:

- review progress towards achieving objectives, targets and indicators against baselines, if they have been set;
 - review the alignment of targets with available data and data that may have become available since the last iteration of the WPP (such as economic, sectoral, material or specific waste stream data);
 - review the appropriateness of targets in addressing key legislation (for example the circular economy action plan and WFD);
 - consider setting non-binding targets, such as targets for reuse and preparation for reuse;
 - ensure that indicators are fit for purpose, i.e. that they are easy to observe, monitor and communicate;
 - ensure that indicators clearly demonstrate progress towards a defined target or targets;
 - consult with stakeholders (such as national statistical agencies and/or ministries of environment) to assess their views on the targets and indicators identified.
-
- identify data sources (which data sources were used and how);
 - examine if the data sources selected were fit for purpose (or if alternative data sources should be found);
 - review the quality of the data from these sources (the failure to gain data from important providers during data collection significantly distorts data quality);
 - review data sources for all waste streams, as opposed to including only the waste streams that were selected in the WPP;
 - investigate how alternative or emerging data sources and technological developments (e.g. electronic data registries) can be taken advantage of;
 - evaluate if the data collection system was efficient and effective (e.g. if it was easy to collect the data);
 - verify if sufficient data were collected for monitoring the implementation of specific waste prevention measures.

2.5 Data availability and monitoring

Statistics on the generation and management of waste from various sources are necessary for monitoring the implementation of waste policy. This creates the basis for monitoring compliance with the principles of maximisation of recovery and of safe disposal. Additional statistical instruments are required, however, to monitor waste prevention and to establish a link between waste generation data and global,

national and regional inventories of resource use and economic activities.

This section explores ways of evaluating the quality and availability of the data needed for assessing progress towards achieving targets and for compiling indicators. The scope of the data collection in an expiring WPP is defined, as well as the targets and corresponding indicators on selected priority waste streams, the measures identified for implementation and the overall objectives of the WPP. Therefore, the evaluation of data availability and quality is closely linked with the evaluation of these other elements of the WPP, as described in previous sections.

The assessment of the suitability of data for monitoring a WPP must be done individually in each country, based on their data collection frameworks, data collection processes and scopes. However, in general, to evaluate the sources of data used for the process of monitoring an expiring WPP, it is necessary to:

- The information gathered through each of the above steps can help in the assessment of the relevance, efficiency and quality of the databases used for monitoring the implementation of the expiring WPP. Note that different countries have different data

collection schemes and methodologies, so the steps above need to be customised to match national settings. For example, some countries base their data collection systems on codes from the EU List of Waste, while others base them on national nomenclature.

2.5.1 Data sources for monitoring

Data sources that can provide relevant data for waste prevention monitoring include:

- **Data collected by European and national statistical agencies:** it is important to use data in the WPP that is from official sources and at the same time best describes and assesses the situation in the particular Member State. In addition to national data, it is a good idea to use Eurostat data for validation and for identifying improvement options.
- **Data collected by environment protection agencies:** specific statistics collected by environment agencies mostly reflect data on waste, meaning that this type of data source does not take into account prevention or reuse in most cases.
- **National reports (national waste management plans):** data for a national report are best obtained through the renewal of a waste management plan or prevention programme.
- **Data from chambers of commerce and trade unions (e.g. about activities that are relevant for waste):** business and professional associations, such as e-commerce associations or food associations, have detailed data that could be taken into account and used in the evaluation of a WPP and the creation of a new one.
- **Reuse centres:** data from reuse centres can be used for WPPs, especially in light of the new obligation in the amended WFD for countries to start collecting data on reuse. Various online stores could also be used for data acquisition in the future. The European Commission's implementing act clarifies the methodology for measuring reuse. The full calendar year following the adoption of the implementing act will be the first year in which these data are collected.

- **Research:** research projects may be necessary to understand the structure of the waste prevention sector in each country. These can be based on surveys aimed at establishing baseline figures for waste prevention and, therefore, will help Member States to understand how to develop and measure the success of WPPs.

2.5.2 Quality of data and methodology

The quality of the data depends not only on the data sources but also on the quality of the data collection system. Data quality is highly important, and is determined by the way data are collected, who the information providers are and whether the data characterise the whole market/country. Some factors that should be taken into account when evaluating data quality in an expiring WPP are the following:

- **IT systems:** given the rapid development of IT systems in waste management in recent years, countries should list which systems are being used and which could be used in the future. It is also important to consider the systems used in the existing programme in the context of the IT systems now available and, if necessary, use newer systems in the next WPP. Finding better solutions by sharing experiences is crucial.
- **Methodologies and responsibilities in countries:** a country must describe the methodology used in the WPP, i.e. how the data will be collected to assess trends accurately. It is important to pay attention to the waste types that are currently included and excluded and whether these should be changed. Data collection methods, the data sources used and the quality of the data are key factors in building a reliable system.
- **Data analysis by the designated environment agencies and experts (data aggregation, data evaluation and interpretation, and comparison with baseline year):** it is important to understand how the data were collected and used in the analysis. The data used must be comparable with the baseline year. The authority collecting the data must be able to assess the quality of the data and also be able to compare

data from different years to identify key trends and draw conclusions from them.

- **Benchmarking/comparison of data with data from other countries:** Eurostat is the best source of data for such comparisons. However, some data may not be comparable because different countries may have used different methodologies for collecting the same data.

The processes described above are aimed at understanding the relevance and effectiveness of selected data sources used for the implementation and monitoring of an expiring WPP. This evaluation will qualify whether or not the data sources used serve the purpose of the WPP and also whether or not these data sources should continue to be used in the new WPP. The latter depends on the revised strategic objectives of the new WPP, the newly selected priority waste streams, the definition of new supporting measures and the stakeholders involved.

On the other hand, this evaluation process assesses the quality and efficiency of the collection of data used for waste prevention monitoring. If the data quality is judged to be suboptimal, alternative data sources should be sought or improvements should be initiated in the country's data collection mechanisms.

The following actions are proposed:

- identify the data sources used and investigate their suitability;
- review the quality and availability of the data used;
- identify alternative data sources and assess their appropriateness and complementarity;
- evaluate the effectiveness and efficiency of the data collection systems used;
- verify if sufficient data were collected for monitoring and benchmarking purposes.

2.6 Communication and awareness raising

Communication about WPPs to multiple audiences is important for raising awareness and facilitating WPP implementation. Details of the WPP should be communicated along the supply chain from producers to consumers including businesses, extraction industries, expert groups, policymakers and others. Therefore, a customised communication strategy is necessary for different stakeholders.

The review of the communication strategy of an expiring WPP should assess the success of the strategy already implemented and also aim to gain an understanding of broader changes that have happened during the expiring WPP's implementation period to inform the design of a new communication strategy. These changes can be considered in the context of broad frameworks such as, on the one hand, the WPP's priority waste streams and, on the other hand, European activities and programmes (such as the European Green Deal of the European Commission, the Single Use Plastics Directive (EU, 2019) or the European Week for Waste Reduction).

The revision of a communication strategy can involve considering as a starting point the different stakeholder groups targeted. Consumers are one important stakeholder group. Because of differences in consumers' social characteristics, such as age, gender, income, level of education and migration background, but also values and life goals, the concept of social milieus, which considers the diversity of consumers, can be a useful approach to use when developing a communication strategy. In this sense, social milieus are understood as the target groups for communication strategies. The advantage of the milieu concept is that complex interrelationships in the everyday lives of consumers are consolidated and become understandable with the help of milieu analysis. This offers the opportunity to develop, design and implement communication strategies that are tailored to the target group. Effective communication on the subject of waste prevention must take into account not only the actions and everyday logic of different target groups, but also the structural framework conditions, such as access to infrastructures that enable waste reduction in everyday life. Examples for milieu segmentations are 'sociodimensions' ⁽¹⁾ or Sinus Milieus ⁽²⁾. This process should be repeated and

⁽¹⁾ <http://sociodimensions.com/wp-content/uploads/Schippberger-2019-Soziale-Milieus-in-Deutschland.pdf>

⁽²⁾ <https://www.sinus-institut.de/en/sinus-solutions/sinus-milieus>

adjusted when evaluating the communication strategy of an expiring WPP.

Other stakeholders should also be considered to ensure that a comprehensive communication strategy is developed. The existing awareness-raising activities of businesses, institutions, expert groups, policymakers, etc., should be investigated and their effectiveness should be evaluated to find out whether any activities should be continued or changed. An evaluation of the indicators used can be helpful, for example an evaluation of the number of events related to waste prevention held, the number of schools that have taken part in specific campaigns or the number of companies that are active in the field of waste prevention.

All perspectives of the different stakeholders of the WPP must be considered to develop a successful concept for an updated communication strategy for the new WPP. To bundle and consolidate all the results, it is advisable to summarise the findings in fact sheets with relevant information on approaches to communicating the topic of waste prevention. These sheets should focus on relevant fields of action, possibly those that were also included as priority topics in the WPP. Specific action guidelines for the updated communication strategy can then be derived from the fact sheets.

When planning an updated communication strategy for a new WPP, the questions outlined in Box 2.5 should be addressed.

If all relevant questions can be answered, a revised communication strategy can be worked out. The target groups should be addressed using different communication channels via certain media or with the help of certain alliance partners. Messages that smack of

paternalism will be met with rejection. It is better to give specific tips or advice on waste-avoiding practices and guidance on actions that are understandable and less ambitious but highly practical. Above all, it is important to raise awareness of the positive health aspects as well as the financial advantages of waste-avoiding practices to encourage habit changes, because incentives to act are greater when personal concerns or benefits can be addressed or achieved by adopting new practices. Participatory and interactive means of communication can also be considered.

The following actions are proposed:

- review all communication and awareness-raising activities of the WPP for all target groups of the WPP and evaluate the effectiveness of the existing activities for awareness raising (identifying what worked, what did not and what needs to be changed);
- use indicators to evaluate awareness-raising activities, for example the number of events/workshops for waste prevention held, the number of specific campaigns run and audiences reached, or the number of companies actively involved;
- determine the relevance of the key audience for communication and awareness raising as a part of a future WPP;
- develop a communication strategy specific to target groups based on concrete fields of action/priority topics in the new WPP and establish appropriate communication tools and/or methods.

Box 2.5 Questions to address when updating a WPP communication strategy

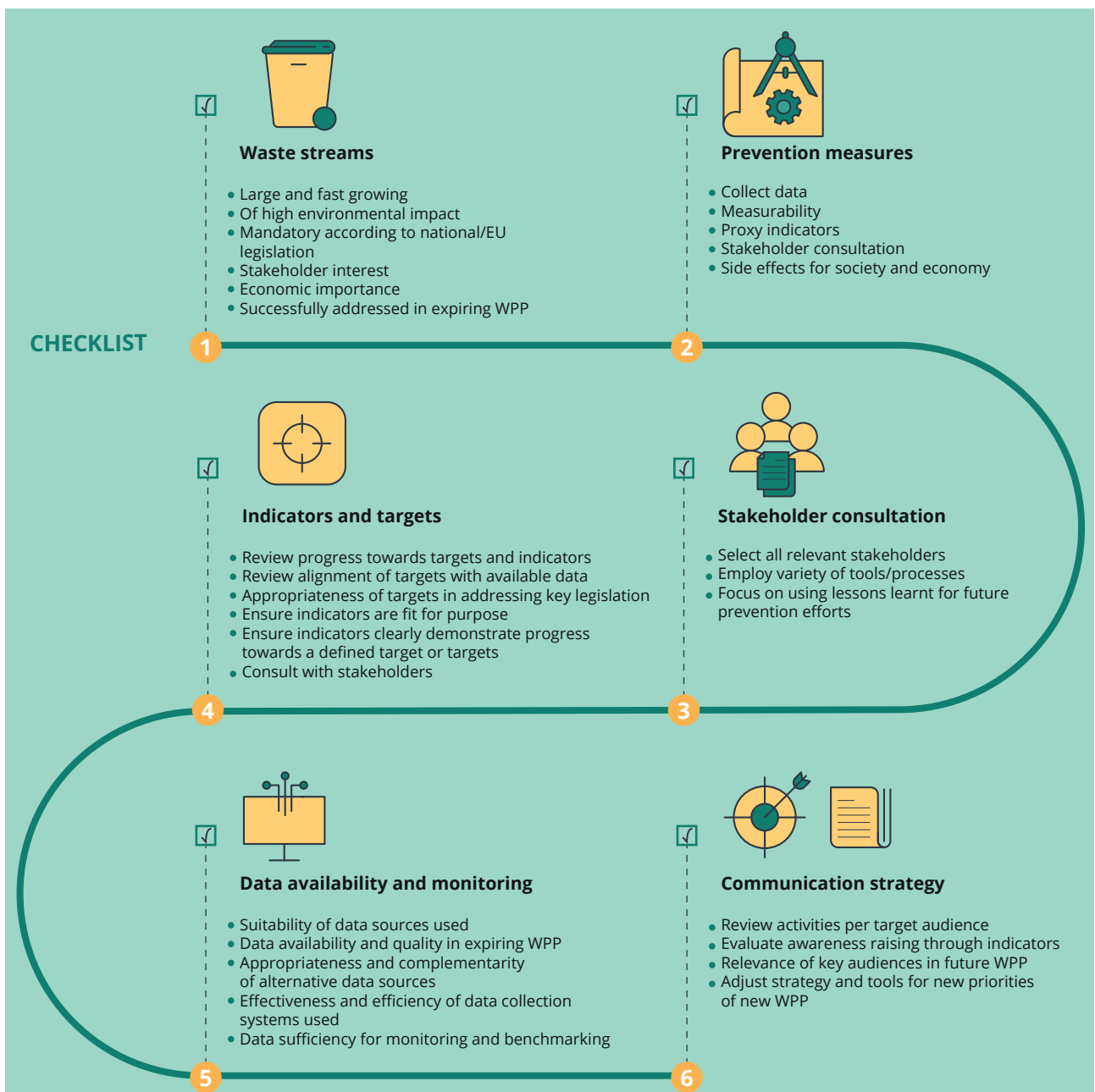
- **Are the key messages to be communicated still relevant?**
Definition and justification of the messages to be communicated
 - What are the relevant waste streams that are being addressed via communication to get a change in behaviour?
 - Which conducive framework conditions for waste prevention must be taken into account in communication?
- **Should the same stakeholders be reached by the communication measures?**
Definition and description of target group
- **How large was the communication budget and how has it been used? Which material and non-material resources were available for communication measures and how were these used?**
Estimation of effort and available resources (communication budget)
- **Which communication instruments/media were used and how effectively?**
Definition and justification of the channels and formats used for communication to target group
- **Who were the partners engaged in the communication campaign? Did partners cooperate effectively?**
Definition and justification of partners

3 Checklist

All waste prevention programme (WPP) elements should be evaluated based on their relevance, effectiveness, efficiency and consistency with other

policy initiatives. The checklist in Figure 3.1 summarises the steps proposed by this guidance for evaluating each element of an expiring WPP.

Figure 3.1 Checklist summarising steps for evaluating a WPP



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