

Supporting strategy with action plans

Guide for the Preparation of an Emissions Reduction Action Plan

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Helsinki



**Supporting strategy with action plans:
Guide for the preparation of an emissions
reduction action plan**

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Foreword

This guide was born from a combination of climate anxiety and climate bewilderment. While carrying out climate work in different organisations, we both kept encountering this strange indifference towards the effectiveness of climate efforts, or rather the lack thereof. Almost everyone we met was worried about climate change and its mitigation, but very few people were interested in the actual effectiveness of measures intended to combat climate change. We seem to be living in an attention society, where making noise and keeping things moving matter more than how effectively and comprehensively measures actually contribute to reducing emissions.

Both of us have a long history of working on strategies and carrying out strategic management and planning, so we also took an academic interest in the matter. Every time we met, the discussion quickly turned to the same questions: what is wrong, how could we improve the situation and how could we design an emissions reduction plan based on effectiveness? To answer these questions, we ended up creating this guide.

We advocated for effectiveness in all possible contexts ad nauseam. In this guide, we attempt to explain, based on both empirical analysis and our

own experience and insight, how to prepare climate change mitigation targets and action plans that focus on effective, timely and correctly scaled emissions reduction actions instead of attention-grabbing and pointless tinkering. Our understanding of the justification and acceptability of climate actions is based on the notion of leaving behind a liveable planet for future generations as well, regardless of species. While reducing emissions is not the only important aspect of this, actions that achieve emissions reductions lay the groundwork for our capacity to promote other important aspects as well.

This guide was written in the context of the public sector and climate action plans. Our hope is, however, that it will be of use to anyone who is interested in the more effective implementation of strategic targets and improving the effectiveness of strategy work.

We would like to thank Kai Alhanen for his constant support and numerous constructive comments during both the writing process and emissions reduction efforts.

In Helsinki 21.9.2022,
Susa Eräranta and **Kaisa-Reeta Koskinen**

1 Introduction

1.1 Objective

Climate targets are constantly growing more rigorous. In spite of this, the effectiveness of climate actions has hardly increased. Familiar measures that have failed time and again to bring about systematic change at the right scale keep being repeated from one action plan to the next. Often the actual target, which for climate change mitigation actions is reducing emissions, seems to fall by the wayside as efforts become increasingly dominated by other objectives, acceptance and convenience. However, when operating under tight deadlines and with limited resources, what matters is the effectiveness of the chosen actions, not their convenience. The fact is that when it comes to mitigating climate change, not all measures are equally necessary. The most important thing is to identify a target and choose the most effective measures for achieving it. Any busywork that is not relevant to the target should simply be set aside.

Especially in the public sector, the identification and implementation of required measures is often promoted with the help of various documents intended to steer operations (such as strategies, policies, principles, guidelines, action plans, implementation plans, visions), the number of which is constantly growing. And as the number of documents continues to grow, so, too, does the number of actions presented in them. Unfortunately, the effectiveness of these actions in terms of the actual targets is often unclear. In fact, even the targets themselves are often vague. When the targets and effectiveness of steering documents and the actions presented in them are unclear or people are unaware of them, they quickly lose their capacity to steer operations.

The key challenges in the preparation of action plans can be divided into five main categories:

- **The effectiveness of actions is forgotten and the focus shifts to their quantity.** The action plan contains numerous actions of varying effectiveness, but their implementation has not been clearly prioritised. Trying to implement and measure everything at once ends up hindering action plan management, causing delays and ultimately ensuring that the emissions reduction target remains out of reach. Resources typically end up being allocated to the actions that are easiest to implement, but also the least effective.
- **The big picture is forgotten and the focus shifts to the details.** The monitoring of the action plan focuses on comprehensively measuring and reporting on the implementation of individual actions, without providing a clear overview of progress towards the actual emissions reduction target. Perhaps the target has not even been clearly defined or the actions are not effective in terms of it. A lack of information on the current situation and how it relates to the set target makes it difficult to manage operations in a target-oriented and resource-effective manner.
- **The target is forgotten and the focus shifts to the promotion of the common good.** The action plan contains numerous actions that are generally considered good and important in public discourse, but their relevance to the emissions reduction target is unclear. Resources end up being used on actions the effectiveness of which in terms of the chosen target has not been determined. In a world of limited resources, this often means that the most effective actions end up never being implemented.

- **The acknowledgement of new information is forgotten and the focus remains on actions chosen years ago.** The action plan consists of actions that were defined during the plan's preparation without clear consideration of their implementation or updating. With progress based on actions defined years ago, the plan's capacity to react to slow progress and any changes in the operating environment is non-existent. Furthermore, actions that are found to be ineffective cannot be corrected as the implementation of the plan proceeds based solely on what was originally decided.
- **The clarity and assignment of actions is forgotten, and nobody feels responsible for the chosen actions.** Most actions are unambiguous statements of ambitions, but the things that actually need to be done to achieve them are not clearly defined. The actions include numerous sub-actions, responsibility for which has not been clearly assigned. The actions are kept in the action plan year after year, but little progress is made on them, as nobody feels responsible for them.

1.2 Why should I read this guide?

Have you faced at least some of the challenges listed above in your own work? Are you responsible for preparing or implementing an emissions reduction action plan? Does your action plan have a clear emissions reduction target, the implementation of which can be monitored? Is it clear to all the actors implementing the action plan which of its actions are the most critical in terms of achieving the emissions reduction target? Are you aware of how close you are to achieving the target with your current actions and of the gap that you still need to close? Have you made sure that most of your available resources are not being spent on actions that only have a small impact on achieving the set target? Does your action plan include a lot of things that have no clear relevance to achieving the emissions reduction target? Or actions and sub-actions in progress despite their connection to the emissions reduction target being difficult to put into words? Or a large number of actions that distribute the scarce resources available in several directions whilst hardly contributing to the achievement of the actual emissions reduction target?

This guide collects instructions for the preparation of an effective emissions reduction action plan. It includes clear principles and provides examples of the formulation of targets, indicators and actions and





general instructions for preparing an action plan and managing it throughout its lifecycle. While the focus is on emissions reduction action plans, the majority of these principles can be applied as is to the preparation of other types of action plans and programmes as well.

The guide provides answers to why and how to:

- **Build an action plan based around a clearly defined target, indicators and actions.**
- **Focus on the effectiveness of actions instead of their quantity.**
- **Maintain an overview of progress towards the defined target.**
- **Define a sufficiently frequent update cycle for the action plan so that corrective measures can be implemented promptly.**
- **Channel resources from broad multivocality to target-oriented participation.**

The guide also includes thought-provoking examples from real life and other sources and answers to some

of the typical questions asked during the preparation of action plans. You can identify them by the following markings:

- **Heard elsewhere!** Quotes from other sources that provide food for thought.
- **Frequently claimed?** Answers to why previous practices are not enough.

At the end of the guide, you will also find:

- **The emissions reduction action plan writer's checklist**, which includes step-by-step instructions for preparing an action plan and finding additional instructions.
- **Common challenges and solutions thereto (FAQ)**, which can support you in tackling some of the typical issues of action plan work.
- **Key concepts**, which you can always refer to if you encounter unfamiliar terms.
- **References**, which help you find more in-depth literature on the subject.

2 Strategic management

To understand an emissions reduction action plan as tool for steering operations, it is important to also understand some other aspects of public sector steering, from strategies to resource planning. In this section, we briefly examine the role of a strategy in general and take a closer look at strategic management in the public sector, strategy implementation and the typical challenges thereof, and the role of action plans in support of strategy implementation.

2.1 What is a strategy?

A good strategy defines the prioritised objectives of the organisation¹ and systematically steers the organisation's operations towards achieving strategic targets. A strategy defines the priorities and focus areas of operations. As such, an objective defined in an organisation's strategy should steer the operations of the organisation as a whole: the entire organisation should shape its core operations so as to support (or at least not hinder) the achievement of strategic targets.

In other words, a strategy should be seen as an approach that steers core operations: for example, if the organisation's objective is to achieve climate targets, then its communications department can effectively contribute to the achievement of the target not by preparing a climate action plan of their own, but rather by carrying out communications in a way that supports the achievement of the climate target. One of the typical challenges of strategy work is that strategies and actual operations proceed as separate processes². Studies show, however, that strategy implementation typically fails³.

A successful strategy helps prioritise work. When strategic target is clear, it serves to prioritise the core operations of the organisation. If there is too much work to do or too few resources relative to the amount of work, then core operations should be prioritised by focusing on efforts that most effectively contribute to the achievement of the strategic target. Targets also facilitate exclusion: operations that are no longer aligned with the organisation's current

strategy can be discontinued or deprioritised so that resources can be allocated to efforts that contribute to the achievement of the target.



Heard elsewhere!

“With each key strategy, you need to first ask the question WHY?”⁴

‘Why’ is an essential question when it comes to effective strategy work, one that steers you to constantly seek justifications for arguments that may seem intuitively significant, but contain serious or even critical flaws upon critical inspection and examination. All key decisions should be exposed to the question of ‘why’ a sufficient number of times. If the answer to this question is clear, then the answers to follow-up questions, such as ‘how,’ ‘when’ and ‘who,’ are also easier to find.

The strategy process is typically presented as a series of stages⁵, during which the organisation learns to understand its strategic position in the operating environment, establishes targets that steer operations, renews its operational processes to correspond to the chosen targets and monitors progress towards achieving targets⁶. For example, Freedman (2003) describes the strategy process as consisting of five stages, which are strategic intelligence-gathering and analysis; strategy formulation; strategic master project planning; strategy implementation; and monitoring, reviewing, and updating strategy. Once a strategy is ready, it should be translated into clear targets and indicators, on the basis of which operations can be planned⁷.

The strategy process can also fail at any of the aforementioned stages. Often the strategy formulation stage leaves the strategy too broad, which makes implementation difficult and ineffective in terms of achieving the targets. In other words, a strategy needs to be focused enough so that resources can

be actually prioritised. It is also typical for a strategy to be regarded as just a ‘piece of paper’ instead of being concretely implemented throughout the organisation. If a strategy cannot be translated into sufficiently concrete actions, its capacity to steer the organisation’s operations will remain low.



Heard elsewhere!

“A fitting analogy is the preparation of a great meal, which requires more than just a fabulous recipe (i.e., a strategic plan). It takes high quality ingredients, the right equipment, and a capable team of chefs, sous-chefs, and servers working well together; all critical elements involved in the preparation and service (i.e., execution) of the meal. In addition, effective strategy implementation is a requirement for effective evaluation of strategy [...]. In other words, if the recipe is not executed in the exact way it was intended, it is impossible to accurately evaluate the recipe’s merits”⁸.

If the target of a strategy is to achieve a desired change, then it is important to allocate limited resource to actions that help achieve the target. The only way to achieve effective change is to directly change core processes instead of carrying out individual pilots; in other words, instead of establishing a test kitchen, you need to change the entire operating process of the bread factory.

2.2 Public sector strategic management

Public sector actors largely use strategy tools developed for private business operations⁹. However, since the needs and challenges of the public sector differ significantly from those of the private sector, tools developed to serve private business interests are not ideal for serving the needs of the public sector.ⁱ Strategy implementation is challenging, the strategy process is still perceived to largely consist of financial planning and the gap between strategy

and reality has called into question the credibility of strategic planning¹⁰. As a result of these challenges, strategic planning is often disconnected from operative planning, coming across as more of an annually repeated administrative ritual¹¹.

In municipal organisations, a strategy is typically prepared for each council period of office. In addition to actual municipal strategies, municipalities also prepare many other documents that contain strategic objectives, though these often remain unimplemented¹² and can even weaken the credibility and significance of the strategy process. In this guide, we focus particularly on action plans, which are often prepared for the purpose of supporting strategy implementation.

2.3 Strategy implementation

The implementation of a strategy requires clear targets¹³.ⁱⁱ The implementation stage of a strategy has been defined in numerous different ways in research literature.¹⁴ What all of these definitions have in common, however, is the notion that strategy implementation requires leadership, clear decision-making, operational planning and resource allocation to facilitate the achievement of targets. Other factors important to implementation include organisational culture and the structure of the organisation, which can potentially even prevent the definition and/or implementation of effective actions.

ⁱFor example, strategy as a concept has been utilised in a number of different contexts throughout history, but it wasn’t until the 1980s that it started to be used in the context of public sector resource planning (Strandman 2009). Originally in the 1960s, strategic planning was based on understanding changes in the operating environments of organisations (Mintzberg 1994). As such, strategy work consisted primarily of long-term financial planning carried out by executive management and financiers (Ansoff 1984). In the 1980s, the preparation of strategy work was distributed throughout line organisation, until in the 1990s it started to become something that all staff participated in. In the 2000s, strategy work has continued to develop, but some of the challenges are still the same.

ⁱⁱThe implementation stage has received little attention in research literature on strategic management over the decades (Amoo et al. 2019; de Oliveira et al. 2019; Lee & Puranam 2016; Elbanna et al. 2016; Hrebiniak 2013; Hrebiniak & Joyce 2001). Suggested reasons for this include the complexity of the implementation stage and a lack of capacity for multidimensional thinking and the ability to operationalise the broad objectives of strategies (Yang, Sun & Eppler 2010). The implementation of public sector strategies has been researched even less (e.g., Andrews et al. 2017; Andrews et al. 2011).



Heard elsewhere!

“Without successful implementation, a strategy is but a fantasy”¹⁵.

The only way to achieve the change that your strategy is aiming for is through strategy implementation. Only actions that are actually carried out matter. Research and practical literature are full of examples of strategic targets and operative reality being out of sync with one another and of resources being spent over the years on ideas that seemed impressive, but did not ultimately contribute to the achievement of the originally defined targets in any way. If the goal is to go beyond lofty speeches and actually bring about change in accordance with targets, then you need to focus particularly on strategy implementation and the effectiveness of selected actions. In section 4.2 we explain how to go about doing this.

To ensure successful strategy implementation, it is essential to define strategic targets and make sure through resource planning that they are also achieved¹⁶. The practical implementation of strategic targets can be carried out through master projects, which are operationalised into action plans¹⁷. Many organisations suffer from incomplete strategy implementation¹⁸. They end up using massive amounts of resources on the strategy process, yet ultimately implementing only a small part of their strategy¹⁹. Even if the strategy itself is clear, it is very typical for organisations to run into problems in its implementation due to unclear resource planning or internal resistance to change, for example.

As a result, the various documents intended to steer operations end up being perceived as an assembly of disconnected pieces that have little actual impact and make strategy implementation challenging. As such, the management of strategic master projects and the action plans that support them is first and foremost change management. When different action plans do not come together to form a coherent whole and the effectiveness of individual actions is unclear, their steering capacity diminishes. The number of strategic master projects should be kept relatively low. With too many master projects, a strategy loses its capacity for prioritisation.

In practice, it can often be unclear what the strategic master projects actually are and what documents strategic management is supposed to be based on. Typical examples of documents thought of as being part of strategic management include policies and principles used to describe the theme-specific operating models of themes and sets of themes considered important for the operations of services. Even instructions and checklists intended to harmonise operating methods and reduce the need for case-by-case consideration can sometimes be thought of as being strategic management documents. In practice, however, these types of documents are not master projects or action plans that directly implement a strategy and as such they have no place in the hierarchy of strategy implementation.



Frequently claimed?

“But a strategy is just a strategy. Our strategy covers all the generally important issues and things that come up in joint discussions. You can’t start defining it too restrictively, especially in the public sector”.

A well-prepared strategy that is lean in terms of implementation makes clear choices about what kind of changes are meant to be achieved and how limited resources are to be allocated to different functions. To be lean, a strategy needs to have clear master projects. However, the more master projects a strategy has, the less it will steer actual operations or support the prioritisation of actions. Focusing a little bit on everything means that you will ultimately make no progress on anything.

According to studies, the key elements of successful strategy implementation include clear actions, the effectiveness of the implementation and leadership skills²⁰. Implementing actions that are aligned with targets requires allocating limited resources to actions that contribute to the achievement of the chosen targets. In addition to external costs (procurements), it is also important to take into consideration the internal costs required or caused by actions (such as person-workdays) on the basis of on

action-specific work amount and cost estimates. The aim of resource allocation is to identify and schedule resource needs so that the resources required for the implementation of the action plan are available when they are needed. The most critical resources are usually financial, personnel, competence and technology-related resources²¹.



other and proceed in parallel. Defined action plans are a key part of strategy implementation.

Frequently claimed?



“You can’t programme strategy implementation too much. You have to leave a lot of freedom at the operational level. After all, you never know what new idea or funding source is waiting just around the corner!”

The targets defined in and derived from a strategy determine the direction that you are aiming for. If it becomes apparent along the way that the targets are no longer relevant, they should be updated or replaced. To ensure the capacity to react to changes quickly or even proactively, it is important to also establish a regular and sufficiently frequent update cycle for action plans. To ensure effectiveness and the appropriate allocation of public funding, it is important to tie operational level freedom of choice to the implementation of targets. New ideas should be implemented or new funding applied for only when it doing so contributes to the achievement of the targets in a meaningful way.

Frequently claimed?



“But action plans and their targets are so diverse that you cannot draw up clear instructions for preparing them. Every action plan is a unique whole that finds its shape during the shared discussions carried out during the process”.

An action plan is a tool intended to support strategy implementation. Although the content-related aspects of action plans can vary significantly, basing their preparation on a lean process can contribute to the achievement of strategic targets. Without a high-quality and well-justified process, you cannot expect high-quality substance.

2.4 Supporting strategy implementation with action plans

Based on strategic choices²², action plans are change management tools and collections of actions that contribute to the achievement of a clearly defined target. Instead of being a collection of separate, well-intentioned actions with unclear effectiveness, an action plan is driven by a clear target defined in a strategy. An action plan defines indicators for its target and effective actions that contribute to its achievement. From the perspective of effectiveness, it is important for an action plan to focus not on individual pilots, but rather on permanently changing core processes and operations. Figure 1 depicts how the strategy process and strategy implementation are connected to each

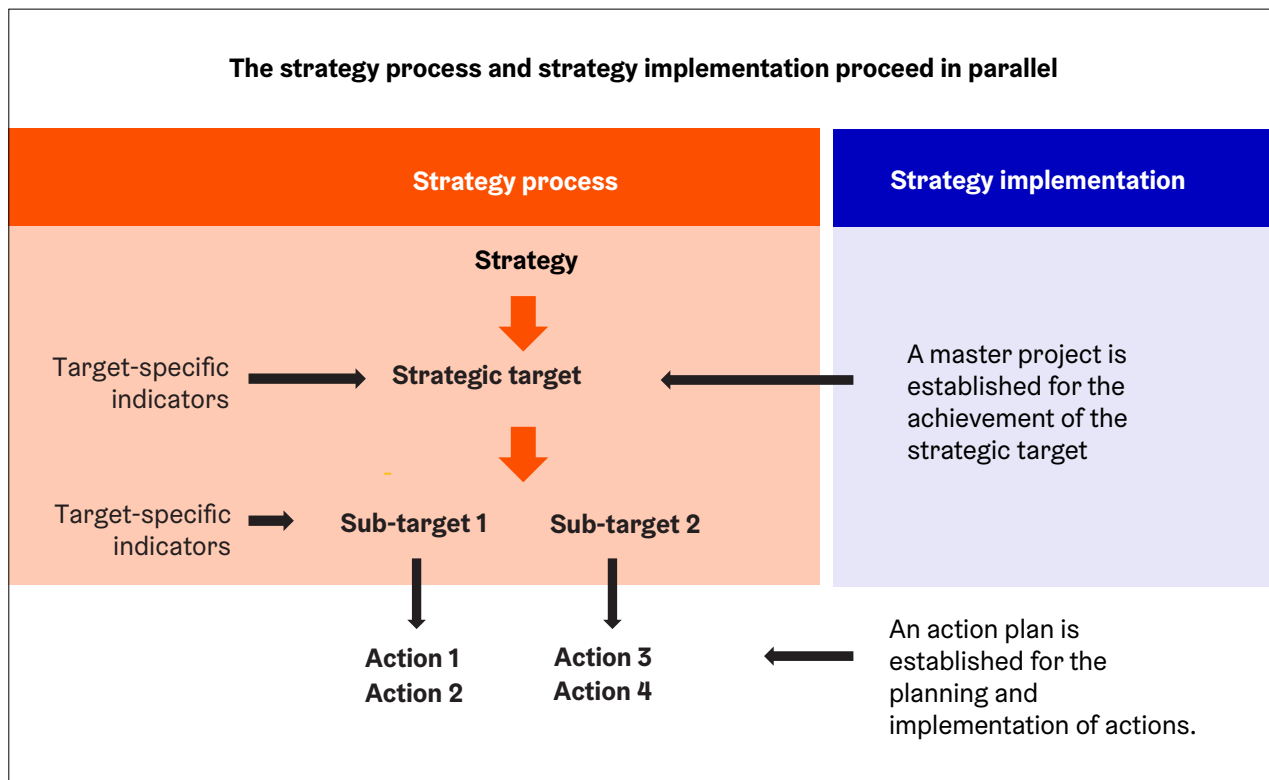
Frequently claimed?



“All actions are important in the fight against climate change and thus cannot be prioritised”.

When it comes to achieving critical targets, it is crucial to understand the effectiveness of individual actions and prioritise them accordingly. Without prioritisation based on effectiveness, resources will most likely be allocated to actions that are easy to implement, but contribute little to the achievement of the target. Actions with low effectiveness are not important in terms of the target if they take up resources from major, more effective actions.

Figure 1. The strategy process and strategy implementation proceed in parallel.



3 Setting and monitoring targets

3.1 Strategic targets and operational sub-targets

Strategy is about making choices. During the strategy process, a strategy is broken down into clear targets²³. A strategic target defines the outcome that you are trying to achieve. For example, in the context of reducing emissions, this can mean defining the amount by which emissions should be reduced and the target year:

“An emissions reduction of x by the year y.”

A strategic target can encompass a set of operational sub-targets, which describe how the desired outcome defined by the strategic target is to be achieved. Sub-targets should be derived from the strategic targets; in other words, sub-targets cannot be defined arbitrarily. For example, for an emissions reduction target, you could define an operational sub-target for transport, which is still one of the most significant sources of emissions:

“Transport kilometrage will decrease by y within time-frame z.”

Actions describe how the defined operational sub-target will be achieved and should always include an estimate of their effectiveness. For example, an action related to the transport kilometrage sub-target could be adjusting transport pricing to reduce passenger car kilometrage:

“A decision will be issued on transport pricing, as a result of which the number of trips made by passenger car will decrease by b, which will reduce emissions by c.”

Targets have their own hierarchy, and a strategic target can include several **operational sub-targets**. Every sub-target must be linked to a specific strategic target, and every action must be linked to a specific sub-target. Any actions that are not linked to targets should be removed from the action plan, unless there are other clear grounds for their inclusion.



Frequently claimed?

“Targets are always easier to accept than actions.”

It is often easy to find widespread support for the actual targets of action plans. For example, views on the importance of promoting climate targets are often aligned. However, the discussion often heats up when it comes time to make choices about the actions intended to contribute to the achievement of the target. Because of this, a multivocal process often results in actions that are easy for everyone to commit to without requiring anyone to make any significant changes to their operations. However, the effectiveness of these types of actions is often low. As such, an effective and acceptable target needs to be backed up with a selection of effective actions that actually contribute to its achievement, lest it remain a mere embellishment in lofty speeches. After all, achieving targets requires concrete measures, which must also be agreed upon sooner or later.

3.2 Formulating an effective target

The target of an action plan defines the change that the plan is aiming for and how it promotes the implementation of the strategy. The target should describe in a sufficiently unambiguous manner both the required change and the time period within which it should be achieved. The instructions provided here apply to the formulation of both strategic and operational sub-targets.



Frequently claimed?

“These targets were really difficult to write down with so many different actions under them!”

From the perspective of achieving targets, strategic management and lean operations, it is important to first define the targets and the indicators for measuring their progress and only then define the effective actions required to achieve them. Following the reverse order will result in a large number of actions that veer in different directions without ultimately achieving anything meaningful. It is important to identify the actions for achieving the target instead of simply coming up with all the things that you could do.



Frequently claimed?

“It is not always so simple to formulate a target. There are a lot of indirect and generally beneficial targets that simply cannot be formulated in a clear and unambiguous manner. And you definitely cannot clearly define the change that they are aiming for.”

A target should always include a description of the required change. If the direction and size of the change are not known, it is impossible to steer operations in a direction that will make a difference in terms of the target. If your targets are unclear, you may end up listing all kinds of actions under them, only to later find out that none of them were actually effective. Some actions can also be justified for other reasons, but in such cases they should not be justified with climate change mitigation. For example, setting up cultivation boxes can be justified on the basis of increasing the comfort and well-being of residents, but since they have no impact on emissions, their implementation should not be an action of an emissions reduction action plan.

A target should clearly define:

Target =
verb + object + current state +
target state + time

The verb answers the question of what the action plan aims to do. For example, in the case of an emissions reduction action plan, the aim is to reduce emissions:

Strategic target: “We will reduce CO₂ emissions by 80% from the 1990 level by 2030.”

Operational sub-target: “We will reduce transport kilometrage by y% from the x level by z.”

The main focus of a target is on the future, to which end the **target state** describes the future situation or change that you are aiming for. In the case of an emissions reduction action plan, the target state often describes by how much emissions are to be reduced:

Strategic target: “We will reduce CO₂ emissions by 80% from the 1990 level by 2030.”

Operational sub-target: “We will reduce transport kilometrage by y% from the x level by z.”

The object tells you which target derived from the strategy the action plan corresponds to. In the case of an emissions reduction action plan, the object is usually related to CO₂ emissions:

Strategic target: “We will reduce CO₂ emissions by 80% from the 1990 level by 2030.”

Operational sub-target: “We will reduce transport kilometrage by y% from the x level by z.”

The **time** defines the time frame within which the change is to be achieved:

Strategic target: “We will reduce CO₂ emissions by 80% from the 1990 level by 2030.”

Operational sub-target: “We will reduce transport kilometrage by y% from the x level by z.”

The current state describes the current situation that you aim to start changing towards the target. The understanding of the current state is based on the best available information. It is important to be aware of the fact that this information can sometimes be incomplete and difficult to define. However, it is important to have at least an approximate understanding of the scale of the required change to be able to define appropriately scaled actions. In the case of an emissions reduction action plan, the current state is often defined as the total emissions of a given year:

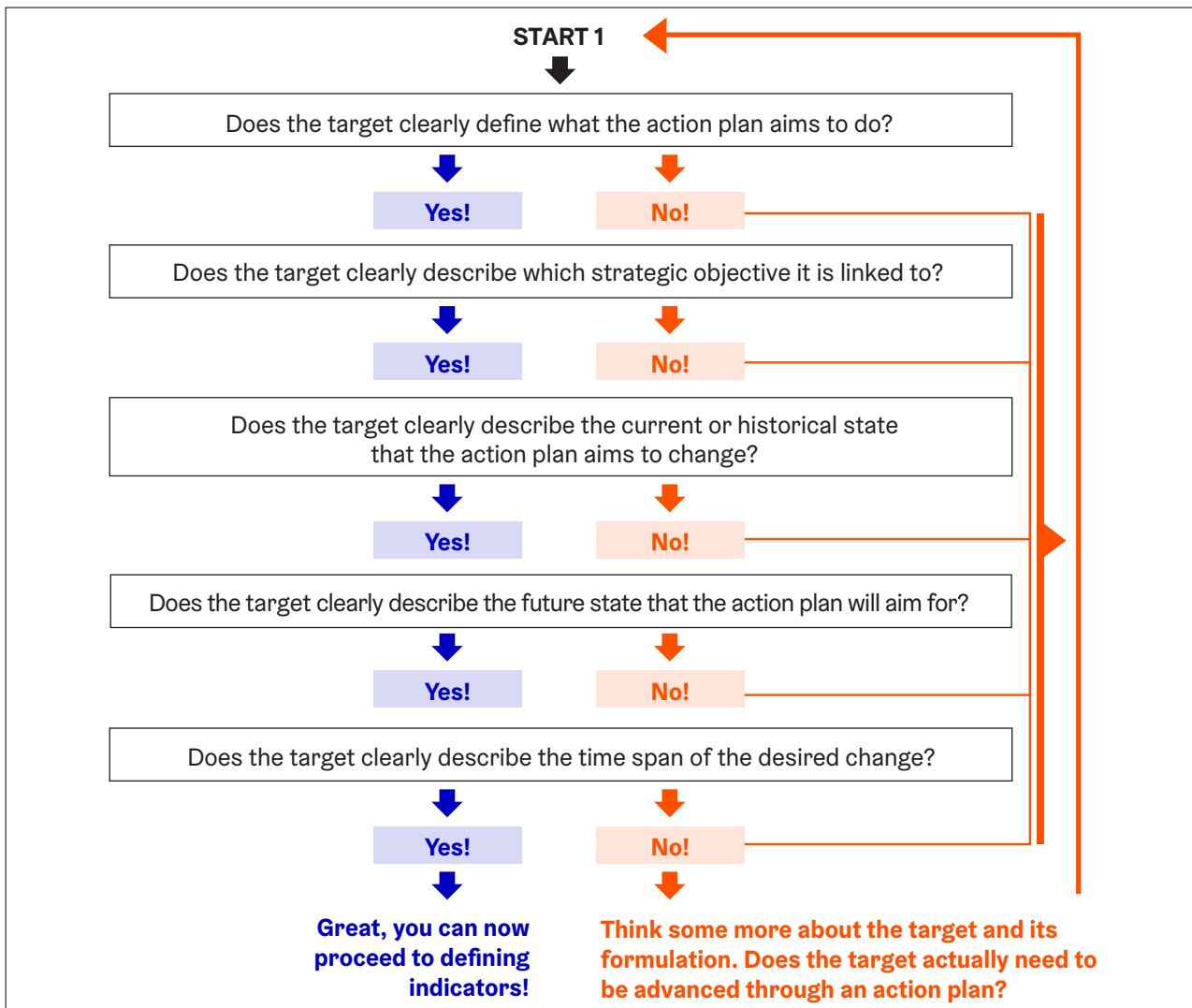
Strategic target: “We will reduce CO₂ emissions by 80% from the 1990 level by 2030.”

Operational sub-target: “We will reduce transport kilometrage by y% from the x level by z.”



The flowchart in figure 2 can help you ensure that your targets have been effectively formulated. Be sure to complete it before proceeding to defining indicators.

Figure 2. Formulating an effective target.



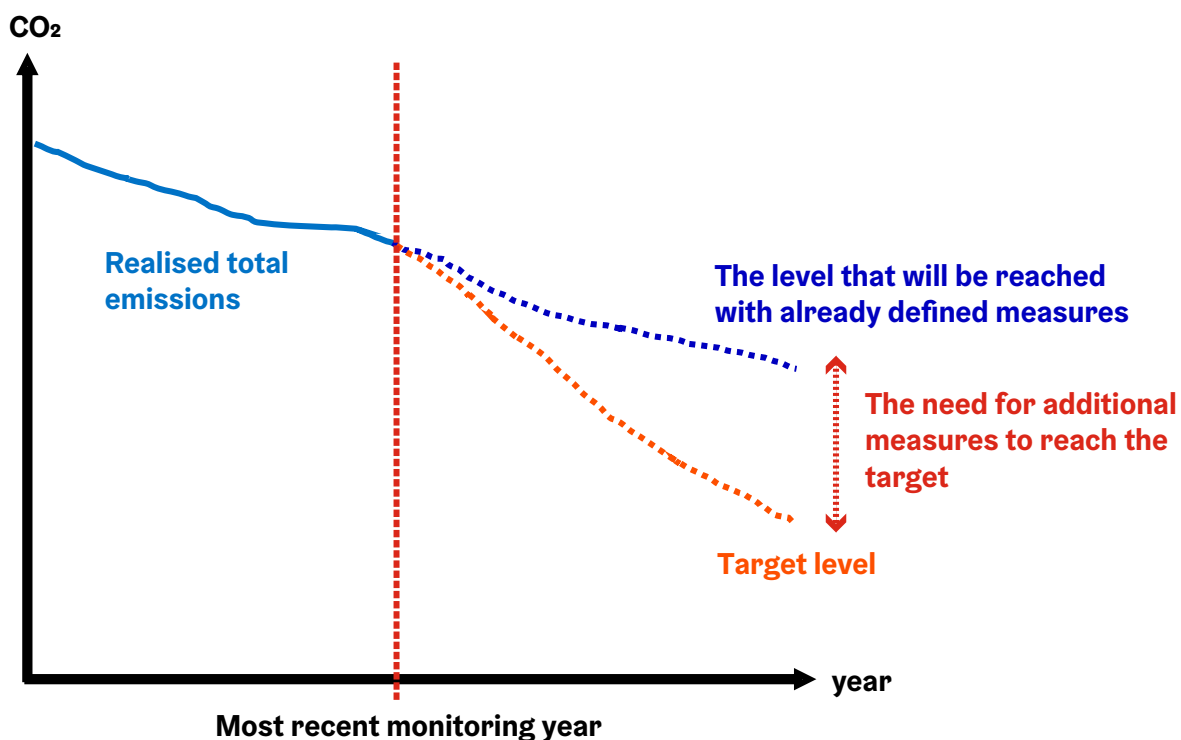
3.3 Monitoring and the definition of progress indicators

Monitoring is a key part of strategy implementation and ensuring the achievement of targets. Effective monitoring ensures that resources are allocated to actions relevant to achieving the targets and helps identify the potential need for corrective actions²⁴. It is often necessary to define milestones for monitoring so that if progress towards the target is insufficient, the matter can be addressed in a timely manner. Progress towards the target is measured on a scale defined by the set target and the base level defined when the target was set (figure 3). In addition to measuring current progress, monitoring

should include a progress forecast based on already decided actions and a progress forecast based on defined additional measures. This comparison contributes to an up-to-date understanding of how many additional actions or corrective actions are needed.

“In addition to measuring total annual emissions, monitoring will be carried out to measure progress towards the set target, forecast expected progress based on already defined actions and determine the need for additional actions”.

Figure 3. Monitoring tied to realised total emissions promotes awareness of the overall situation.





While the formulation of indicators is not the primary purpose of an action plan, giving them some thought can help improve effectiveness. An indicator describes progress towards the target by measuring things relevant to achieving the target. With the increasing digitalisation of society, it is easy to fall into the trap of thinking that you should have as many indicators as possible since there is so much data available from countless sources. However, when it comes to indicators, the focus should be on quality over quantity. Ultimately, the only indicators that you really need are ones that can be used to measure progress towards the target with the necessary level of precision and reliability.

When choosing indicators, you should also keep in mind that the relevance of indicators in terms of measuring progress varies²⁵. The number of indicators does not need to be high, as long as they are relevant. In the case of an emissions reduction action plan, the most important indicator is usually total emissions. If total emissions do not decrease and the emissions reduction target is not reached, any other indicators that you might be using have little relevance.

The key to defining indicators is understanding how to measure progress towards the target. Defining an indicator requires a good understanding of the current situation so that the current state and target state can be compared. Indicators can help ensure that you do not stray from the desired path and that progress is regularly monitored so that you can change direction before the deadline of the target, if necessary. To strengthen their steering capacity, relevant indicators should focus primarily on measuring progress towards the chosen target instead of the progress of individual actions.



Frequently claimed?

“But it simply isn’t possible to measure everything! There are a lot of indirect impacts that you simply cannot measure. Besides, formulating numeric indicators can focus your thoughts on the wrong things. After all, the most important things in life cannot be measured.”

It should be noted that an indicator does not necessarily need to be numeric, as long it can otherwise unambiguously and reliably describe progress towards the target. You can also have multiple indicators, as long as they are all relevant and support action plan management.



Frequently claimed?

“But we consider practical measures so important that our indicator is the number of actions carried out! No stone should be left unturned in the fight against climate change.”

Instead of the number of actions, it is important to focus on their effectiveness. Even if you implement a large number of actions, you can still end up falling short of the target if they are not effective in terms of the target. In other words, the number of ongoing or existing actions is not a relevant indicator for the monitoring of an action plan. Instead, monitoring should be focused primarily on the achievement of the target.

The effective management and resource allocation of an action plan requires the defining of indicators and a regular and sufficiently frequent interval for their monitoring. Effective monitoring requires clear and relevant indicators that are derived from the target of the action plan. A good indicator is not too open to interpretation, as you get what you measure. An indicator should clearly define:

Indicator =
connection to the target + relevance +
monitoring cycle

The **connection to the target** ensures that the indicator clearly defines the target that it is used to measure progress towards (such as total emissions or change in CO₂ emissions). However, simply being connected to a defined target is not enough to guarantee **relevance**. In other words, it is important that the indicator is used to monitor something that is relevant to the target instead of something that is easy to measure.

“The most important indicator of the emissions reduction action plan is total emissions”.

The **monitoring cycle** determines how frequently progress towards the target needs to or can be monitored so that changes can still be implemented and corrective actions defined, if necessary. For long-term action plans and targets, it is also necessary to define milestones to support monitoring.

“Total emissions are monitored annually. Any additional actions are defined on their basis, as necessary”.

If monitoring reveals that the defined targets will not be reached within the defined time frame, the initiation of **corrective actions** must be considered. Corrective actions are actions that were not originally included in the action plan, the purpose of which is to ensure the achievement of the target in the event that the originally defined actions fail to achieve the desired or sufficient progress.



Frequently claimed?

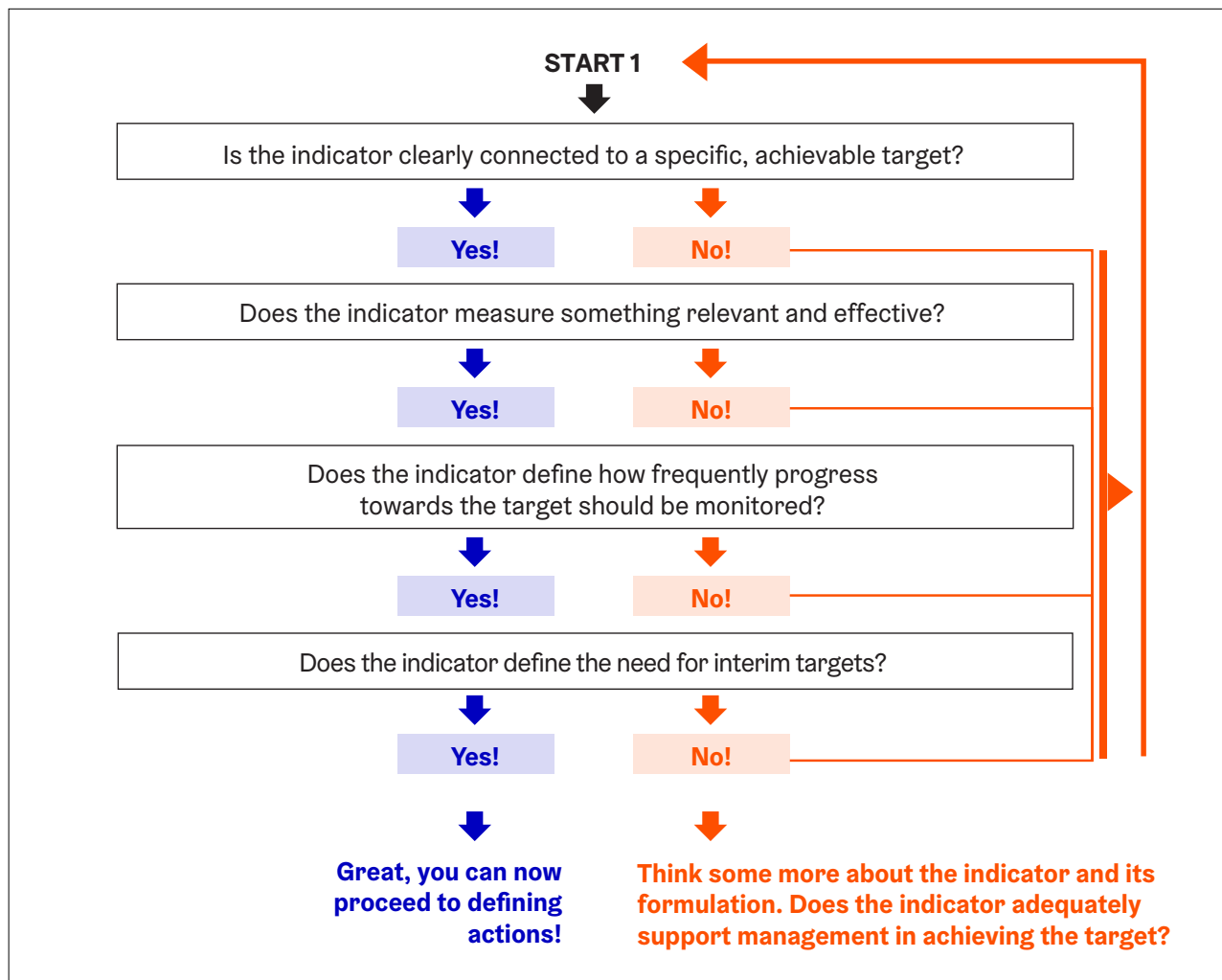
“You shouldn’t think about corrective actions too early. It is entirely typical for impacts to become visible only after prolonged periods. You need to be patient.”

If the time frame of a target is ambitious, it is important to take additional and, if necessary, corrective action early enough. It is also important to define the monitoring cycle in advance and adjust it based on the available time. The more ambitious the target and the less time there is to achieve it, the more frequently progress towards it needs to be monitored. When defining actions, you should also consider the amount of time needed to change them. You need both actions that will achieve the set target on time as well as actions that will maintain the change achieved afterwards.



The flowchart in figure 4 can help you ensure that your indicators have been effectively formulated. Be sure to complete it before proceeding to defining actions.

Figure 4. Formulating an effective indicator.



4 Defining effective actions

4.1 Formulating actions

Preparing a massive number of actions can take up resources that would be better spent on implementing effective actions and end up drawing focus away from the chosen targets²⁶. As such, an action plan should include only the actions that are most important in terms of strategy implementation²⁷. An effective action is always based on a clearly defined target and contributes specifically to the achievement of that target. Actions that do not contribute to the achievement of the chosen target should not be included in the action plan.

Heard elsewhere!

“A good rule of thumb is to follow a so-called 20/80 rule: list the 20% of actions that will implement 80% of the strategy”²⁸.

Instead of the quantity of actions, you should focus on their effectiveness. The number of actions does not need to be high, as long as the actions are effective. Doing a little bit of everything will lead to nothing, so do not try to increase the number of actions at the cost of their effectiveness.

The assessment of the effectiveness of an action depends on the target. In other words, an action that is highly effective for raising general climate awareness, for example, is not necessarily effective for achieving a specific emissions reduction target within a specific time frame. What this means in practice is that actions should be selected based not on their quantity, but on their capacity to contribute to the achievement of the chosen target. The effectiveness of individual actions inevitably varies, which means that assessing the effectiveness of actions and their resource and cost effects can help prioritise actions based on the available time and resources.



Frequently claimed?

“For us at least, the programming of official work is an important part of operational planning. After all, official work contributes to the achievement of the climate target, too. It would be strange to think of official work as being somehow separate from the target! Many other actors are also already doing more comprehensive things working towards the target. Why are they not included in the action plan?”

An action plan is always a collection of additional measures for achieving a target defined in a strategy. What is meant by ‘additional’ is that these measures would not be carried out without being programmed in the plan. If current operating methods are enough to achieve the target, then there is no point in including the target in the strategy. An action plan is a change management tool, and the measures carried out under it often aim to implement permanent changes to official work and core processes as well. Furthermore, an action plan should only include measures that the actors carrying it out can influence. This ensures that the targets can actually be achieved.

If you are wondering what to do when an action being prepared is already part of official work, see FAQ1.



Frequently claimed?

“But effectiveness is not what is important, what is important is that we are implementing these actions! After all, effectiveness is entirely dependent on how these actions are carried out.”

That is true. A loosely defined action will not steer towards effective measures. As such, it is important to write down actions in a way that ensures that they steer operations clearly and directly in an effective direction – without unwanted externalities. Especially in the public sector, available resources are limited and need to be allocated in a socially responsible manner. As personally motivating as carrying out less effective actions could be in some respects, resources need to be allocated primarily to responsible and effective actions that contribute to the achievement of the chosen targets.

Actions should be clear and unambiguous so that the actors responsible for them are aware of what they need to do²⁹. An action should clearly define:

Action =

**Additionality + Effectiveness + Feasibility
+ Clarity + Responsibility assignment +
Timetable + Monitoring**

4.1.1 Additionality - Is the action already a part of other action plans, official duties, etc.?

Additionality ensures that the action plan's resources are allocated primarily to actions that are not already a part of official work, activities defined elsewhere (e.g. legislation) or other ongoing or already completed action plans. Under current action plan practices, the same actions are utilised in multiple action plans simultaneously. This means that resources that could be used on the implementation of actions are instead used on administrative reporting, as the same actions have to be reported to multiple actors. The additionality of actions is examined in greater detail in section 4.3.



Frequently claimed?

“It is important for all actors to participate extensively in climate work. We cannot achieve the target without the participation of residents and companies, which is why it is important to come up with actions for them as well”.

The primary target of an emissions reduction action plan should be to reduce emissions. As such, the action plan should only include actions that significantly reduce emissions. If the participation of a given actor is not critically relevant to reducing emissions or if it is difficult or impossible to influence the actor's behaviour, actions focusing on this actor should not be included solely for the purpose of allowing everyone to participate. Participation is its own, separate objective, which can contribute or not contribute to the achievement of the emissions reduction target.

According to studies, providing more information has very little impact on people's values and behaviour, and even when it does, the impacts are often short-lived³⁰. Because of this, simply sharing information without carrying out any other actions is usually not an effective measure.





Frequently claimed?

“The action will strengthen understanding for the achievement of strategic targets. The action will create a regularly convening network to ensure the information flow of existing projects” (adapted example from an existing action plan).

Measures that are already part of official work, other project or action plan management should not be separately programmed into the action plan, as their programming and monitoring takes additional time. For example, information flow between strategic targets and master projects should be ensured as part of the City’s operating culture and core processes instead of being programmed into separate action plans, as the latter approach will only take up resources from more effective measures. Instead of the example above, an additional action in an emissions reduction action plan for changing the entire core process and contributing to the achievement of the emissions reduction target could go something like this:

“Renovation projects concerning City facilities and service buildings will be implemented from planning beginning in 2022 onwards so that the E value will decrease by 34% of the buildings’ original E value”.

If you are wondering what to do when an action being prepared is already a part of other strategies, action plans, etc., see FAQ2.

4.1.2 Effectiveness - Is the action effective in terms of contributing to the achievement of the action plan’s target?

Under current action plan practices, plans often include numerous actions that have no direct (or necessary facilitating) impact in terms of contributing to the achievement of the action plan’s target. If it becomes apparent during the implementation

of an action plan that the planned actions hardly contribute to the achievement of the targets, then the organisation should have the courage to discontinue ongoing actions or cancel ones that have not been started yet. The effectiveness of actions and the definition thereof are covered in greater detail in section 4.2, while the need for additional actions is covered in section 4.3.



Frequently claimed?

“The action involves preparing plans for defining solutions in accordance with regulations. An assessment of the benefits of the new plans will also be carried out at a later date” (an adapted example from an existing action plan).

It is important to recognise during preparation that the effectiveness of actions in terms of contributing to the achievement of the target can vary. Some actions can have direct impacts or directly facilitate them, while others, like the ones described above, can consist of measures in preparation of actual actions. As such, it is important to assess and appropriately document the effectiveness of actions so as to communicate it to the actors responsible. An action plan should focus primarily on actions with high effectiveness. In an emissions reduction action plan, actions could be categorised as follows, for example:

1. Actions that directly reduce emissions;
2. Required actions that enable direct emissions reductions;
3. Surveys to determine new emissions reduction actions in categories 1 and 2.

If you are wondering what to do when an action being prepared only facilitates or enables, but does not steer, see FAQ3.

If you are wondering what to do when the effectiveness of an action being prepared is negative in terms of the target, see FAQ4.

If you are wondering what to do when an action being prepared only proposes new surveys, action plans, etc., see FAQ5.

4.1.3 Feasibility - Can the action be implemented with the available resources?

It is important to allocate available resources to actions with which the changes necessary for achieving the target of the action plan can be implemented. Under current practices, many actions do not undergo an analysis, which can help ensure that the action is actually feasible with existing or separately allocated resources.

Frequently claimed?

“It is imperative to also include actions that are important, but unfeasible with current knowledge or current resources.”

The actions of an action plan must be feasible in order to contribute to the achievement of the target. If an action is not feasible with current knowledge, it can be included in a category of action ideas to be developed further and then added to the action plan in a later update cycle, once the preconditions for its implementation have been met.

If the exact cost effect of the action cannot be estimated, it is a good idea to mention the approximate scale of its impact, for example:

- Feasible as part of official duties, no need for additional resources.
- Small cost effect (approximate funding need).
- Moderate cost effect (approximate funding need).
- Major cost effect (approximate funding need).

Frequently claimed?

“To achieve the overall target, solar power must account for 15% of electricity production. We do not know how to reach this, but we will include the target as an action!”

Writing a target (= increasing the proportion of solar power to 15%) in another way (= the proportion of solar power will be increased to 15%) does not make it an action. An action must clearly indicate how its target state is to be achieved. In the case of the example above, a sub-action for reaching the target state regarding solar power could be a zoning regulation for increasing the proportion of solar power or a policy of installing solar panels on all of the City’s new and renovated properties. The effectiveness of these sub-actions needs to be assessed to make it possible to estimate progress towards the overall target.

4.1.4 Clarity - Is the action clearly defined?

Clarity ensures that the actors implementing the actions are sufficiently aware of what their implementation requires. Under current practices, a single action can include numerous sub-actions that are not directly dependent on one another or that do not need to be implemented simultaneously. To make sure that resources are allocated to the actions that are most critical in terms of the target, it is important to define actions in a sufficiently understandable and clear manner, i.e. what the implementation of the action means and what it entails, at least.





Frequently claimed?

“The action involves developing and using new tools and methods” (adapted example from an existing action plan).

The risk of unclear formulation arises for example when an action is recorded in a very general manner, without going into sufficient detail about its target and effectiveness. If the content and benefit of the action are unclear, the resources allocated to it will most likely fail to achieve the impacts that the action was originally aiming for. It is also impossible to assess the effectiveness of an unclearly defined action. As such, it is important to test the clarity of actions and how they could potentially be misunderstood in ways that do not contribute to the achievement of the target. As a rule, actions that encourage, promote or develop without providing more detailed descriptions of how these things will be done should not be included in action plans. Lack of clarity is often the result of disagreement regarding the implementation of the action. This disagreement cannot be circumvented by writing down the action in an unclear manner.

If you are wondering what to do when the target level of an action being prepared is unclear, see FAQ6.

4.1.5 Responsibility assignment - Is it clear which actor is responsible for the action?

The responsible actor unequivocally defines who is responsible for implementing the action and coordinating any cooperation that it requires. Under current practices, action plans include large numbers of actions that have not been sufficiently clearly assigned to a specific actor, as a result of which resources are spent on discussion about responsibility assignment instead of on the implementation of the actions.



Frequently claimed?

“There is no need to waste time on detailed responsibility assignment during preparation. Responsibilities should only be assigned on a general level so that organisations can later discuss amongst themselves who would like to participate. Furthermore, it is important that for each action we also list every possible related sub-action so that they do not go unrecorded.”

Responsibilities need to be assigned in sufficient detail during the preparation phase so that the actors responsible for actions can participate in the definition of measures. If responsibility assignment, commitment assurance and resource allocation are not carried out during the preparation phase, the implementation of the action may be delayed if these are not accounted for in the operational plans. In connection with responsibility assignment, it is also important to make sure that responsibility for the action is assigned to an actor that can take responsibility for the implementation of the action. Actions assigned to actors that cannot take responsibility for the actions in practice cannot be effective. An example of clear responsibility assignment is provided below, in addition to which the action needs to be communicated to the actor responsible at a sufficiently early stage:

“The actor responsible for the action is unit x”.

4.1.6 Timetable - Is the scheduling of the action clear?

The timetable defines the deadline for the action, if applicable, and when the action can be considered to have been implemented. Current practices are characterised by the constant increase of continuous actions, the successful implementation of which is difficult to determine. In other words, many of the actions included in action plans have no clear end point, as a result of which they tie up resources for long periods of time regardless of whether they are effective in terms of the targets of the plans. As such, the point at which an action can be considered to have been

successfully implemented needs to be clearly defined along with the target timetable of the action, if applicable. The target timetable can depend not only on the target year of the action plan, but also the interdependencies of actions, i.e. their implementation order.



Frequently claimed?



“You can’t know the timetable in advance. There are always changes that cannot be accounted for. Because of this, you should avoid making timetables too strict. Besides, some measures may require external funding, the granting and scheduling of which is always uncertain. It is better to let measures proceed at their own pace based on people’s enthusiasm for taking action.”

It is true that changes can occur along the way. However, if the achievement of targets is dependent on uncertain funding or the personal enthusiasm of people, then the preconditions for achieving them are poor. If there is a clear need for an action, it should be scheduled and resources should be allocated to it during the preparation phase to ensure the preconditions for its implementation. If there is no need for the action, it is better to leave it out of the action plan so that it does not compete for limited resources with other actions. The timetable can be defined as follows, for example:

“The actions will be implemented during the year 20xx”.

4.1.7 Monitoring - Can the progress and successful implementation of the action be measured?

Monitoring defines how the progress and effectiveness of the action is to be measured. Currently, the monitoring of many actions included in action plans focuses on the implementation of individual actions or internal indicators, with no clear connection to the actual target of the plan. A far more effective way is to define the monitoring methods and monitoring cycle of actions in a way that connects them directly to the achievement of the plan’s targets and provides information on the need to change course or implement corrective actions.

Frequently claimed?



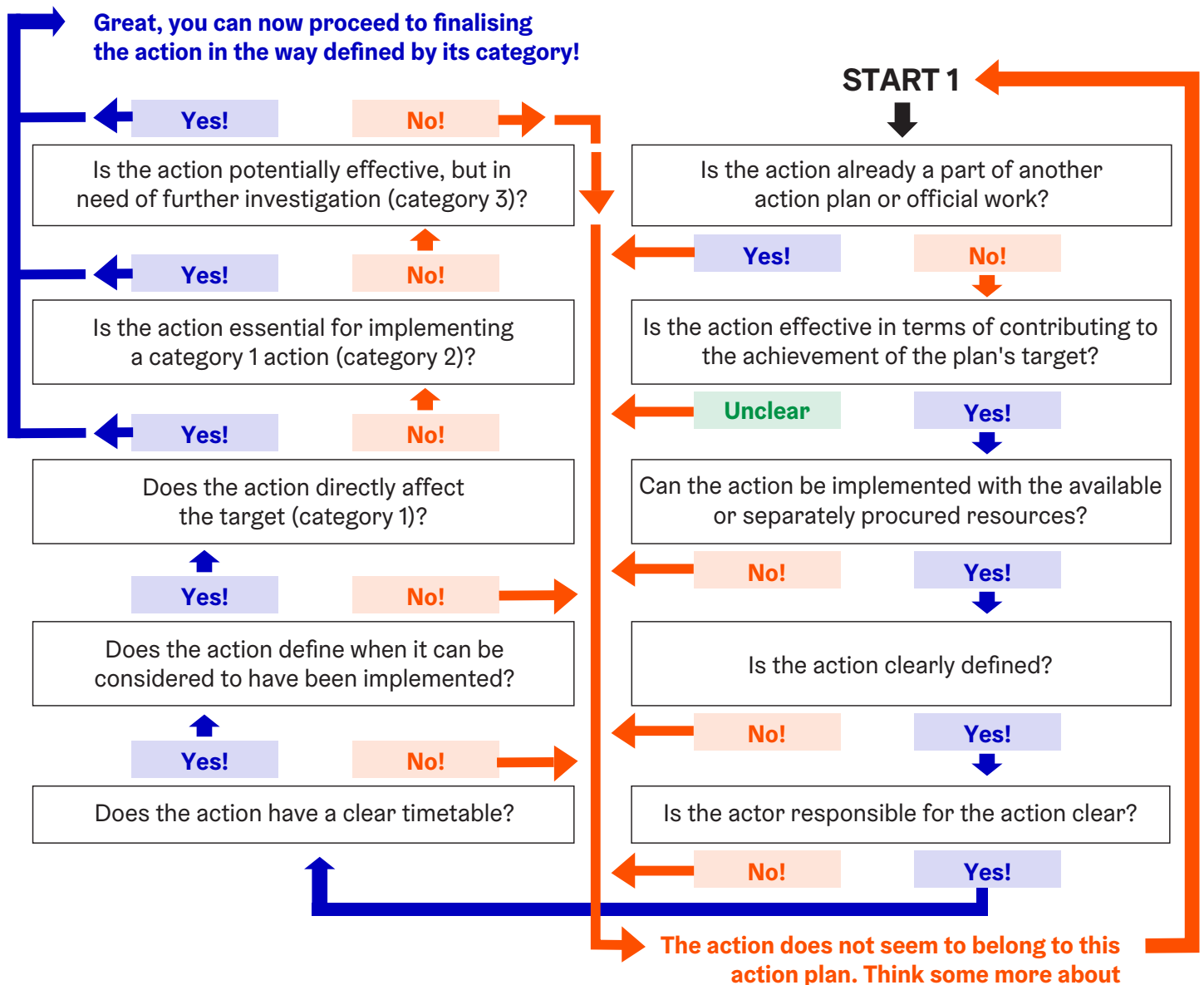
“Even a small step is a step in the right direction. There is no point in defining when exactly an action is completed or ends. It is a good idea for each action to have many operational indicators so that you can report on how many different measures are in progress”.

The purpose of actions is definitely to make sustainable changes to operating methods. However, from the perspective of resource allocation, it is not ideal for actions to continue forever or have new sub-actions constantly added to them. Instead, actions should lead to permanent changes in core processes. As such, it is important to clearly define when an action can be considered to have been implemented so that resources can be re-allocated to other needs. An individual action does not necessarily need to be monitored with many indicators, but in the case of long-term actions in particular, it may be important to monitor their progress. However, it should also be noted that in the case of an emissions reduction action plan, for example, the only key indicator is total emissions. If total emissions are not reduced, operational indicators are not useful in and of themselves. Operational indicators that can be utilised in an emissions reduction action plan include:

- The implementation of the action has concluded.
- The emissions reduction of a specific sub-process compared to the BAU scenario, e.g. “50% emissions reduction in sub-process x compared to the BAU level”.
- Number of solutions implemented (pcs/km, etc.).

The flowchart in figure 5 can help you ensure that your actions have been effectively formulated. Be sure to complete it before proceeding to the decision-making phase and implementation of the action plan.

Figure 5. Formulating effective actions.



4.2 The effectiveness of an action

The effectiveness of actions should be assessed relative to the set targets. There is no single universal definition for effectiveness. However, one simple definition would be that the effectiveness of an action describes how big of a change in the desired direction in terms of the target the action will achieve. The effectiveness of individual actions varies, and there is no need to include all possible actions in an action plan. Instead, the aim should be to select the most effective or otherwise essential measures out of all the countless options. In practice, this means that even seemingly sensible measures may need to be excluded. Including actions with low effectiveness in an action plan ties up resources in irrelevant work that contributes little to the achievement of the plan's targets. The actions of an emissions reduction action plan can be roughly divided into three different categories. The majority of actions should be category 1 actions:

- 4. Actions that directly reduce emissions.** This category includes actions that directly and demonstrably contribute to the achievement of the target. Since the target in this case is to reduce emissions, this category includes actions that directly reduce emissions.
- 5. Required actions that enable direct emissions reduction.** This category includes actions that are essential for implementing category 1 actions, but do not necessarily directly contribute to the achievement of the target by themselves. To ensure the effectiveness of the actions included in this category, their necessity for implementing category 1 actions should be demonstrated through systems analysis and/or based on research, for example.
- 6. Surveys to determine new emissions reduction actions for categories 1 and 2.** The purpose of these actions requiring additional preparation or studies is to prepare category 1 and 2 actions that meet the criteria set for them. These can include surveys for identifying sufficient emissions reduction actions, for example.

It is typical for the majority of actions included in action plans not to fit neatly into any of these categories due to being selected primarily based on their seemingly simple implementation, which often proves to be anything but in practice.



Photo: Julia Kivela

Frequently claimed?



“But this action is important, too!”

If the available resources are limited, then the general importance of actions is not a sufficient selection criterion by itself if the effectiveness of actions in terms of the set target varies. If your emissions reduction action plan, for example, includes actions that primarily affect general living comfort, participation or air quality, you can easily end up in a situation where the primary target of the action plan, reducing emissions, is overshadowed by other objectives. In fact, a clear primary target is a crucial tool for excluding and prioritising actions so that resources can be allocated to measures that are most relevant in terms of the target.

Frequently claimed?



“Insect hotels in the yards of buildings are important”.

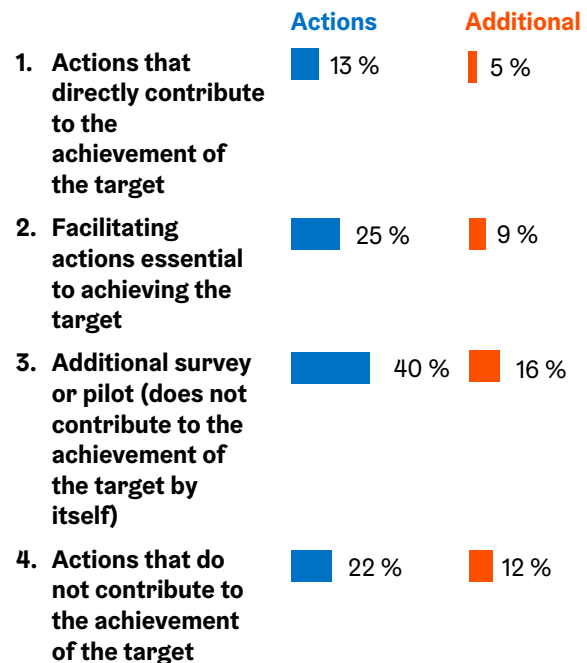
True, but they do not reduce emissions. If actions intended to support the pollinator population are nevertheless included in an emissions reduction action plan, the plan may end up giving the impression that increasing the number of insect hotels is sufficient for reducing emissions and that other actions, such as reducing construction emissions, are optional. Because of this, it is important to understand and specify what an action will actually and primarily affect.

The actions included in the City of Helsinki’s Carbon-neutral Helsinki 2035 action plan were reviewed for effectiveness based on the above categorisation and additionality after the plan had already been prepared. Based on the review presented in figure 6, only 5% of the actions included in the action plan directly corresponded to its target and were additional in nature. Over 60% of the plan’s actions consisted of additional studies, pilots

or activities that did not contribute to the achievement of the target of the plan in any way.

This example demonstrates why assessing the effectiveness and additionality of actions is so important, especially when operating with limited public resources. If only 5% of actions contribute to the achievement of the plan’s target, then the previously presented 20/80 rule is not even close to being followed.

Figure 6. Analysis of the effectiveness and additionality of the actions of the previous Carbon-neutral Helsinki 2035 action plan.



It is not uncommon for action plans to be presented as actually striving for indirect effectiveness instead of direct effectiveness. In such cases, it may seem difficult to determine how effectiveness should be defined or measured. In practice, it is not, however, because when resources are allocated based on action plans, the target of each plan must be clear and methods for monitoring progress towards it must be developed during the preparation of the plan at the latest. If the connection between the target and actions cannot be demonstrated and the implementation of the actions requires resource allocation, then the action plan is not yet ready for decision-making before the target is clarified and the effectiveness of actions in terms of the target has been re-assessed. Once the action plan is ready for decision-making, there is a clear connection between its target and actions and the ‘measurement’ of indirect impacts is no longer challenging.

Frequently claimed?



“But you can’t measure indirect impacts.”

It is true that indirect impacts cannot always be measured numerically using simple indicators. However, indirect effectiveness and its scale and type can be assessed based on other classifications, such as by assessing how certain the impact of the action is or how many steps of a systemic chain the preconditions for its implementation are behind. This can be done with the help of systems analysis, for example, which we explain more about in section 4.4.

ness, the majority of actions should instead focus on ensuring that continuous operations change in way that contributes to the achievement of the target. If, for example, the target is to reduce emissions from heating by reducing the energy consumption of buildings, it is more effective to change policies that steer construction so that all of the buildings are built according to energy efficiency class A instead of implementing a large number of energy-efficiency measures at a specific pilot site. As the number of affected sites increases, the effectiveness of measures increases significantly.

But how precisely should effectiveness be assessed? Effectiveness and impacts are often assessed based on a heavy and detailed protocol. However, it is more important to assess the approximate scale of the impacts of actions to ensure that limited resources are used in as effective a manner as possible and so that the effectiveness of the actions in terms of contributing to the achievement of the target can be assessed. When determining the level of precision of effectiveness assessment, it is also necessary to take into consideration and clearly express the uncertainties and inaccuracies related to the source data, the uncertainties related to assumptions and the time span of the assessment.

Frequently claimed?



“Public participation is key to achieving the emissions reduction target, and the best way to influence people’s behaviour is to share information”.

The importance of public participation should be assessed in relation to the target. If the target is to quickly achieve significant emissions reductions, effective participation can include things like carrying out energy renovations on personal properties. Public participation and inclusion can also be based on other objectives, such as increasing community cohesion or easing climate anxiety, but in these cases activities cannot be justified with their impact on emissions, meaning that it would be better to implement them under a wellbeing action plan, for example.

For example, the emissions generated by pleasure boats are calculated based on the number of pleasure boats registered in the municipality, with the assumption that each registered boat generates a specific amount of emissions each year.

However, since the emissions and use of boats vary significantly, the estimate used in the source data introduces great uncertainty. If the point is to assess the impact that the natural turnover of pleasure boats has on emissions, the result of the assessment will inevitably be highly imprecise. In this case, there is no point, nor need to calculate precise multi-variable estimates of the development of emissions based on the available source data.

Another major issue in terms of the effectiveness of action plans is that often a large proportion of actions focus on things outside of core processes, as a result of which they have no scalability. In other words, actions are implemented in the form of separate, individual activities. To ensure effective-

Assessing the approximate scale of impacts is often sufficient. When the time span of assessments is long, the assumptions used in calculations introduce so much uncertainty that precise assessments become impossible. If the aim is to assess the impacts that actions will have 10 years from now, for example, a good rule of thumb is that

there is no need to go beyond percents or tens of percents. If numerical assessments cannot be made with reasonable effort, it is often enough to estimate the approximate scale of impacts verbally (major/medium/minor impact). On the other hand, the effectiveness of facilitating actions (category 2) should never be assessed numerically, nor should any resources be allocated to doing so. Still, the effectiveness of these types of actions needs to be ensured in other ways. Actions that only have a minor impact should, as a rule, not be carried out at all when resources are limited.

4.3 The additionality of an action

Additionality means that the action is separate from actual official work and would not be implemented without being programmed in the action plan. If an action will be implemented in any event, including it in an action plan provides no added value. There is also no need to bloat action plans with actions that are already outlined or being carried out elsewhere (other plans, legislation, as part of daily work, etc.). Most things are carried out as part of normal official work without needing to be programmed. In this context, official work means all the work carried out by the organisation's employees as part of their regular duties that have already been defined or outlined elsewhere.

It is very typical for the same actions to be listed multiple times in different action plans and for work that is part of normal official duties to be included as actions in plans. However, these types of approaches are not ideal in terms of effectiveness. Instead, action plans should only include measures that would not be implemented without the support of the plan and that are critical to the achievement of the plan's target.

4.4 Identifying critical actions with systems analysis

Actions are often dependent on one another in various ways^{31, 32}. By making the relationships between actions visible, choices can be made in a more transparent and information-based manner. One method of identifying actions critical to the achievement of targets and exploring the interdependencies between actions is systems analysis. Systems analysis helps you understand the things that actions can affect and how they affect them. In addition to

this, it helps you understand what kind of actions are effective in terms of the targets, what kind of actions are needed at each level and stage of planning and what kind of things actions can actually affect and by how much³³.



Heard elsewhere!

“The most critical aspect of strategy work is insight: you have to be able to see the big picture, the parts that form it and how these parts interact with each other”³⁴.

Assessing these interactions is one of the most important aspects of assessing the effectiveness and impacts of actions, as many actions are dependent on one another and affect the preconditions or effectiveness of other actions in various ways. Because of this, it is important to examine planned actions systematically to identify unwanted and surprising synergies.

The prioritisation of actions means making systematic and informed decisions about which actions are the most effective or critically facilitating and how limited resources should be primarily allocated based on this information. Prioritisation is also affected by the probability and timespan of the impacts of actions and the feasibility of actions in terms of available resources or the political situation. Systems analysis also helps to identify actions that need to be implemented simultaneously to have the desired impact.

1. Identifying components. What components affect the achievement of the target based on current knowledge and research literature?

Figure 7. Identifying components can help identify themes important to the target

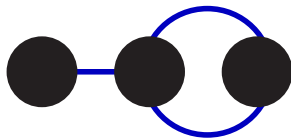


“The target is to reduce emissions from transport by x% by the year y. Based on research literature, it seems that transport emissions are greatly affected by transport kilometreage (component 1) and unit emissions (component 2), for example”.

The first step is to identify primary level components. A more detailed analysis will result in finding secondary level components that affect the primary level components. The analysis is continued based on literature until a sufficient level of detail in terms of the target and the operational power of the actor responsible for the implementation of the action plan is reached.

2. Identifying the interrelations between the components. Which of the identified components affect each other based on current knowledge and research literature? If component 1 is affected by component 2, is component 2 also affected by component 1, or is the relationship one-way?

Figure 8. Identifying the interrelations between components helps you understand how the components are connected to each other.



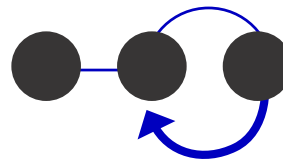
“Based on research literature, we find that components 1 and 2 clearly affect each other. There also seems to be an indirect connection between components 1 and 3, which should be taken into consideration, even though the components do not affect each other directly based on literature”.

The next step is to identify existing relationships, dependencies and other connections mentioned in literature between the different components. Components can have different types of relationships³⁵. The three most important categories are:

- **Precondition** = The actions are preconditions for each other’s implementation, meaning that both need to be implemented to achieve the target.
- **Facilitation** = One action facilitates the implementation of the other action. For example, in the context of emissions reduction, limiting passenger car traffic is not enough if a transition to more sustainable modes of transport is not facilitated at the same time by developing the service level of public transport and cycling infrastructure.
- **Contradiction** = One action prevents the effectiveness of the other actions or cancels out its emissions reduction impact. For example, in the context of emissions reduction, actions promoting sustainable transport are not effective if you are also implementing actions that increase the transport kilometrage of passenger cars.

3. Identifying the strength and direction of relationships. How strong (e.g. on a scale of weak, moderate, strong) are the relationships between the different components based on current knowledge and research literature? Are the strong relationships complementary or contradictory?

Figure 9. Identifying the strength and direction of the relationships supports the prioritisation and risk assessment of actions.

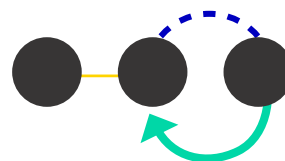


“Based on research literature, we find that the impact of component 1 on component 2 is significantly weaker than that of component 2 on component 1. As such, caution must be exercised in changing component 1, as even a small change can have a major impact due to the strength of the feedback cycle”.

The next step is to identify the strength and direction of relationships based on literature. This step provides important additional information that can support the risk assessment of actions, for example.

4. Identifying the types of relationship. What is the nature of the relationships between the components based on current knowledge and research literature? Are they positive or negative? Are there other dependencies between the components? Do both components need occur simultaneously to achieve a given impact, or is it enough for just one of the two components to occur? Are there components that must occur to achieve the target? Are there temporal dependencies between components: do some impacts need to occur before others can occur?

Figure 10. Identifying the types of relationships helps you understand the temporal dependencies between components.



Once the preliminary systems analysis is ready, you have an overview based on which you can start drafting the most effective actions and actions for facilitating them (ones with close and facilitating relations). Depending on the target and actions, the analysis can be continued by categorising components based on factors such as the responsible actor (city, state, private, etc.) to identify the role of the actor responsible for the implementation of the action plan in terms of their influence on the components. The temporal aspects of relationships (takes a long time to occur, occurs quickly) can also be further analysed for additional information on the amounts of time needed to achieve impacts. Cost and other resource impacts can also be analysed as part of systems analysis to reveal the resource needs of actions in addition to the scale of their impacts.



Frequently claimed?

“But everything affects everything, which makes this kind of analysis completely impossible and useless.”

It is true that in-depth analysis can reveal an overwhelming number of systemic interrelations. Because of this, it is important to focus the analysis specifically on the most notable relationships. This kind of approach provides critical information about the most effective actions and which actions require other actions to be implemented.



5 The Action Plan Process

5.1 The stages of an action plan's lifecycle

The action plan process describes the continuum of interdependent administrative tasks related to the preparation and implementation of a plan. To ensure appropriate preparation, it is important to carry out the right tasks in a sufficiently effective manner during each step of the process.

If you are wondering what to do when an action being prepared is a part of the action plan management process, see FAQ7.

Issuing a decision to start preparation ensures that there is a need for the action plan and sufficient resources for its preparation. The matter will be processed as an action plan, and the approval to proceed with preparation can be given once the following criteria are met:

- **The target is significant in terms of the strategy.** Evaluation criterion: a clear description of what part of the strategy the action plan is to implement.
- **An indicator for measuring progress has been defined.** Evaluation criterion: a clear indicator(s) and a monitoring cycle have been defined for measuring progress towards the target.
- **The amount of internal work has been defined and the fact that the action plan can be prepared with current or separately allocated resources has been ensured.** Evaluation criterion: the necessary resources have been defined and allocated, the necessary roles have been assigned.
- **The amount of external resources needed for the preparation of the action plan has been defined in the cost-estimate and the operational planning based on it.** Evaluation criterion: the necessary resources have been defined and allocated.

The preparation phase involves defining the targets, indicators and actions of the plan and ensuring the participation of relevant actors in the preparation. A steering group is established to ensure the conditions for the successful implementation of the action plan. The members of the steering group consist primarily of the owners of key resources that are critical to achieving the targets and other strategically highly important partners. **A review** is carried out to ensure the appropriateness of the plan's targets, indicators and actions. The implementation of a strategy requires an overall understanding of action plans and their effectiveness. When challenges are tackled with actions that primarily address simple changes, resources are not allocated to the most important matters overall. It is important to allocate resources to the most effective actions. **Issuing a launch decision** before implementation ensures that the target and actions are feasible. The launch decision should also elaborate on the issuing of a termination decision if the action plan is to continue beyond the current council period of office for justified reasons. The launch decision should also elaborate on the necessary interim evaluations.

The implementation phase involves implementing the actions of the plan. The steering group monitors progress towards the target and ensures the initiation of corrective actions, if required. Projects can be launched to implement several actions simultaneously. **Updating** is a key part of target-oriented action plan management. The preparation of an action plan is an annual, ongoing process in which resources are allocated for the implementation of annually selected actions or the preparation of initial ideas for actions.

Issuing a termination decision ensures that the targets of the action plan have been successfully achieved. Action plans that continue beyond a single council period of office can also be terminated if they no longer correspond to the targets of the new strategy. **The reflection phase** involves reviewing the lessons learned during the process to support the preparation of future action plans. As regards the preparation phase, the aim is to critically examine which practices contributed the most to the creation of the action plan, whether the chosen interaction practices benefited the preparation and which best

practices can be shared with other actors preparing similar action plans. As regards the implementation phase, the aim is to critically examine whether the set target was achieved (if not, why?), whether the chosen interaction practices benefited the implementation of the action plan and whether the estimates of required resources were accurate (if not, why were they too high/low?).

5.2 Update and implementation cycle

In order for an action plan to achieve its target, progress towards the target must be monitored with sufficient frequency so that there is time to implement corrective actions and account for potential changes in the operating environment. Monitoring is covered in greater detail in section 3.3. It is important to plan the lifecycle of an action plan with a sufficiently frequent update cycle built into the process. The more ambitious the target or the timetable for achieving it, the more frequent the monitoring and updating should be. Sufficiently frequent monitoring and updating facilitates resource management and the prioritisation and implementation of actions by making it possible to choose actions based on the latest available information. Furthermore, the update cycle makes it possible to discontinue actions that prove ineffective. Actions that have not made sufficient progress or contributed to the achievement of the target or that have otherwise become contradictory to other steering efforts can be discontinued, removed from the action plan and replaced with more appropriate actions.

In strategy work, progress should be reviewed at least once a year³⁶. With emissions reduction targets constantly growing more rigorous, it is ideal for the preparation of an action plan to be an annual, ongoing process in which resources are allocated for the implementation of annually selected actions or the preparation of initial ideas for actions. This ensures that actions continue to contribute to the chosen target and makes it possible to define additional measures based on the latest information, when needed.



Frequently claimed?

“But having to review the same things every year takes up an enormous amount of resources. Surely it is better to prepare a sufficient number of actions at once and then pick and choose which ones to implement in different situations.”

An annual monitoring and preparation cycle ensures that actions contribute to the achievement of the target. They also provide important information about the preconditions and potential limitations of actions and ensure that actions decided on and implemented are based on the best and latest available information and on the context-sensitive experience accumulated during the process.

5.3 Roles in the action plan process

To ensure effective action plan management, it is essential to identify the key actors involved in the work and their roles in plan preparation and the achievement of targets. The key roles in action plan work are the owner, the project director, the steering group and the actors responsible for actions. To ensure that these roles can carry out their tasks successfully, it is also important to have critical stakeholders participate in the process.

The owner is tasked with ensuring that the project director has the resources necessary for the preparation and implementation of the action plan and making sure that the decisions required for the plan are made on time.

The project director is responsible for the operative management of the action plan's preparation and implementation, steering the work of the actors responsible for implementing actions, participating in the implementation of actions, if necessary, and monitoring the progress of the plan. The project director is also responsible for preparing the neces-

sary actions and corrective actions based on expert assessments and presenting them to the steering group for approval at the start of the action plan period and in connection with possible updates. The project director reports to the owner and the steering group.

Every action plan needs a **steering group**, which is composed of actors representing interests and resources critical to the preparation and implementation of the plan. The steering group is responsible for supporting the project director so that the targets of the plan are achieved. Every member of the steering group must have a clear role in the group, and the size of the group should not be any bigger than it needs to be. The recommended size of a steering group is often thought to be 2–5 persons. The steering group is also responsible for discontinuing the implementation of the action plan if it is no longer contributing to the achievement of the set targets or is found to be incompatible with other targets defined since its launch.

The actors responsible for actions are responsible for planning and implementing the actions assigned to them. They report on the progress of actions and any challenges encountered directly to the project director.

5.4 Target-oriented interaction

Participation is considered an integral part of contemporary public administration processes. However, rarely is attention paid to who exactly should participate in these processes and how intense their participation should be. In many cases, the aim seems to be to promote participation as broadly as possible, which contemporary digital tools conveniently facilitate. However, the actual impact of participation often remains unclear, with little thought given to focusing participation opportunities on themes that participants could actually still influence. This has given rise to the concept of pseudo-participation in academic circles³⁷.



Heard elsewhere!

“In strategy work, you have to have the capacity and courage to prioritise things to an extreme degree, which is why excessive democracy is very destructive to good strategy work”³⁸.

Integrating all the targets and actions collected during a multivocal process into an action plan runs the risk of robbing the plan of a clear direction, hindering the assessment of the effectiveness and prioritisation of actions. In practice, the plan’s actions end up steering efforts in different directions instead of effectively contributing to the achievement of any targets. Because of this, it is important for any parts of the process involving multivocal participation to always be followed by effectiveness assessment and prioritisation, as part of which ineffective actions are excluded from the plan.

To ensure the successful deployment of an action plan, it is important to ensure during the preparation phase that the actors that can influence the content of the plan and the achievement of its target are committed to and participating in the plan. Often the most effective way of doing so is to reach an agreement with management on what the action plan is intended to steer before formulating the actual actions of the plan, so as to avoid unnecessary disagreements during the action proposal phase.



Frequently claimed?



“It is important to ensure that participation is as broad as possible.”

Instead of maximising the breadth of the participation process and the number of participants, it is important to ensure the participation of actors whose activities the action plan can affect, who are needed to achieve the target or whose actions have an impact on its implementation. When the participation process is well-planned and implemented in a target-oriented manner, resources can be allocated to the actors relevant to the achievement of the target. The number of participants can always be expanded later based on available resources.

Frequently claimed?



“Communication is the most important part of an action plan.”

Obviously it is important to carry out open and transparent communications when there is information to share and when doing so is required for achieving the target. Communication efforts should be targeted specifically at actors that can affect the achievement of the plan’s targets or that are affected by them. However, communications matter little if the actual actions of the plan are not relevant to the targets or otherwise effective.

In the case of action plans involving multiple administrative branches, it is also important to consider how extensively and at which point other actors, such as residents, should be invited to participate. The aim should be to utilise participation based on needs: participation should be a means of acquiring information to address issues in the case of which such information can help make better decisions and participation provides an actual benefit. Pseudo-participation should be avoided. It is also important to honestly describe what kind of impact participation and the sharing of opinions can have. It is important to keep in mind that asking for opinions is a waste of time if they will ultimately have no impact on the matter at hand.

The principles of interaction are defined during the definition of the action plan’s target. In the preparation and implementation phases, the work is steered by the steering group in accordance with the roles of action plans as covered in greater detail in section 5.3.

Emissions reduction action plan - writer's checklist

1. Make sure that the objective set by the strategy is sufficiently concrete and directive. Clarify it, if necessary.

- Instructions for strategy implementation are provided in section 2.3.
- Does the objective convey a clear picture of the future state that you want to achieve?
- Is the objective lean and directive?
- Can the change that you are aiming for actually be achieved?

2. Consider whether it is necessary to programme the implementation of the target in the action plan or whether it is already a part of regular official work.

- Instructions for strategy implementation are provided in section 2.3.
- Instructions regarding additionality are provided in section 4.3.
- If you decide that programming in the action plan is necessary, proceed to section 2.4.

3. Set a clear strategic target and break it down into the necessary operational sub-targets.

- Instructions regarding the differences between strategic and operational targets and their definition are provided in sections 3.1 and 3.2.
- Ensure the effectiveness of the target with the help of figure 2. Do not proceed to step 4 on the checklist until the targets have been effectively formulated.

- Does the target clearly define what the action plan aims to do?
- Does the target clearly describe which strategic objective it is linked to?
- Does the target clearly describe the current or historical state that the action plan aims to change?
- Does the target clearly describe the future state that the action plan will aim for?
- Does the target clearly describe the time-span of the desired change?

4. Define the monitoring of the targets and indicators.

- Instructions regarding monitoring and the definition of indicators are provided in section 3.3.
- Ensure the effectiveness of indicators with the help of figure 4. Do not proceed to step 5 on the checklist until the indicators have been effectively formulated.
- Is the indicator clearly connected to a specific, achievable target?
- Does the indicator measure something relevant and effective?
- Does the indicator define how frequently progress towards the target should be monitored?
- Does the indicator define the need for interim targets?

5. Define actions that are effective in terms of the target, additional and critical for the action plan.

→ Instructions for the formulation of actions are provided in section 4.

→ Ensure the effectiveness, additionality and other important aspects of actions with the help of figure

- Is the action already a part of another action plan or official work?
- Is the action effective in terms of contributing to the achievement of the plan's target?
- Can the action be implemented with the available or separately procured resources?
- Is the action clearly defined?
- Is the actor responsible for the action clear?
- Does the action have a clear timetable?
- Does the action define when it can be considered to have been implemented?
- Does the action directly affect the target (category 1), is the action essential for implementing a category 1 action (category 2) or is the action potentially effective, but in need of further investigation (category 3)?

6. Make sure that the majority of your actions are category 1 actions.

→ Instructions for defining the effectiveness of actions are provided in section 4.2.

- Do most of your actions directly and demonstrably contribute to the achievement of the target (category 1)?

→ If most of your actions are not category 1 actions, go back to step 5 of the checklist.

→ Do not proceed to step 7 on the checklist until most of your actions are category 1 actions.

7. Define the monitoring cycle.

→ Instructions for defining the monitoring cycle are provided in section 5.2.

- Is progress towards the target monitored with sufficient frequency so that there is time to implement corrective actions and account for potential changes in the operating environment?

8. Define the update cycle.

→ Instructions for defining the update cycle are provided in section 5.2.

- Is the update cycle sufficiently frequent to leave time for corrective actions?

9. Define the management structure.

→ Instructions for defining roles, management and interaction are provided in sections 5.3 and 5.4.

- Have the key actors of the action plan work and their roles been clearly defined?
- Has a project director been assigned for the action plan work?
- Has a steering group composed of actors representing interests and resources critical to the preparation and implementation of the action plan been established?
- Have actions been assigned to named actors responsible who are aware of their responsibilities and have the resources needed to implement the actions?

Support the implementation of effective actions. If progress towards the target is lacking, keep repeating step 5 during monitoring and updating until the target is achieved.

Common challenges – and solutions thereto (FAQ)

The challenges that arise during the preparation of an action plan are often quite similar. Some of the most typical challenges are listed below along with possible solutions for tackling them.

FAQ1: What if an action is already a part of official work?

For example: “The City organisation will create new operation models and criteria that enable the City to achieve its economic policy objectives simultaneously with the emissions reduction actions”.

The challenge: Coordinating the City’s strategic targets is a key part of the strategy process preceding the actual action plan. Programming it or converting it into actions will not achieve any additional impacts relevant to the target of the action plan.

Development need: The action plan should only include actions that are not already part of official work or the City’s internal steering and operating processes. The resources of action plan work should be allocated to additional actions for ensuring the achievement of the target instead of official work and unnecessary documentation and reporting.

Change proposal: Actions related to normal official work will be removed from the action plan.

FAQ2: What if an action is already a part of other strategies, action plans, etc.?

For example: “The development programme for tram traffic will be implemented”, “The promotion programme for cycling and the development programme for bicycle parking will be implemented”, “The charging infrastructure for buses will be expanded as part of the competitive bidding for bus traffic programme”, or “A pleasant and safe environment for pedestrians will be promoted, for example by implementing the development programme for traffic safety”.

The challenge: When an action has already been programmed into another action plan, it should also be provided with resources via that other plan. Adding

the same action into multiple action plans or programming the implementation of another action plan via a new plan does not provide any additional benefits in terms of the target, but takes up resources as the task is documented and reported on multiple times.

Development need: Action plans should only include additional actions that have not been programmed and provided with resources under another plan, programme, etc. Action plan work resources should be allocated to actions that provide an additional contribution towards the target.

Change proposal: Actions programmed elsewhere will be removed from the action plan.

FAQ3: What if an action enables and facilitates instead of steering?

For example: “The City will promote wooden construction through detailed planning”.

The challenge: Actions that enable, encourage or facilitate things on a general level do not provide a sufficient steering effect for the achievement of targets. If it is unclear when an action can be considered to have been implemented or what its implementation actually entails, it may end up steering operations in a direction that is not effective in terms of the target of the action plan. Thus resources end up being allocated to actions that do not contribute to the achievement of the plan’s target.

Development need: Actions should be formulated so that their steering effect is clear. Instead of steering towards individual, strictly defined actions, it may be more effective to steer towards the target by setting limit values or target levels, for example, which provides actors with more freedom in terms of planning their measures.

Change proposal: “A carbon footprint limit value of x is defined for building and construction. The limit value shall be binding in all planning.”

FAQ4: What if an action has the opposite impact in relation to the target?

For example: "The traffic of the West Harbour area will be made smoother between the Harbour area and the Länsiväylä area".

The challenge: The total impacts of the action have not been considered, as a result of which its contribution to the achievement of the emissions reduction target is unclear. Although making traffic smoother reduces time spent sitting in traffic and thus emissions relative to the distance driven, on the other hand it may also increase total traffic, which, in turn, increases total transport emissions.

Development need: All the impacts of an action on emissions, both negative and positive, need to be taken into consideration.

Change proposal: Actions that increase total emissions will be removed from the action plan.

FAQ5: What if an action only proposes new surveys, action plans, etc.?

For example: "The Smart Transport Action Plan will be prepared (update to the Action Plan decided on in 2013)", "The methods of personal emissions trading used in various cities will be examined and used", or "A road map for circular economy and sharing economy will be created".

The challenge: The emissions reduction impacts of action plans, surveys and road maps are difficult to assess because they ultimately depend on the effectiveness of the actions selected for them and on how effectively the actions are implemented. As a result, actions may be steered in a direction that is not effective in terms of the target of the action plan, and resources may end up being allocated to actions that do not contribute to the target.

Development need: The content of actions should be clarified so that it is clear what they entail and when they can be considered to have been successfully implemented.

Change proposal: Actions involving surveys should be included in the action plan only when they are critical to defining new effective actions. It should be noted that surveys have no emissions reduction impacts.

FAQ6: What if the target state of the action is unclear?

For example: "The cycling lane network with high-level winter maintenance will be expanded" or "The City will

have an active role in developing city logistics and incentives to encourage low-emissions delivery traffic".

The challenge: When an action is formulated in a way that leaves its content (how is 'an active role' interpreted?), timetable (by when?) and target state (expanded by how much?) open to interpretation, steering the implementation of the action becomes more difficult. If it is unclear when an action can be considered to have been implemented or what its implementation actually entails, it may end up steering operations in a direction that is not effective in terms of the target of the action plan. As a result, resources may end up being allocated to activities that do not contribute to the achievement of the plan's target.

Development need: The content of actions should be clarified so that it is clear what they entail and when they can be considered to have been successfully implemented.

Change proposal: Actions that do not directly contribute to or indirectly facilitate the achievement of the target (e.g. the preparation of new action plans or road maps) should be excluded from the action plan.

FAQ7: What if an action is a part of action plan management?

For example: "A communication and interaction plan for the action plan will be developed. The communication strategy will be implemented, and it will be monitored and updated regularly" or "A group for climate-related and environmental management will be founded. The group will be responsible for informing the City's executive group on the implementation of the action plan, coordinating environmental management and climate work, and monitoring and supporting the implementation of the actions".

The challenge: Communicating about, implementing, coordinating and reporting on an action plan are key parts of its management.

Development need: The action plan management process needs to be planned and coordinated during the planning phase, and there is no need to programme it through actions in the actual implementation phase. Action plan work resources should be allocated to additional actions instead of excessive documentation and reporting related to its management.

Change proposal: Actions related to action plan management and planning will be removed from the plan.

Key concepts

There are many different definitions related to action plans, and strategy work, and the same concepts can have multiple meanings depending on the context. This guide uses the following definitions:

Action = concrete tasks for achieving a target³⁹.

Action plan = a change management tool that serves as a collection of actions for achieving a clearly defined and measurable target.

Additionality = the action is separate from actual official work and would not be implemented without being programmed in the action plan.

Corrective action = actions that were not originally included in the action plan, the purpose of which is to ensure the achievement of the target in the event that the originally defined actions fail to achieve the desired or sufficient progress.

Indicator = measures the effectiveness of actions relative to a strategic or sub-target and clearly indicates progress towards the target.

Strategic master projects = the strategy's city-level focus areas for the council period of office.

Strategic target = a measurable target set for the focus areas of the strategy. Indicates the result or state that you are aiming for⁴⁰. For example, the City of Helsinki's strategic target is to be carbon-neutral by 2030. As a measurable target, this means that the direct greenhouse gas emissions generated in the City of Helsinki's area need to decrease by 80% from the 1990 level while the rest, up to 20%, can be compensated for.

Strategy = focus areas chosen for a council period of office, based on political values.

Strategy implementation = the organisation's operations are aligned with the objectives of the strategy and resources are allocated to the actions that are deemed most critical in terms of achieving the objectives through strategic master projects or action plans, for example.

Sub-target = a subordinate target derived from a strategic target. In many cases, a strategic target, such as the City of Helsinki's carbon neutrality target, is not enough to steer different sectors by itself. Because of this, it may be necessary to divide a strategic target into clearer sub-targets, based on which operative units can plan and assess their own operations and the actions required. For example, the City of Helsinki has derived from the strategic carbon neutrality target the aligned sub-target of reducing emissions in the transport sector: the target is to reduce greenhouse gas emissions by 69% from the 2005 level by 2030.

Systemic change = change that requires adopting a new approach throughout the core process.

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1. Allio 2015; Bowman 1998.
2. Kamensky 2002.
3. Speculand 2006; Raps 2004.
4. Kamensky 2002, 287.
5. E.g. Barney & Hesterly 2018.
6. Balogun 2006; Mintzberg & Rose 2003.
7. Kaplan & Norton 2008.
8. Tawse & Tabesh 2021, 22.
9. Bryson et al. 2009; Ferlie 2002.
10. Strandman 2009.
11. Strandman 2009; Hansén 1991.
12. Strandman 2009.
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