Study to support the development of a monitoring framework for the Eighth Environment Action Programme (8EAP)

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Trinomics

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Executive Summary

The primary aim of the work carried out and reported here is to analyse and present the requirements and options for a functional and useful monitoring approach for the proposed Eighth Environment Action Programme (8th EAP or 8EAP) and to illustrate a potential approach with some suggestions of indicators. This summary captures the **aim of the exercise**, the **approach**, **conclusions**, and an overview of a potential monitoring framework that could operationalise a suggested approach.

Aim of the exercise

The aim of this exercise is to come up with suggestions for a **coherent monitoring framework for EU environment policy. The framework needs to be long-lived/robust** and enable **regular stocktaking of policy progress**.

Approach

We have reviewed existing indicator sets and the ways in which policy-making and environmental progress, in general, have, and could be, reviewed. These approaches have then been applied to the current political position of the environment in European level policy-making.

Conclusions

Our analysis suggests that there is a good case for setting up a monitoring framework, considering the EAP "**outputs**, **results** and **impacts**[1]" across environmental policy as a whole. The monitoring framework should ideally capture / measure the following aspects:

- **'*Outputs*'**: The existence of policies and targets in each environmental policy area / goal, and some measures of the quality of transposition and implementation of this at Member State level. This could/should be closely linked to the Environment Implementation Review (EIR);[2]
- **'*Results*'**: The progress against key targets as contained in Directives, Regulations etc. across each environmental policy area / goal. Again, consistency with the EIR would be desirable;
- **'*Impacts*'**: Key indicators of environmental state in each policy area / goal. On the basis that the results should have a positive impact in these areas. However, in some policy areas the frequency of available data means that they will only be available over longer time horizons, and, therefore, it could be more relevant to include these in the EEA's State of the Environment Report (SOER),[3] which is arguably the current case.

It is important that coordination and coherence with the monitoring efforts under the European Green Deal (EGD) (and the European Semester Reporting), EIR and the EEA's State of the Environment reporting (SOER) needs to be made a priority and guaranteed. They should also be aligned with the UN 2030 Agenda.[4] Any regular reports could be designed in such a way that they would be the main vehicle to analyse and publish the monitoring of the 8th EAP. Maximum use should be made of existing data in order to remove any additional data collection and reporting burden.

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[1] "Outputs, results and impacts" as defined in EU policy intervention logics, see
https://ec.europa.eu/info/files/better-regulation-toolbox-47_en
[2] https://ec.europa.eu/environment/eir/index_en.htm
[3] https://www.eea.europa.eu/soer/2020
[4] https://sustainabledevelopment.un.org/post2015/transformingourworld

The monitoring framework is an output in itself, that would enhance one of the strengths of the EAP (that of it being a tool to hold the European Commission to account) by better formalising the process of monitoring environmental policy making. It could also help address some of the weaknesses of the 7th EAP, such as its lack of profile and lack of stakeholder engagement, by providing a simple, unique and useful monitoring tool.

Overview of the monitoring framework

The work undertaken to develop an illustration of a monitoring framework that meets these criteria is described below:

1. A collation of a long list of all the indicators used in each policy area was made, forming an **indicator library**. Each policy area has a table (or tab on an Excel file). Existing monitoring frameworks were used as the primary source (to make best use of data that is already collected). Input was also sought from a number of DG ENV units as well as other DGs on indicators they make use of to track policy need, and success. The tables also include some key gaps /weaknesses, i.e. aspects of the respective policy areas where the available indicators may be perceived as lacking, or may not be available at all or may be under development.

2. Each policy area was further broken down into **sub-areas** in the indicator library. The sub-areas are shown through sub-headings. For example, in the "Circular economy" monitoring framework, the sub-headings include "waste management", "secondary raw materials", "production and consumption", "waste shipment", and "competitiveness and innovation".

3. The indicator library is structured against the different sub-headings and categorised against the three steps of the policy cycle ("outputs, results, and impacts").

    a. The **outputs** are thought of as the existence of policies and targets in each environmental policy area / goal. I.e. is there legislation to tackle the issue? We assume yes = existence of policy;

    b. The **results** are thought of as progress against key targets, as set by the legislation and policies in place, across each environmental policy area / goal;

    c. The **impacts** are thought of as progress in the environmental state in each policy area / goal (as a result of the progress against targets).

    Efforts were made to ensure that the indicator library includes indicators that cover all aspects of the policy cycle in each area; however, some gaps still remain.

4. The indicators have been categorised into three groups indicating different purposes / levels of priority within a 'pyramid' structure.

    a. **Top of the pyramid**: a couple of indicators per policy area and cycle stage, indicating the headlines that are the easiest to understand (for policy-makers and for the public). These indicators also have good quality data and are regularly updated. They overlap with other high-level monitoring sets, especially the EGD.

    b. **Middle of the pyramid**: incorporates several indicators per policy area. These indicators are well known to specialists in the field but may be somewhat more technical.

    c. **Bottom of the pyramid**: could represent over 100 indicators (without any limit). These indicators are operational within each policy area.

    The selection and classification of the indicators was carried out in conjunction with the Commission specialists in each policy area. The database of indicators is a good reference point for consultations with Member States and stakeholders in 2021, with a view to arriving at a final list of headline indicators before the end of 2021.

5. Based on the selection of indications, headline indicators (top of the pyramid) would be reported on, to provide an overall picture against overarching strategies (i.e. EAP or EGD).

Indicators from the top and middle of the pyramid would be used to report on progress in specific policy areas.

6. The indicator database allows knowledge gaps to be identified and highlighted, by policy area and stage (output, impact, result).

7. An annual presentation and update of the summary tables is recommended, but the availability of new data for outputs, results, and impacts varies.

1 Introduction

1.1 Paper outline

This paper has been developed during a period of rapid political and policy developments as the new Commission come into place and plans are developed for the next Commission funding period.

The paper has three main objectives (described in three main sections):

1. **To provide evidence** for, and a discussion of, the principles (see Chapter 3) of relevance to constructing an effective monitoring framework.
2. **To outline a potential structure for** the monitoring framework.
3. To **suggest some next steps,** highlighting what work could be done to further develop and operationalise a framework.

1.2 Purpose of an EAP monitoring framework

A monitoring framework for the future (8th) Environmental Action Programme (EAP) could help achieve a number of practical and intellectual objectives. It could present clear messages to non-technical audiences and help policy makers make choices. It could also help assess and **communicate progress towards the EU's long-term environmental and climate objectives**. In parallel with the legislative negotiations on the proposed legal act of the 8th EAP, the Commission will engage in a wide consultation with Member States on the monitoring framework. If the response is positive, headline indicators could be decided by the end of 2021.

The monitoring framework could provide a **headline set of indicators** that seek to cover all aspects of environmental policy. They should range across **all the policy areas** from resource use to biodiversity to waste, water, chemicals and beyond, in line with the overarching ambitions of the European Green Deal (EGD). These headline indicators would give a good overview of the current **relative successes and failures** across environmental policy as a whole (as is the case with the State of the Environment Report (SOER)[5]). The headline indicators of the monitoring framework would make progress towards EU environmental and climate objectives **easier to review and digest** than in the current situation where there are numerous sets of indicators focussed on specific environmental policy areas and/or on wider cross-cutting agendas (e.g. sustainable development). This overview would be useful for those at the political and social level wishing to identify those areas of environmental policy-making and implementation where progress may be lacking and additional action may be required. This means that a monitoring framework could be considered as having a **'dual purpose'**, i.e. it would exist to monitor progress towards the EAP as well as to identify possible new policy measures needed to meet the objectives of the EAP. It is important to bear in mind that the EAP monitoring framework should not duplicate the European Environment Agency's (EEA's) Flagship State of the Environment Report (SOER), which, as the name suggests, mainly focusses on the 'state' aspect. The SOER has historically made use of the DPSIR (Driving forces, Pressures, State, Impact and Responses) logic to structure its indicators. This has some overlap with the "outputs, results and impacts" model, which is discussed in more detail later in this paper.

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[5] See table ES.1Summary of past trends, outlooks and prospects of meeting policy objectives/targets. Page 13. https://www.eea.europa.eu/publications/soer-2020

The monitoring framework would help analyse and communicate progress on the whole policy process. This would include the **"outputs", "results"** and **"impacts"** of environmental policy, using the policy model described in the Better Regulation Guidelines[6]. The '*outputs*' of policy-making are things like the existence of targets and European Commission (EC) and Member State level strategies to achieve these targets. The '*results*' of environmental policy can be considered as progress against defined targets. The '*impacts*' of environmental policy are typically measures of environmental state against a desired outcome, for example levels of air pollution exposure. If policy is working, the '*outputs*' should lead to '*results*' and then '*impacts*', albeit with some delay between them. For example, the '*output*' of a clean air strategy should lead to the '*result*' of reduced emissions and the '*impact*' of less exposure to air pollution.

Another existing monitoring framework that was considered in the development of the illustrative potential EAP monitoring framework and indicator library is the **Sustainable Development Goals (SDGs).** As is discussed later in the paper, there are many parts of the SDG monitoring framework that cross over with the '*outputs, results and impacts*' aspects of a potential EAP monitoring framework. This should not necessarily be viewed as a negative duplication, because the EAP framework would be solely focussed on environmental policy, which differentiates it from the SDG. The EAP monitoring framework would highlight other potential indicators which could be included in future SDG monitoring, to enhance its ability to monitor environmental issues.

The new (2019-2024) Commission **has committed to the European Green Deal (EGD)**. On 17 December 2019, the EC adopted its new Annual Sustainable Growth Strategy (ASGS) for 2020[7], as part of the new European Semester cycle. The ASGS sets out the economic and employment policy strategy for the EU, which will aim at delivering President Ursula von der Leyen's Political Guidelines and focusing on prioritising the EGD. An 8th EAP monitoring framework would help monitor progress towards these high-level ambitions across environmental and climate policy areas. This would be done in the context of the EU Recovery Plan, including the next Multiannual Financial Framework (MFF) and the Next Generation EU.

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[6] As defined in EU policy intervention logics, see https://ec.europa.eu/info/files/better-regulation-toolbox-47_en
[7] https://ec.europa.eu/info/sites/info/files/2020-european-semester-annual-sustainable-growth-strategy_en.pdf

2 Principles for designing the monitoring framework

A potential monitoring framework for the future EAP should be developed on the basis of a number of principles. These principles are presented and grouped below.

Table 2-1 Summary of guiding principles

1. Consideration of existing monitoring frameworks and indicators
There are several specific monitoring frameworks for key parts of the future action programme (e.g. on climate action or on circular economy). They need to be considered as fixed.
There are several specific monitoring provisions in environmental legislation or policy leading to a large set of indicators in use (currently between 300 and 400), as well as existing targets.
There are well-established overarching assessments, which are done for other purposes, namely the EEA's SOER reporting[8], the Annual SDG indicator assessment coordinated by ESTAT, and the DG ENV led Environmental Implementation Review (EIR). There is a strong link and some overlap with EAP monitoring, but they are not sufficient nor targeted towards monitoring of policy effectiveness.
The EGD will add to the political profile of environmental issues and will also require extra environmental monitoring as part of the European Semester reporting. In the interest of efficiency and coherence these indicators should align with those chosen to monitor the EAP.
There is a need to be aware of the risk of "political reporting fatigue"; therefore, any new tool should be aimed at bringing together existing work streams (including existing indicators and targets) under a common aim.
2. Consideration of the high-level nature of the EAP – with the long links between EAP outputs and environmental impacts and results.
Past EAP monitoring either looked at output indicators (i.e. have the actions announced in the programme been delivered, see the 7th EAP evaluation) or tried to define outcome or impact indicators (i.e. measurable changes in the economy, society or the environment). Such outcomes or impacts are, however, difficult to associate with implementation of the EAP. The cause/effect relationships are often complex and it is very difficult to establish a correlation, let alone a causality, between the EAP and the outcome/impact.
3. Consideration of the Better Regulation Guidelines
The Better Regulation Guidelines set out some useful methodological approaches for setting up monitoring for policy or legislative initiatives.
4. The need for a manageable set of indicators
Previous streamlining exercises for environmental indicators or overarching monitoring frameworks have only been partially successful given the complexity of the situation and the current governance. There is therefore a need to make the streamlining process inclusive to help get the buy-in of the policy specialists involved, and to make it clear that the intention is to avoid duplication.
The development of ideas for an 8th EAP monitoring framework is set against a long tradition of environmental monitoring and a significant evidence base. The work builds on the Fitness Check on Environmental Reporting, which analysed the environmental reporting obligations in all 58 relevant pieces of legislation and highlighted the need to improve coherence and indicators for some of these reporting flows.

The remainder of this section discusses each of these four groups of principles in more depth.

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[8] SOER every five years and annual indicator reports

2.1 Existing Frameworks and Indicators

2.1.1 *Existing indicators*

The following indicators and monitoring frameworks have been reviewed:

- Resource Efficiency Scoreboard (and the current draft updated / expanded version of the publication);
- Circular Economy Monitoring framework;
- European Semester Country reports;
- EEA – 7th EAP monitoring set/annual indicator reports and the SOER (plus other environmental indicators the EEA hold / present in combination with Eurostat[9]);
- Environmental Implementation Review (EIR) (first and second rounds);
- Sustainable Development Goals (SDGs);
- Biodiversity indicators (SEBI);
- Agri-environmental indicators;
- Headline impact indicators for the EGD;
- Indicators used for the ENV Annual Activity Report.

The following conclusions were drawn regarding the state of play as regards indicators:

- **There are many indicators, indicator sets and a lot of overlap between sets**. It is certainly true that there are many indicators already collected and reported on that are of potential relevance to the 8th EAP. There are also certain indicators that appear in multiple sets. The EEA set of 29 indicators on the monitoring of the 7th EAP, and the 35 included in the latest SOER, being a reasonable collation of the 'most popular' state indicators, and one that can be presented on one page;
- **There are more indicators (and indicator sets) on environmental state than policy outputs**. The majority of the indicators focus on what can be described as 'environmental state', rather than policy response. It can of course be argued that the policy response should influence the state, e.g. achieving recycling targets should reduce resource use, achieving renewable energy targets should reduce GHG emissions and achieving Natura 2000 coverage should improve biodiversity. However, as one of the key purposes of the EAP is to coordinate and improve policy response, in order to monitor it, there is arguably a need to capture policy outputs and the quality of the implementation of these policies in addition to state indicators;
- **Some areas of environmental state are better covered than others**. The depth of coverage (i.e. the number of indicators) and the quality of coverage (i.e. the extent to which the indicators are accepted by all, are frequently updated and are robust) of the state of the various environmental areas is varied. The best-accepted indicators (i.e. with the most consistency between different sets – on the assumption that indicators which are used in multiple sets are better accepted than those indicators only used in one set) can be found in the energy, waste and air quality areas. There is a much larger number of indicators in the biodiversity and water areas, with certain indicators being well accepted, but there is less consistency between the indicator sets (i.e. the number of indicators which appear in more than one set is low) and the number of indicators in some areas (e.g. soil quality) is low;
- **There are some areas which are of clear concern, but there is (as yet) no agreed indicator (or group of indicators) to capture the state**. A good example of such an area is chemicals,

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[9] The Eurostat environmental indicator catalogue (over 230 indicators) is here
https://ec.europa.eu/eurostat/web/environment/environmental-indicator-catalogue

where sales of chemicals is commonly used as a proxy, but this is a reflection of what data is available, rather than what damage chemicals might do. This is partly because the exact nature of the damage that chemicals do to the environment is not obvious, and is still a subject of research and debate. The difficulty of defining the desirable end state is a reason why there are few or no indicators in other areas. For example, in the area of a 'just transition', the debate on this issue is relatively new so there are not yet any obvious (i.e. commonly accepted, and with a long time series) indicators of this. The data is limited to indicators of positive progress (e.g. employment in Environmental goods and services) and negative impacts (e.g. fuel poverty);

- **In some areas, the frequency of data updates are relatively low.** Examples of this are most common in areas where the monitoring required is extensive and detailed and/or relies on modelling, e.g. the quality of water bodies, biodiversity and soil. This means that the impacts of policy interventions will take longer to become apparent in these areas than in areas where data is updated annually. Some indicator sets try to address this by including data sets that are updated more frequently, but are taken as a useful tracker. For example, the annual bird survey is commonly used for this as a tracker of biodiversity, because the indicators on the status of habitats and diversity are only updated every six years;

- **No collation of progress against targets.** The EIR arguably comes closest to doing this, in that the 'policy background' document[10] discusses the relevant targets under the various themes of the 7th EAP and uses Member State progress against these targets as the basis for much of the discussion in each of the Member State reports. However, the EIR does not present any collation of overall EU, or individual Member State progress against these targets. The online supporting briefings[11] for the indicators used by the EEA in their monitoring of the 7th EAP include discussion of the relevant targets under each indicator, but there is no collation or presentation of progress against these targets, by the EEA or by the Commission. The EEA's SOER also presents progress (and future prospects) in the form of a colour coding in policy areas, but the basis of this appears to be environmental state rather than policy implementation (though these are clearly linked in most areas);

- **None of the indicator sets are intended to solely monitor the policy process objectives of the EAP.** The EEA's monitoring of the 7th EAP focusses on the environmental state objectives of the EAP. This is not a criticism, as this is in line with purpose of the EEA, and the narrative reporting that they provide to supplement the indicators does mention the relevant policies and the progress they are making. The EIR comes closest to looking at the policy process, but this is intended to highlight Member State implementation performance, rather than the EU environmental policy process as a whole. The Resource Efficiency (RE) scoreboard and the Circular Economy Monitoring Framework are both predominantly focussed on environmental state indicators in one area of environmental policy. The revised RE scoreboard set has a wider scope. The SDG indicator set is linked to the global SDGs and its monitoring. Although virtually all of the environmental state indicators it includes are of clear relevance to the EU (and are used in other EU indicator sets), some of its environmental policy process indicators are not an ideal match to the state of economic development and detailed environmental acquis of the EU. For example, the indicator "Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities" is close to 100% in

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[10] See https://ec.europa.eu/environment/eir/pdf/eir_2019_policy_background.pdf
[11] See https://www.eea.europa.eu/airs/2018

the entire EU. The SDG set includes output, impact and result indicators, but is not structured in a way that differentiates between them;

- **There needs to be clarity over the audience to ensure coherence in communication**. There is a need to identify the main audience(s) for the indicators and how they will use them. Having a number of different indicator sets is justified on the basis that the intended audience for each one is different. For example, the European Environment Agency (EEA) have used the Drivers, Pressures, State, Impact, Response (DPSIR) approach (amongst others) to structure and help select their indicators. This is a good approach for environmental scientists, but is hard to combine with the output, result, impact approach that is more familiar to policy-makers. There is also a risk that a poorly selected set of indicators, and/or a selection which is not tailored to the audience, can give out diluted or mixed messages. However, the case can also be made that if a particular issue is addressed through different indicators in different indicator sets, it can also give a confused message, so it is arguably better to repeat commonly used indicators to avoid this confusion. Monitoring progress on the EAP should be of interest for more than one audience, with some stakeholders being interested in the technical detail of particular policy areas, while other audiences are interested in a higher level picture of the environmental policy process as a whole;

- **There appears to be a good case for combining environmental '*result*' (i.e. progress against the targets set by Directives and Regulations) and environmental '*impact*' (i.e. the state of the environment, that meeting the targets is intended to improve) indicators to monitor the success of environmental policy**. This has the advantage of not requiring additional data collection, as there is already data collection and reporting in both of these aspects for every environmental policy area. There are some known gaps in environmental state indicators, e.g., the difficulty in finding a single indicator that captures chemical exposure risk or a 'just transition'.

## 2.2 The long links between EAP outputs and environmental outcomes and impacts

When considering designs for a monitoring framework for any policy, the obvious place to start is the intervention logic. The EAP intervention logic describes both its expected '*outputs*' and '*results*', and the actions that show how the objectives link to '*outputs*' and '*results*'. This will help with the selection of indicators, both in terms of the type of data that is needed, and of the specific data sets that might best fit these needs.

The draft intervention logic for the 8th EAP is presented below. The EAP is well-established and its overall purpose is relatively well understood by policy makers. The intervention logic is a further development from the one presented in the 7th EAP evaluation[12]. The basic structure of the future EAP is similar to that of the 7th EAP. The main difference is how the 8th EAP relates to the EGD in both the detail and presentation of the objectives, and the role that the 8th EAP plays in the implementation of the EGD. For example, the future EAP has fewer priority objectives (i.e. six) as opposed to the nine priority objectives of the 7th EAP.

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[12] See https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=SWD:2019:181:FIN

The formal inclusion of a monitoring framework is another way in which the 8th EAP would differ from its predecessor. A monitoring framework would seek to consider the '*outputs*', '*results*' and '*impacts*' of the EAP, so it goes beyond the (often hard to measure) '*outputs*' of the EAP such as inclusion in policy documents, and policy influences that have traditionally been considered during its evaluation. It would aim to consider the '*results*' and '*impacts*' of environmental policy more widely, such as progress against environmental targets (which could be considered '*results*' of policy) and the state of the environment (which could be considered '*impacts*').
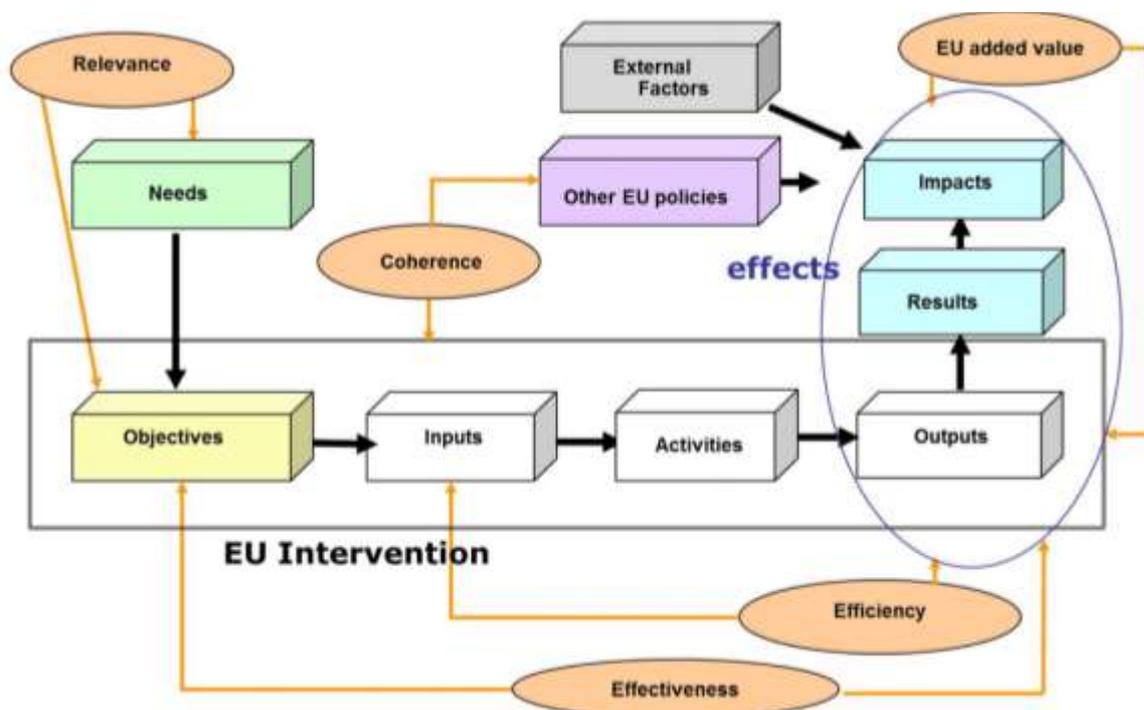
Figure 2-1 8ᵗʰ EAP Intervention Logic
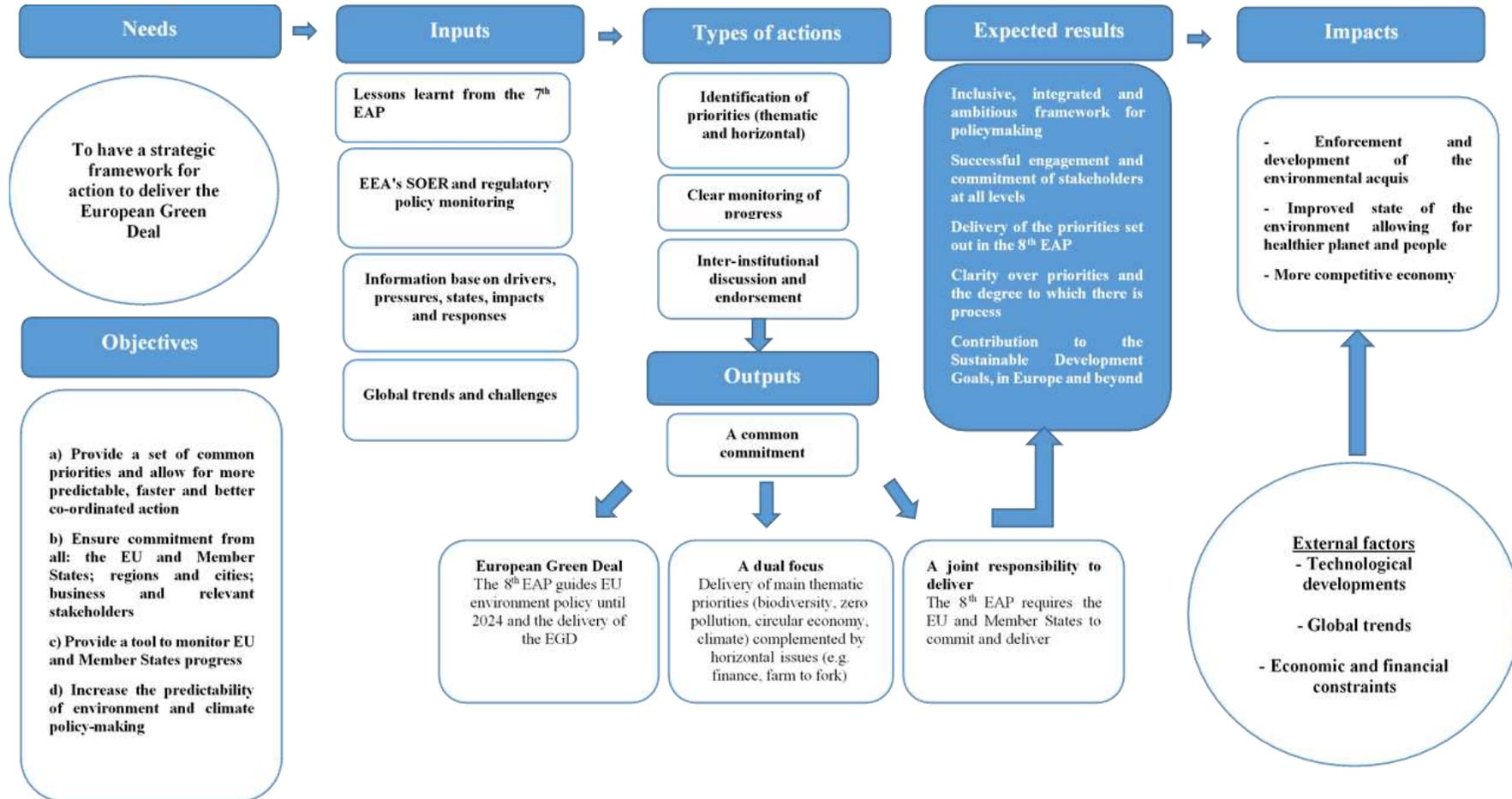
Source: European Commission 2019

The monitoring framework for this intervention logic should therefore pick up the effects (i.e. '*outputs*', '*results*' and '*impacts*'), as shown in this diagram from the Better Regulation Guidelines[13]:

Figure 2-2 Intervention logic structure

Source: Better Regulation Guidelines see https://ec.europa.eu/info/files/better-regulation-toolbox-47_en

Looking at each of these effects in more detail from the intervention logic for the 8th EAP, we can say the following:

Outputs

The '*outputs*' described in the intervention logic are as follows:
- That there is a 'common narrative' - i.e. that the EAP sits above all environmental policies and unites them in pursuit of a common vision. There should thus be a logical link between all environmental policy actions and this vision;
- All environmental policy actions should be either to achieve objectives in one of the priority areas and/or to achieve progress in the enabling / horizontal objectives. The links to the EGD are also important here;
- All environmental policy actions should have both an EU and Member State responsibility / commitment in their design and delivery;

Typical EAP '*output*' indicators, and things that have been pursued in previous evaluations of the EAP, are things like, mentions of 8th EAP in Member State and EC policy documents. These are not easy to measure and typically rely on anecdotal evidence from stakeholders.

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[13] See: https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines-evaluation-fitness-checks.pdf

A monitoring framework would therefore serve the purpose of helping to promote / raise the profile of the EAP. This is an aspect, which the evaluation of the 7th EAP concluded could be improved. This profile raising should improve the effectiveness of the EAP, based on the logic that if more people know about it, then it is more likely to be used / have an influence.

The 'outputs' can also be considered as the existence of environmental policies (Directives, Regulations, Strategies etc.) across all areas of relevance and interest. A way in which the Member States' commitment to the 'outputs' could be measured is through the quality and extent of their transposition and implementation of these policies. Most environmental policies are already subject to some form of transposition and /or implementation check, so there is data available from these checks to monitor / measure this.

Results

The 'results' of an effective environmental policy making process (the four objectives set out in the intervention logic) are challenging to assess by themselves. One way of assessing them would be to see if the expected results materialised. The evaluation of the 7th EAP focussed on the extent to which the 7th EAP's nine priority objectives and their sub-objectives and actions were achieved. This indicates that looking at the results (e.g. the progress against any targets they contain) of the various policies in the various environmental areas (which will include some or all of the EGD in the future) is an accepted way of considering / measuring the overall success of environmental policy making. The objectives in the EAP relating to this are that:

- There is an inclusive, integrated and flexible policy framework as a whole;
- Stakeholders at different levels are engaged in, and committed to, each environmental policy action.

Having a monitoring framework that collates and presents the results of environmental policy making, which could be interpreted as the success against the various targets this policy making sets, should help improve stakeholder engagement. The 7th EAP evaluation concluded that this aspect could be improved with a clearer approach to monitoring. The EAP objective of being a tool to 'hold the EU to account' on their overall approach to environmental policy, which was an objective often quoted by NGO and European Parliament stakeholders during the 7th EAP evaluation, would be enhanced in the presence of a better defined and more central monitoring framework.

The 'results' mentioned above are structured under the different policy areas of the EAP, and, in the name of efficiency and coherence, have been updated from the 7th EAP to align with the EGD.

Impacts

The ultimate 'impact' of the policy 'results' should be an improved state of the environment in each policy area. Measuring this requires some agreed indicator (or indicators) for each aspect of the environment and also either an agreed desirable end state and/or direction and rate/scale of improvement.

This is monitored by the European Environment Agency as part of its 'state of the environment' process and it is assumed that this should be true for ongoing monitoring of the 8th EAP. Therefore, the monitoring framework as a whole would need to include more than this to avoid duplicating the EEA's work. This could be achieved through the inclusion of the 'outputs' and 'results' mentioned above.

2.3 The Commission's Better Regulation Guidelines

The Better Regulation Guidelines[14] say that monitoring frameworks should consider the following aspects (in italics). Each of these aspects is followed by a discussion of how these have been considered in the context of a potential monitoring framework for the future EAP.

1. *Implementation (i.e. transposition of Directives into the national laws of Member States and, more generally, adoption of measures that are necessary to comply with/enable the legislation to be effectively applied. In case of expenditure programmes, spending money allocated to the intervention);*
    The EAP is very unlikely to directly lead to new Member State laws (though it could well be a factor in them). However, if it is working, it would be expected that across the whole environmental policy area transposition, implementation and expenditure should be occurring – and this should be apparent in all the policy areas. The fact that the EAP is signed by / calls for action by, Member States, is a positive here because it implies that a monitoring framework should consider actions taken by Member States in transposing and implementing EU level environmental policies and legislation. One downside is the long causal link between the EAP and Member State implementation – with many other issues (legislation and Member State specific) having a larger influence. However, an overall picture of implementation would be useful and would show the 'health' of the environmental policy implementation process as a whole. It would also show up any areas where action is lacking – whether in the existence of legislation, its implementation or in achieving the targets it is intended to meet. The Environmental Implementation Review (EIR) is a tool that already exists and is focussed on Member States' implementation of EU environment policy. It is therefore important that any EAP monitoring does not duplicate the EIR;

2. *Application (i.e. changes observed in the realisation of the main policy objectives);*
    This could be monitored by considering the achievement of the policy objectives for each goal, e.g. biodiversity levels for 'biodiversity/manage our natural resources' and recycling rates for 'circular economy'. There are many sources of data, and indicator sets focussed on this – e.g. the EEA's SOER. This could therefore be done relatively easily. This also aligns with the overall objective of protecting the environment. The downsides would be the difficulty of selecting which indicators to use. It is not deemed credible to include them all because the list needs to be kept relatively short and simple in order for it to be useful as a communication and monitoring tool. There would also be a risk of duplicating the many other 'state' indicator sets that exist. The combination of indicators on environmental state with indicators on implementation and results in an EAP monitoring framework would arguably makes such a set different;

3. *Compliance and enforcement (i.e. extent of compliance by businesses, measurements taken, inspections carried out, court cases pursued) can be monitored both during implementation and application stage – and provide useful insight into progress at both stages:*
    There are very similar data sources and arguments for and against the choice of particular indicators as with point 1 (implementation) above. There is data available on the number of court cases taken up against Member States for non-compliance / non-implementation, which is reported by policy area, i.e. covering the whole of environment. There are also compliance

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[14] Tool 41: Monitoring arrangements and indicators See: https://ec.europa.eu/info/files/better-regulation-toolbox-41_en

reports prepared for some individual pieces of environmental legislation (i.e. Member State compliance with a specific Directive). Both of these indicators appear of potential relevance for EAP monitoring. However, the first indicator is not easy to understand for non-(legal) specialists, and the reasons behind the cases are often highly specific to the legislation in question. The level of detail presented in the legislation specific implementation reports is too high for EAP monitoring.

The current illustration / suggestion for a monitoring framework considers the more active stage of policy achievements, and potentially lack of achievements, i.e. target achievement. This refers to the multiple targets that exist within environmental policy, for example recycling targets. These are ways of measuring the success of policy implementation that are not necessarily direct measures of the environmental state that they are seeking to improve. For example, the environmental states that recycling targets are intended to improve include resource use and the multiple aspects of the environment that are negatively impacted by resource use. This picks up areas where the acquis is showing signs of success or failure. If there are problems, this suggests that the policy area may need to be investigated further, e.g. via evaluations of existing Directives, and/or the consideration of new policies and measures. The issue of whether or not the EAP monitoring should attempt to include Member State level assessment of progress was considered in more depth. The main point of relevance was the risk of duplicating the EIR. However, the EIR does not present any overall ranking of Member State performance, which may be a reflection of the political sensitivity of highlighting poor performance and the desire for the EIR to be more of a mechanism for helpful suggestions and capacity building rather than a 'naming and shaming' exercise. As a result, indicators used in the EIR were included for consideration within the illustrative framework with the idea being to help better track Member State performance (and as a result EU acquis performance);

4. *In addition to monitoring progress on individual initiatives, contextual information should also be collected (i.e. developments that are not intentionally related to the policy intervention, although they may be influenced by it, such as economic growth, break-through technologies, new behavioural patterns etc.):*
   This has some similarities to point two. This suggests that a monitoring framework needs to include environmental state and other indicators that are not directly related to specific Directives – e.g. state of biodiversity, materials use, GHG emissions, environmental sector employment – as these are key contextual issues for environmental policy, and if negative trends are apparent it should suggest the need for additional action. It is also important that the indicators can be reviewed when new policy relevant indicators become available (for example if an indicator on endocrine disruptors is developed), and can be updated if new environmental issues become apparent. For example, the issue of plastic marine waste was not really on the agenda when the 7th EAP started, but it is now, so it would have been good to have the ability to be able to add this.

The Better Regulation Guidelines also suggest that monitoring frameworks should comply with the following principles:
- Collect only what is relevant so as to minimise administrative burden;
- Automate as much as possible with the use of IT tools to shorten data collection and processing time;
- Use common reporting standards to increase interoperability and ease sharing of data in the context of different policy areas;

- Make maximum use of existing data to save time and increase coherence of results;
- Be transparent towards the stakeholders and opt for making data publicly available, preferably as "open data" (c.f. principles of the eGovernment Action plan).

The clear conclusions for EAP monitoring of these principles is that maximum use should be made of the wide range of existing indicator sets and other reporting of relevance, with any new requests for data avoided.

The Better Regulation Guidelines also suggest that a monitoring framework and its indicators should comply with the following 'RACER' criteria:

1. *Relevant, i.e. closely linked to the objectives to be reached. They should not be overambitious and should measure the right thing (e.g. a target indicator for health care could be to reduce waiting times but without jeopardising the quality of care provided).*
   This suggests that the use of existing targets in environmental policy, and existing (already reported) environmental state indicators would be appropriate;

2. *Accepted (e.g. by staff, stakeholders). The role and responsibilities for the indicator need to be well defined (e.g. if the indicator is the handling time for a grant application and the administrative process is partly controlled by Member States and partly by the EU then both sides would assume only partial responsibility).*
   This also suggests that using existing targets and state indicators would be appropriate;

3. *Credible for non-experts, unambiguous and easy to interpret. Indicators should be simple and robust as possible. If necessary, composite indicators might need to be used instead – such as country ratings, well-being indicators, but also ratings of financial institutions and instruments. These often consist of aggregated data using predetermined fixed weight values. As they may be difficult to interpret, they should be used to assess broad context only.*
   Complying with this criteria highlights the need to keep the number of indicators as low as possible, to aid interpretation. This criteria would also favour the inclusion of the most well-known of the environmental targets and state indicators;

4. *Easy to monitor (e.g. data collection should be possible at low cost).*
   This is most easily achieved if maximum use is made of indicators and other monitoring (e.g. of targets) that are already required and are already being done;

5. *Robust against manipulation (e.g. administrative burden: If the target is to reduce administrative burdens to businesses, the burdens might not be reduced, but just shifted from businesses to public administration).*
   There are risks in several environmental areas of displacing one risk, or negative impact, for another. However, if existing indicators and reporting are being used this risk should be considered in the policy making process of the area in question. This should give some confidence that this is at least considered, and hopefully minimised.

2.4 The manageability and hierarchy of the structured set of indicators

The development of ideas for an 8th EAP monitoring framework has been set against a long tradition of environmental monitoring and a significant evidence base. The work builds on the Fitness Check on Environmental Reporting[15], which analysed the environmental reporting obligations in all 58 relevant pieces of legislation and highlighted the need to improve coherence and indicators for some of these

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[15] EC (2017), SWD(2017) 230 final, COMMISSION STAFF WORKING DOCUMENT. Fitness Check of Reporting and Monitoring of EU Environment Policy. https://ec.europa.eu/environment/legal/reporting/pdf/SWD_2017_230.pdf

reporting flows. In addition, the report[16] on actions on streamlining environmental reporting included the following text:

The Commission "will look systematically at the following possibilities:

- *Using key indicators more widely and structuring information on the most important implementation questions by referring to the DPSIR[15] framework and the better regulation guidelines on regulatory monitoring;*
- *Aligning such key indicators where possible with the wider policy needs of the Sustainable Development Goals (SDGs), the 7th environment action programme (7EAP) and the Environment Implementation Review (EIR) to ensure a joined up approach;*
- *Reducing the need to provide textual and contextual information or using closed questions more often with pre-defined, prompted possible answers where appropriate;*
- *Using information publicly available at national level rather than requesting the information again from the Member States or businesses."*

A monitoring framework would need to pick up what the EU is doing in all of its goal areas and try to illustrate how well this is working. It would need to capture:

- The actions inspired / helped / partly enabled by the EAP, i.e. the EU led environmental policy actions and goals;
- How well these actions are being implemented (including a reflection / capturing of the fact that performance between Member States often varies);
- The state of the environment – to attempt to illustrate if the environment is moving in the (positive) way foreseen in the policy actions and goals. On the assumption that the actions are helping to achieve these positive changes.

Trying to capture all of these aspects comprehensively would result in a very long list of indicators that would not be possible to present in summary and would be impossible for any individual to fully follow. The EAP has an **overarching role** across environmental policy. Its role is not to influence the fine detail of policy in any one area, but rather to positively influence environmental policy making as a whole, promote some common goals and try to ensure that the coverage is as complete and consistent as possible across the various areas. This suggests that the level of detail in a monitoring framework needs to be controlled. This is a simple aim to state but means that the selection of indicators is difficult. The stakeholders and policy-makers in each policy area will typically feel that their area should be fully represented.

This risk can be managed / mitigated by adopting a **'pyramid' approach** to prioritising the indicators. The basic concept of this approach is that all the known indicators would be included in the total pyramid. This is a lot of indicators, but the collation in itself shows the overlap between the various collections. The pyramid approach applies for each policy area, as well as for environmental policy as a whole (see Figure 2-3).

- **Top Pyramid Level**: The top level of the pyramid would contain a small number of indicators (a couple of indicators per policy area, or EAP goal) that best capture the outputs, results and possibly impacts of EU environmental policy in that area, and when combined show EU environmental policy as a whole. In the interest of efficiency and coherence, these indicators should also align with those selected for monitoring the environmental aspects of the EGD;

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[16] COM(2017) 312 final. Actions to Streamline Environmental Reporting {SWD(2017) 230 final}
https://ec.europa.eu/environment/legal/reporting/pdf/action_plan_env_issues.pdf

- **Middle Pyramid Level**: The middle levels of the pyramid represent those indicators that are well known in each respective policy area and may well already be used in policy specific indicator sets (e.g. the Circular Economy Monitoring Framework) and strategies. These provide useful detail for policy makers in each area but go in to too much detail for the reporting of environmental policy as a whole;
- **Bottom Pyramid Levels**: The bottom levels of the pyramid include all the other, most detailed, indicators that are useful for detailed analysis, but may be infrequent or even one-off analysis. These are indicators used in detailed implementation / enforcement in each policy area by policy specialists and those engaged in scientific research. These levels (as with the others) would not be regarded as fixed, so new indicators can be added as they emerge.

This approach can be visualised in the figure below. The high-level strategies are at the top of the pyramid, with only a limited number of indicators from each policy area being reported. The base of the pyramid houses a lot more data, with this data being useful for detailed assessment of specific issues within themes.

Figure 2-3 Pyramid of indicators

Source: European Commission

The proposed monitoring framework would also allow the identification of gaps in cases where certain issues are deemed important, but the available indicators are seen as lacking for some reason (e.g. poor quality or no data, failure to capture the issue etc.).

2.5 Building blocks for different indicator uses

This collation, structuring and prioritising of the indicators would lead to the development of indicator combinations, covering a wide range of policy needs.

Some examples of the type and level of indicators that could be extracted for a variety of policy needs are provided below:

- **European Green Deal / Environmental Action Programme**. The focus here is on getting an overall picture of the effectiveness of environmental policymaking, implementation and impacts. This requires a relatively small set of indicators that cover all the high-level themes, and ideally each point on the policy cycle ('*outputs*', '*results*' and '*impacts*'). The top-level indicators for each theme with coverage of the '*output*', '*result*' and '*impact*' areas would be considered the ideal set. It is also important to point out that the pyramid includes in the

middle level issues within the EGD that are led by DGs other than DG ENV, for example CLIMA/ENER (Climate and Energy Governance) and AGRI/SANTE (Farm to Fork monitoring);

- **Environmental Implementation Review / Semester**. The focus here would be on the quality of the implementation of established policy, across all the themes. This would require a focus on the policy '*outputs*' and their links to '*results*'. The top and middle pyramid level indicators (focused on 'outputs' and 'results') for each policy theme focused would be considered ideal in this case;

- **SDGs**. The focus here is perhaps the broadest of all the policy needs. This requires a large set of indicators across all the themes and across all the policy stages. The indicator set here is already defined, and it reflects the middle and bottom levels for each policy theme;

- **Theme specific** (e.g. Air quality). The need here is to pick up the full detail of the need and response in the policy area. This requires a theme specific vertical slice through the pyramid, with each stage of the policy cycle and all levels of detail being of relevance.

3 Framework design

Building on the discussions in the previous section, we have developed an illustration of a potential monitoring framework of indicators to cover the top and middle levels of the pyramid structure described in the previous section. The scope of the framework has been expanded in some thematic areas to provide more detail and illustrate its structure and logic more fully.

3.1 Overall framework (top level)

In line with the pyramid approach described in the previous section, the overall monitoring framework needs to capture all elements (goals) of the EAP. The diagram below illustrates the way in which the proposed monitoring framework could be structured.

The themes for the future EAP align with the environmental priorities of the EGD. The priority objectives of the 8th EAP proposal[17] are thus:

1. Irreversible and gradual **reduction of greenhouse gas (GHG) emissions** with a view to attain the 2030 GHG emission reduction target and achieve climate neutrality by 2050;
2. Continuous progress in **enhancing adaptive capacity, strengthening resilience, and reducing vulnerability to climate change**;
3. Advancing towards a **regenerative growth model** and accelerating the **transition to a circular economy**;
4. Pursuing a zero-pollution ambition for a **toxic-free environment** and protecting the health and wellbeing of citizens;
5. **Protecting, preserving, and restoring biodiversity** and enhancing natural capital;
6. **Reducing key environmental and climate pressures** related to production and consumption.

It is useful to point out the alignment between the overarching vision for the 8th EAP and the vision behind the EGD, as this illustrates the alignment between the two and the logic in them sharing monitoring indicators. The 8th EAP proposal also reiterates the commitment of the three institutions to the 7th EAP 2050 vision (with some adjustments):
"In 2050 we live well, within the planet's ecological limits. Our regenerative economy where nothing is wasted produces no net emissions of greenhouse gases and economic growth is decoupled from resource use and pollution. A healthy environment underpins the wellbeing of citizens, biodiversity is thriving and natural capital is protected, restored and valued in ways that enhance our society's resilience to climate change and other environmental risks. The EU sets the pace for a safe and sustainable global society."

The EGD has been described as follows:
"An economy that works for people and the planet"
"Economic growth is not an end in itself. An economy must work for the people and the planet. Climate and environmental concerns, technological progress and demographic change are set to transform our societies profoundly. The European Union and its Member States must now respond to

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[17] https://ec.europa.eu/environment/pdf/8EAP/2020/10/8EAP-draft.pdf

these structural shifts with a new growth model that will respect the limitations on our natural resources and ensure job creation and lasting prosperity for the future."

There has been discussion about the **indicators that should be used to monitor the EGD**. The 8th EAP monitoring could contribute to a wider monitoring of the EGD objectives. A paper[18] from the Institute for European Environmental Policy (IEEP) suggested a set of high level indicators that could be used. The logic used to derive this set has much in common with the approach suggested in this paper.

The IEEP suggests using the following 15 existing indicators to form part of an environmental sustainability scoreboard:
- Private investment, jobs and gross value added related to circular economy sectors;
- Share of forest area;
- Soil sealing index;
- Water bodies in good ecological status (%);
- Water exploitation index;
- Environmental protection expenditure of the public sector by type;
- Fossil fuel subsidies;
- Eco-innovation index;
- Industrial greenhouse gas emissions intensity;
- Greenhouse gas emissions from transport;
- Greenhouse gas emissions from agriculture;
- Domestic material consumption per capita;
- Per capita waste generation;
- Years of Life lost due to exposure to particulate matter;
- Climate-related economic losses.

On 17 December 2019, the EC adopted its new Annual Sustainable Growth Strategy (ASGS) for 2020[19], as part of the new European Semester cycle. The ASGS sets out the economic and employment policy strategy for the EU, which will aim at delivering President Ursula von der Leyen's Political Guidelines and focusing on prioritising the EGD. The introduction to the ASGS restates the points made above on the objectives of the EGD.

The ASGS also describes the refocusing of the European Semester and how this will start with the 2020 country reports. In these reports, there will be a reinforced analysis and monitoring on the SDGs. The reports will also include a new dedicated section focusing on environmental sustainability to complement the analysis on economic and social challenges. There is a clear opportunity to reduce monitoring requirements and help achieve political profile by aligning EAP monitoring with this new section in the Semester reporting, and any other EGD reporting.

Similar high-level objectives can also be seen in other ongoing and developing EU initiatives, such as the Sustainable Development Goals and work on economic indicators 'beyond GDP'[20]. The latter could directly incorporate the 8th EAP monitoring as the environmental component, alongside its social and economic monitoring. The approach also echoes other concepts in economic and environmental growth.

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[18] https://ieep.eu/publications/role-of-a-reformed-european-semester-within-a-new-sustainable-economy-strategy
[19] https://ec.europa.eu/info/sites/info/files/2020-european-semester-annual-sustainable-growth-strategy_en.pdf
[20] 'Beyond GDP' is the EU concept of looking beyond GDP growth as the main indicator progress. It would incorporate economic, social and environmental indicators.

For example, the "doughnut economy" concept and its vision for sustainable development and more precisely meeting the needs of the people, whilst remaining within the ecological limits of our planet.

The **Doughnut**, or **Doughnut economics**, is a visual framework for sustainable development combining the concept of planetary and social boundaries. The concept combines both the environmental resources that people use (energy, water, food etc.) and the access that people have to the essential social and economic needs of life (income, employment, health and equality etc.). The areas outside the doughnut part of the diagram are where people have below the minimum of the social and economic needs ('inside' the doughnut), or use levels of resource that are below levels which are not sustainable without doing long term damage to the environment and/or exhausting natural resources ('outside' the doughnut).

The diagram was developed by Oxford economist Kate Raworth in the Oxfam paper A Safe and Just Space for Humanity and elaborated upon in her book Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist.

Looking at the areas that would need to be monitored at the 'top level' within the 8th EAP, and that are likely to overlap with the environmental aspects of the EGD, we assume that the policy area coverage should fit with the policy areas suggested for the 8th EAP. The proposal for an 8th EAP[21] describes six thematic priority objectives, these are listed below along with a short title for each (our interpretation) in brackets after each:

1. Irreversible and gradual reduction of greenhouse gas emissions and enhancement of removals by natural and other sinks in the Union to attain the 2030 greenhouse gas emission reduction target and achieve climate neutrality by 2050 as laid down in Regulation (EU); (*Climate neutrality*)

2. Continuous progress in enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change; (*Climate resilience*)

3. Advancing towards a regenerative growth model that gives back to the planet more than it takes, decoupling economic growth from resource use and environmental degradation, and accelerating the transition to a circular economy; (*Circular Economy*)

4. Pursuing a zero-pollution ambition for a toxic free-environment, including for air, water and soil, and protecting the health and well-being of citizens from environment-related risks and impacts; (*Zero-pollution*)

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[21] European Commission (2020) "Proposal for a decision of the European Parliament and of the Council on a General Union Environment Action Programme to 2030", COM(2020) 652 final. Available here: https://ec.europa.eu/environment/pdf/8EAP/2020/10/8EAP-draft.pdf

5. Protecting, preserving and restoring biodiversity and enhancing natural capital, notably air, water, soil, and forest, freshwater, wetland and marine ecosystems; (*Biodiversity*)

6. Promoting environmental sustainability and reducing key environmental and climate pressures related to production and consumption, in particular in the areas of energy, industrial development, buildings and infrastructure, mobility and the food system; (*Reducing key environmental and climate pressures*).

The figure below is intended to illustrate the approach, and to highlight how the 8th EAP monitoring would fit in with the monitoring of other European objectives – with the 8th EAP indicators covering the 'environmental' aspects and other indicators covering social and economic objectives. The basic structure is to have a set of indicators that pick up a number of aspects for each of the six thematic priority objectives included in the diagram.

Figure 3-1 EAP monitoring structure
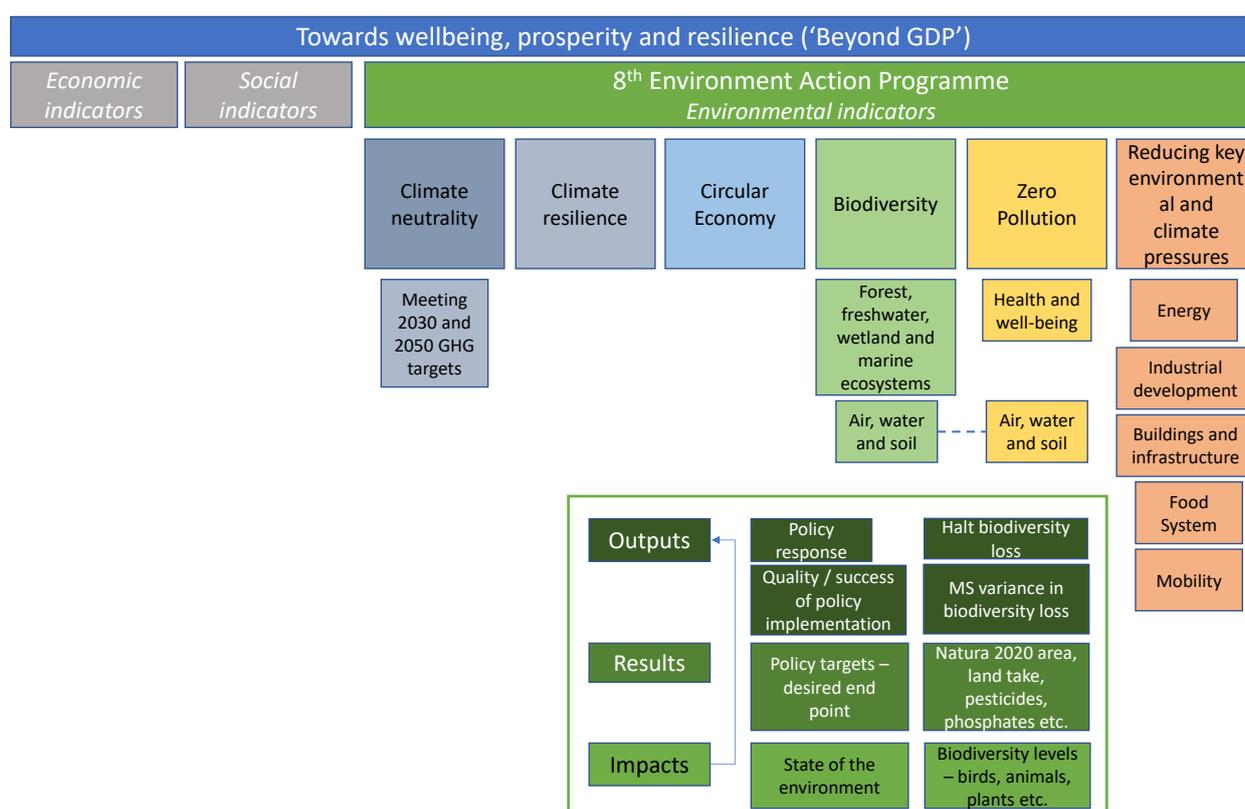
Under each priority objective the indicators selected pick up aspects of '*outputs*', '*results*' and '*impacts*' – as shown in the example for biodiversity. The full set of these indicators would represent the top and middle level indicators for each policy area, further narrowed down to the top-priority indicators. The approach used to select the illustrative indicators in each area is described below.

'*Outputs*'. This includes the existence of a policy response, which can be considered a yes / no question. This can also be phrased as the policy target, or desired end point in the goal area. In the example above, an '*output*' could be to halt biodiversity loss. It is important to note that the existence of a policy does not imply it will be successful, but it needs to exist first, before it can either succeed

or not, so the 'yes or no' fact of its existence is still worth monitoring. The '*outputs*' also measure how well the policy has been implemented.

'*Results*'. The most tangible way of measuring and presenting this would arguably be the achievement level of any targets specified in the Directives, Regulations and strategies in this policy area/goal. The target achievement could also be presented at EU and Member State level. The use of targets will obviously work better in those areas where there are clear targets. In the example area given in Figure 3-1 the '*result*' is the area of land designated as Natura 2000.

'*Impacts*'. This is the type of indicator typically reported in the EEA monitoring. It links back, and overlaps with, the Driving Forces as it shows the state of the environment that the policy intervention, and the target achievement, is intended to improve. In the example goal area shown in the diagram, the state (or '*impact*') is the plant and animal species number.

3.2 Specific detailed framework (middle level)

The following diagram further illustrates the approach was taken to select potential indicators for each of the goals / policy areas. It draws together the approach described in the Better Regulation Guidelines ('*output*', '*result*', '*impact*') and the DIPSR approach.

Figure 3-2 Goal by goal indicator development structure – bringing together Better Regulation and State of the Environment Assessments
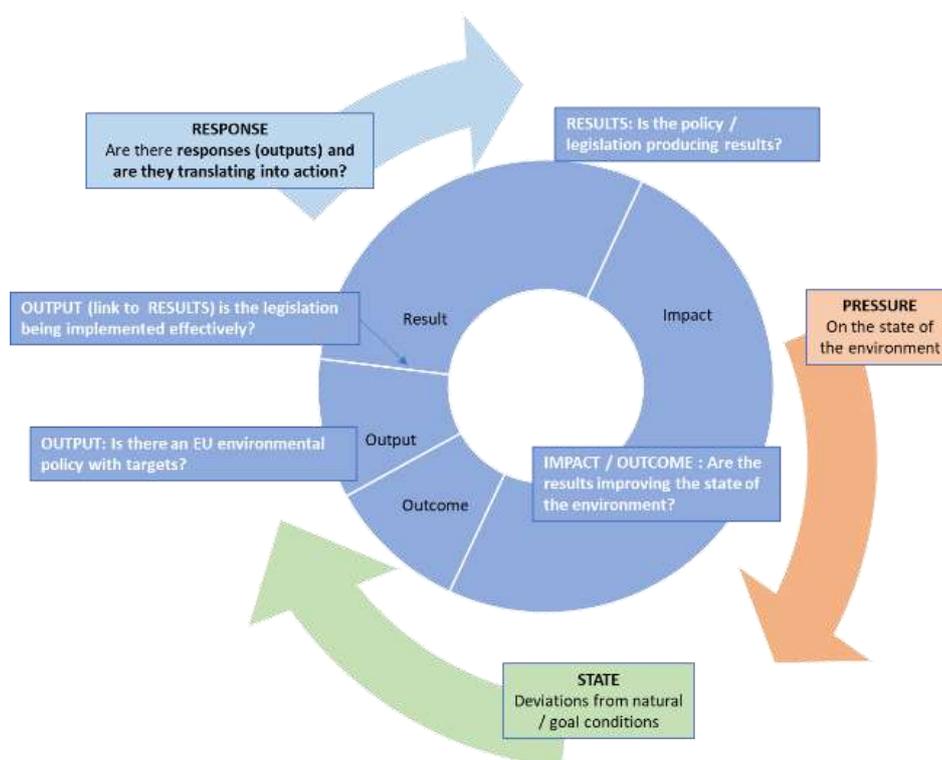
This diagram is based on a combination of the '*output*' – '*result*' – '*impact*' relationship described in the previous sections and a simplified version of the DPSIR framework, (pictured below) that the EEA (and others) use to describe the environment and how policies and other changes interact with it.

Figure 3-3 DPSIR Framework

Source: EEA https://www.eea.europa.eu/publications/92-9167-059-6-sum/page002.html
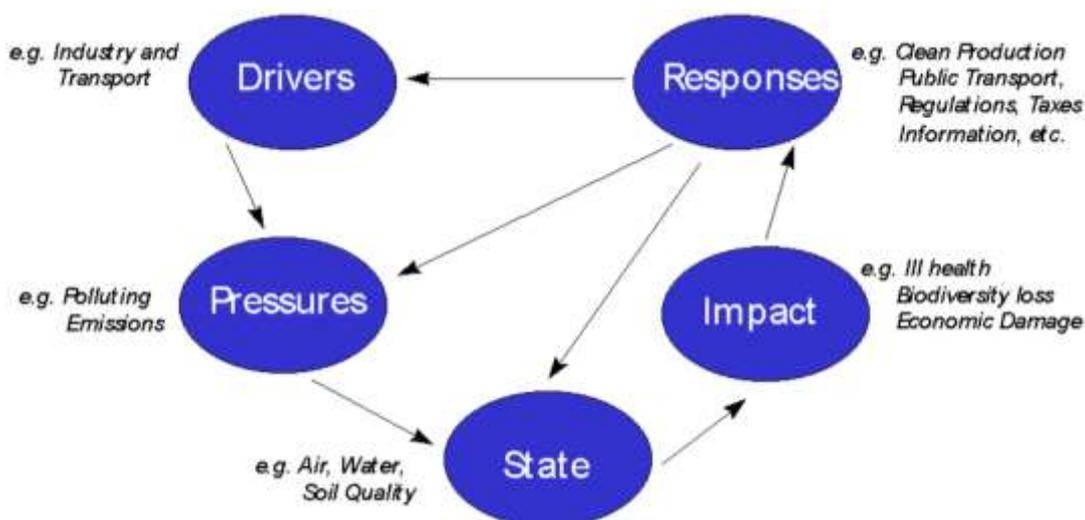
As can be seen, the DPSIR framework is not a purely circular process and does not perfectly align with the '*output-result-impact*' model. It has therefore been simplified to illustrate where it does fit.

As with the figure showing the relationship for the whole EAP, the indicators for each policy area break down into the following three groups:

'*Outputs*': This relates to the policy cycle, where you start with a problem. In this case, the problem is typically that some certain aspect of the state of the environment is not as it should be. The first step is then to recognise that there is a problem and use scientific evidence to define what the desired state of the environment should be and/or the desired direction and speed of movement in that environmental state. This step aligns with the 'objectives' level of the intervention logic. This first step also needs to recognise what is causing this negative state – i.e. what are the negative pressures. These negative pressures are typically what a policy needs to be designed to address. The next step is to formulate a policy response that is designed to address the negative pressures in order that the negative environmental state can be improved. **This policy response aligns with the '*output*' level** of the intervention logic and can be **measured by the existence of policies, programmes, incentives etc**. that are designed to achieve the objectives in the previous step.

The '*outputs*' step **also covers the quality / success of the policy response (or outputs)**. This considers the link between the '*outputs*' and the '*results*' (i.e. the fact that policies, programmes, incentives etc. exist) and results (i.e. do the outputs help achieve the desired objectives). This considers issues such as how well EU level policies are implemented at Member State level, if there is industry resistance, if the output is capable of achieving the scale of change it is designed to. This is one of the harder steps to measure as policy implementation is a dynamic process and there are many legitimate reasons why it can vary. A simple way of illustrating how this might be measured is via the level of Member State compliance with a particular Directive (i.e. the implementation of said Directive). The information captured in the EIR process for each policy area is also of relevance here.

'*Results*': The **level of achievement of the goals and targets set by the policy outputs** in the area. Another way of considering this is the level of variation in progress between Member States. While some variation is to be expected, there should be some common direction and relative scale of movement. For example, if some Member States are progressing towards a goal, but others are making no progress, this should be highlighted as a problem, because positive movement is demonstrably possible, so the Member States without this must either be facing other problems that the intervention is not addressing, or are not implementing it effectively. This highlights the need for assistance in areas such as capacity building / structural assistance and/or policy redesign. This type of analysis is at the core of the EIR process.

'*Impacts*': This is fundamentally the **state of the environment**. This considers if the interventions (the '*outputs*' and their '*results*') have had their desired '*impacts*', and achieved the objectives set for them in improving the environmental measure that was a concern. This step links back to the beginning of the process. If the state of the environment is not moving in the desired direction, and/or the speed of positive movement is too slow, this suggests that the current interventions are either not ambitious enough or are not being implemented effectively. This suggests that more action is needed and/or that the existing actions need to be better implemented. This is also the point at which emerging concerns (e.g. due to new scientific observations, or public concerns) should be picked up and fed into the policy process.

The diagram below illustrates how some of the illustrative indicators were selected within the circular economy policy area.

Figure 3-4 Monitoring framework (level 2) for Circular Economy
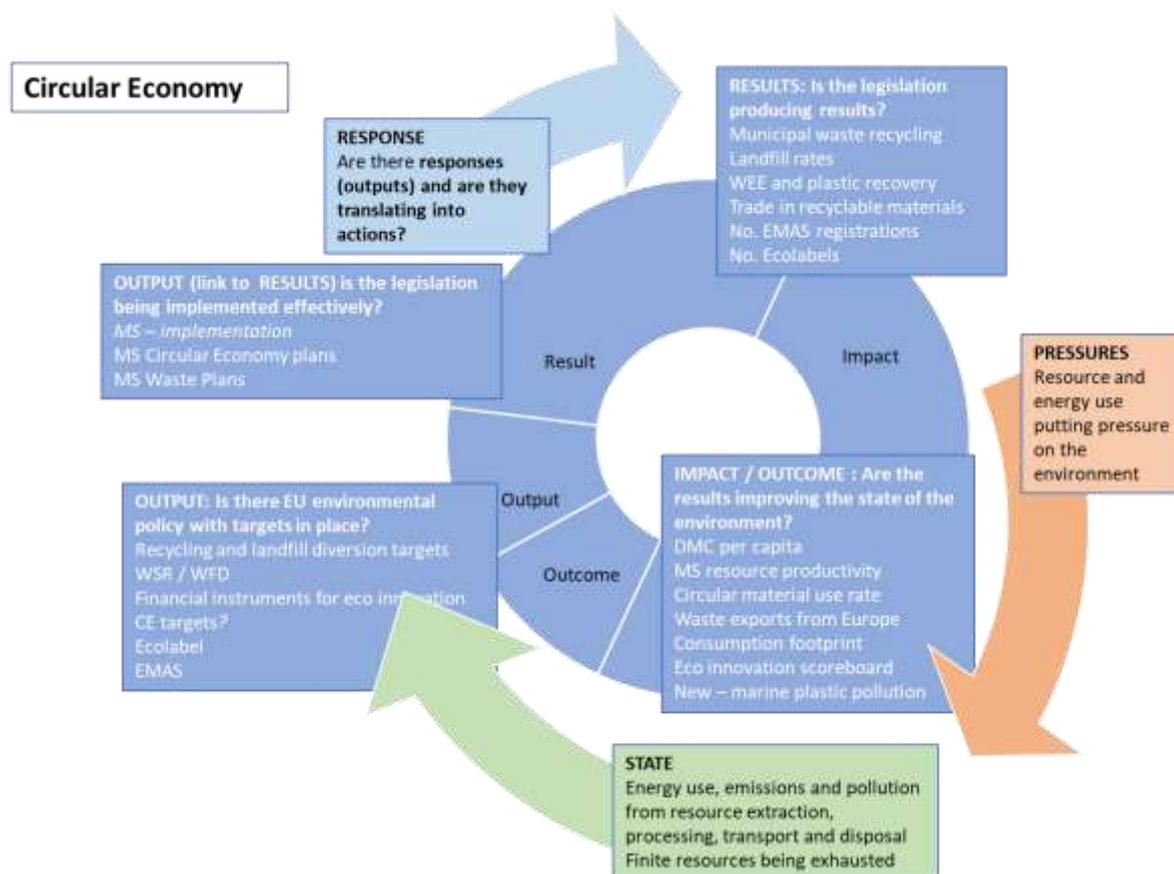
Additional examples of this approach for the policy areas Air Quality, Biodiversity and Zero Pollution are included in Annex A.

It is important to point out that the illustrative indicator library also include areas where there are known gaps and areas for further work. Some examples of areas where there is an acknowledged need to develop indicators include:

- EMAS - Direct environmental benefits (key performance indicators);
- Number of environmental labels and methods related to environmental performance;
- Recycling rate of textiles;
- Crop rotation;
- River continuity (Not disturbed by anthropogenic activities and allows undisturbed migration of aquatic organisms and sediment transport);
- Concentration of pharmaceuticals measured in aquatic ecosystems;
- Economic loss due to floods in relation to GDP.

4   Results of the analysis and conclusions on the monitoring framework

4.1   Results of the analysis

The analysis conducted provides a strong justification for potentially setting up a monitoring framework, considering the EAP '*outputs*', '*results*' and '*impacts*' across environmental policy as a whole. Any monitoring framework should ideally be developed to include the following aspects, which have been described in earlier sections:

- **'Outputs':** The existence of policies and targets in each environmental policy area / goal, and any measures of the quality of transposition and implementation of this at Member State level. This is closely linked to the Environment Implementation Review (EIR);
- **'Results':** The progress against key targets as contained in Directives, Regulations etc. across each environmental policy area / goal. This is also consistent with the EIR;
- **'Impacts':** Key indicators of environmental state in each policy area / goal. On the basis that the results should have a positive impact in these areas. However, in some policy areas the frequency of available data means that they will only be available over longer time horizons and therefore it could be more relevant to include these in the EEA's SOER (which is arguably the current case).

Some critical elements that should be considered in the monitoring framework for the 8th EAP, and are addressed in the potential approach described, are coordination and coherence with the monitoring efforts under the EGD (and the European Semester Reporting), EIR and the EEA's SOER needs. These regular reports could be designed in such a way that they would be the main vehicle to analyse and publish the monitoring of the 8th EAP.

The key positives and justifications for this potential approach are as follows:
The monitoring framework would represent an output in itself. It would be an output which enhances one of the strengths of the EAP (that of it being a tool to hold the EC to account) by better formalising the process of monitoring environmental policymaking. It would also help address some of the weaknesses of the 7th EAP, such as its lack of profile and lack of stakeholder engagement, by providing a simple, unique and useful monitoring tool.

The suggested approach of collating and presenting progress against the full variety of environmental policy / legislation targets is not done in any other indicator set. This would address the risk of duplicating other indicator sets and monitoring frameworks.

The use of data that is already collected on both progress against targets and environmental state would means that there should not be any additional data collection or reporting obligations.

The suggested approach would be a good fit with the Better Regulation Guidelines on monitoring frameworks.

Some risks and downsides of the potential approach to the monitoring framework are listed below, along with measures that could be taken to address them.

There are some areas of environmental policy with a lack of targets, and/or a lack of agreed state indicators, which will lead to gaps in the monitoring framework. The existence of these gaps would be a useful thing for the monitoring framework to highlight. These gaps are typically well known in the policy areas in question and those active in these areas are arguably best placed to address them. The monitoring framework would need to be flexible enough to allow review and update over time as new indicators and targets emerge to fill the gaps.

Selecting a list of targets and indicators that is short enough to be easily presented, yet long enough to be comprehensive, would not be easy. This is true, but the task is not impossible. The suggested monitoring framework includes a long list of indicators, but they are structured according to a pyramid structure. Only the top-level indicators in this pyramid would be reported in the headline presentation, but the other indicators would be collated and remain available for more detailed inspection and use by specialists in the policy areas concerned.

The use of the 'output' 'result' 'impact' framework may be difficult to understand for some stakeholders. This is true for those stakeholders who are not familiar with the policy making process, e.g. those more interested in environmental state. However, this group is already well served by the work of the EEA. If the purpose of the EAP is accepted as being (inter-alia) to monitor the effectiveness of EU environmental policy making, it needs to consider the policy making process in terms that policy-makers understand. The Better Regulation Guidelines are built on the '*output*', '*result*', '*impact*' structure, so it appears a good choice to use it for EAP monitoring. The indicator pyramid allows for different indicators to be presented for different purposes and is not intended to exclude any indicators thought useful for a certain audience. A suite of indicators that effectively ignores the '*output*', '*result*' '*impact*' approach can therefore still be chosen from the pyramid, if this approach is deemed most suitable for the audience in question.

4.2 Conclusions on the monitoring framework and final output

The illustration of the monitoring framework was developed as follows:

1. A long list of all the indicators used in each policy area was made to form an indicator library. The indicators were split across different Excel sheets, depending on the policy area they relate to. The indicators were drawn from existing monitoring frameworks (to make best use of data that has already been collected). The table also includes key gaps /weaknesses, i.e. aspects of the policy area where the available indicators are lacking, or may not be available at all. The Excel spreadsheet has now been converted to a database to allow easier data handling. An example sheet from the Excel document (covering Circular Economy) is included in Annex B;

2. Each policy area (i.e. corresponding EAP/EGD priorities) was broken down into sub-headings. These subheadings already exist in most policy areas. For example, in the Circular Economy Monitoring Framework, sub-headings include "waste management", "secondary raw materials", "production and consumption" and "competitiveness and innovation", among others;

3. The indicator library is structured against the sub-headings and categorised against the three steps of the policy cycle ('*outputs*', '*results*', '*impacts*'):

a. The '**outputs**' should be thought of as the existence of policies and targets in each environmental policy area / goal. i.e. Is there legislation to tackle the issue? We assume yes = existence of policy. The second part of this is the extent to which the Member States are complying with the legislation. This should include measures such as whether they have submitted a national plan, whether this is adequate, whether they have followed up with implementation measures, whether all the implementation measures are fulfilled… etc. This could be assessed on a scale of no progress to fully addressed (1-5) and could make use of information for the Environmental Implementation Review (EIR) process if this was deemed useful. For example, MS implementation reports, including information on accidents or near-accidents for Directive 2006/21/EC;

b. The '**results**' should be thought of as progress against key targets, as set by the legislation and policies, across each environmental policy area / goal. For example, to what extent have the targets to reduce NOx emissions been achieved? This data is already reported;

c. The '**impacts**' should be thought of as progress in the environmental state in each policy area / goal, (as a result of the progress against targets). Much of this data is already collected, with several indicator sets designed to report it – either by sector or on a more cross cutting basis (e.g. the EEA's SOER).

4. The indicators were then prioritised into three groups within the 'pyramid' structure:

a. Top of the pyramid (a couple per policy area) the headlines that are the easiest to understand (for policy makers and the public), have good quality data and are regularly updated. These indicators overlap as much as possible with other high level monitoring sets, especially those selected for the EGD;

b. Middle of the pyramid (several per policy area), indicators that are well known to specialists in the field, but are more technical. If the top and middle level indicators in a particular policy area are combined it creates a good whole set for that area – something like the existing Circular Economy Monitoring Framework[22];

c. Bottom of the pyramid (100+ per area, but no limit). This covers indicators that are operational within each policy area, picking up detailed aspects and of use and interest to specialists. It includes the ability to add new indicators as data becomes available or new issues emerge that available data may be struggling to capture (e.g. chemicals' effects on the environment).

5. Report the headlines for an overall picture against overarching strategies (i.e. EAP or EGD). Or top and middle of the pyramid for a specific policy area;

6. Highlight the knowledge gaps – By policy area and stage (output, impact, result). Describe the gap, i.e. what would the indicator look like, what is the closest existing data. Then compare the gaps to ongoing and planned statistical activity in these policy areas to address the gaps, to ensure that any suggestion for new work is not duplicating existing activity;

7. We suggest presenting and updating a summary table annually. The availability of new data for the three areas ('*output*', '*result*', '*impact*') varies:

a. '*Outputs*': Relatively slow speed of update on the existence of policies and in the delivery of new implementation data. It would appear sensible to align the frequency of updates with the frequency of the EIR process, which is every two years;

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[22] https://ec.europa.eu/eurostat/web/circular-economy/indicators/monitoring-framework

b. **'Results'**: Most of the targets would have new data each year, though this is not the case for all areas, with progress in areas such as rivers, habitats and species being on a five to seven year cycle. It would be possible to update the targets each year for those where it is available, though it may be better to follow the two-year cycle of the EIR;

c. **'Impacts'**: As with '*results*', some of the indicators are updated annually but others are much less frequent. An update every two years, with a reassessment every four is one option that could be considered. The reassessment would allow new indicators to be introduced, if required. The reassessment could be aligned with the EEA's SOER process to try and maximise efficiency and coherence.

If the gaps in indicators continue to exist and are not being addressed by work in the policy area in question, one approach could be to use the voluntary Member State approach used in SDG reporting. An alternative approach could be self-reporting where Member States publish their findings on issues and in a format that is agreed prior in a consultative process at EU level. This reporting approach allows Member States to submit the data themselves, thus removing the risk of imposing extra mandatory administrative load, and potentially encouraging other Member States to report. The drawback to this approach is that it does not allow for a coordinated EU vision, as it relies on the good will of each Member State and is likely to result in data that is hard to collate to EU level, and hard to compare Member States on.

Annex A: Policy area diagrams

Example diagrams for three policy areas.

Figure A-1 Example diagram for the policy area Air Quality
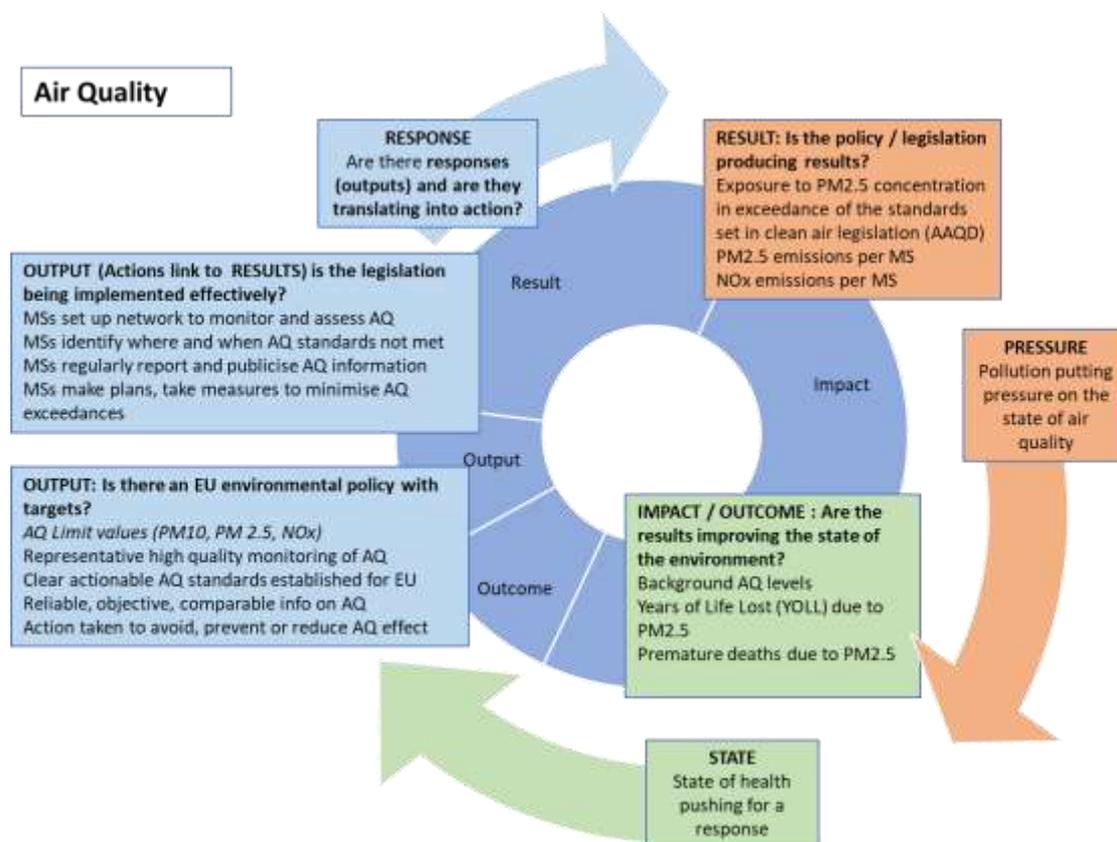
Figure A-2 Example diagram for the policy area Biodiversity
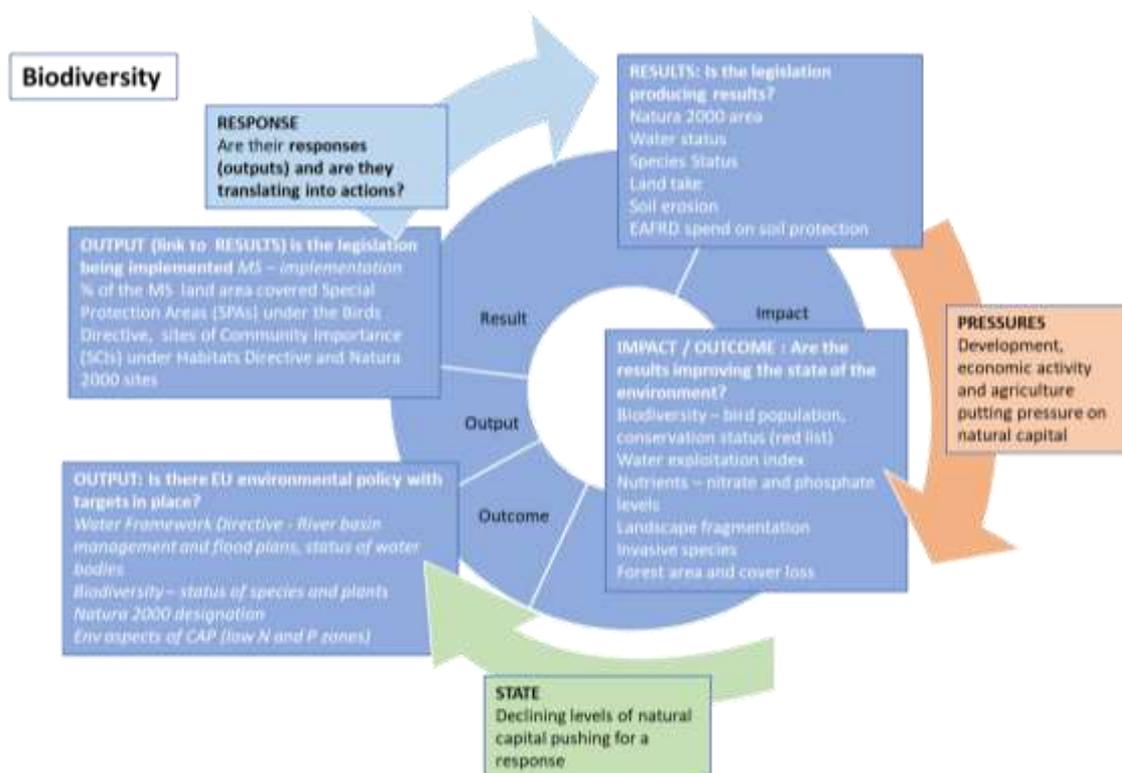
Figure A-3 Example diagram for the policy area Zero Pollution
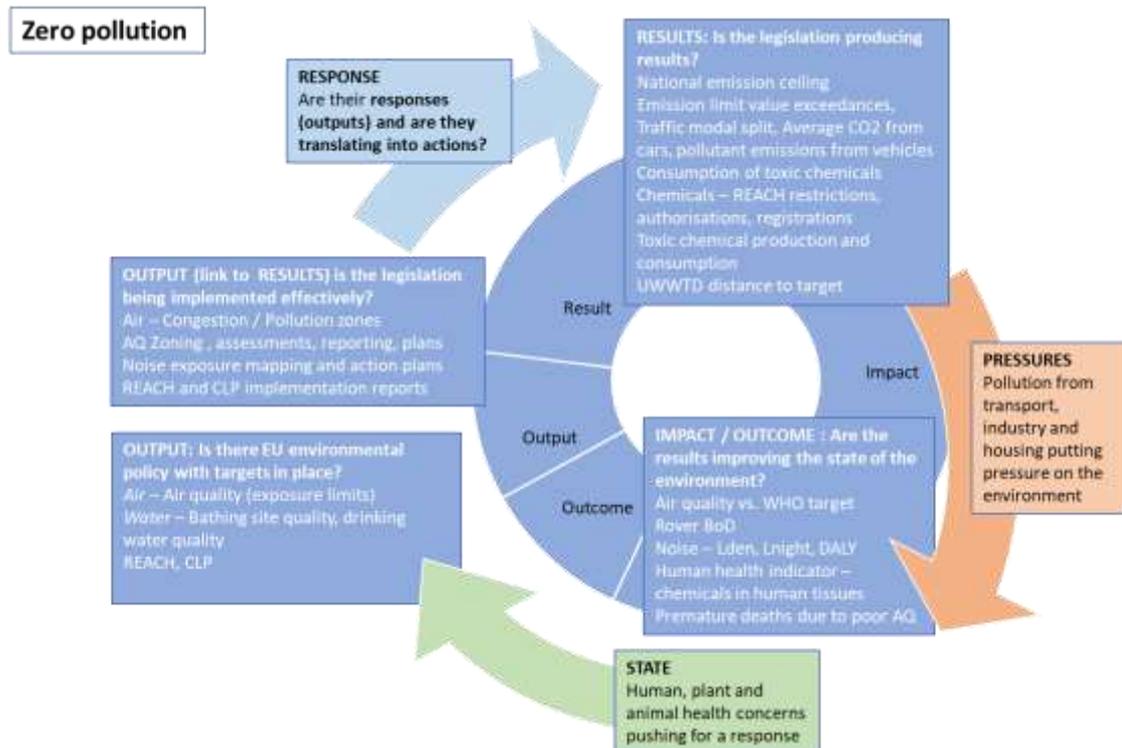
Annex B - Indicator library

Example of one of the Excel sheets in the illustrative indicator library. This shows the **Circular Economy Policy area**. Similar sheets have been drafted for the EAP priority areas that overlap with the EGD (Biodiversity and Zero Pollution), as well as other areas where other DGs lead, but where DG ENV (and the EAP) has some relevance – e.g. climate, energy, farm-to-fork and a just transition. Below the example there is a description of the various rows and columns in the indicator library and what they indicate.

Figure B-1 Description of indicator library

Disclaimer: This is a draft for discussion. The selected indicators are not intended to be an imposed choice, they are to illustrate the approach and will be the subject of discussion.

General note and state of consultation: This table was pre-filled by using the existing indicators in the Circular Economy Framework (COM(2018)29, input from Units B1 or B3 was then added below

Existing indicators (or under development)

Categorisation			Factual												Pyramid level		
EAP Priority	Sub-headings	Indicator (name)	Parameter (unit/definition)	Threshold/Target	Member State Data	Regional data available	Status (readily available?)	Status comments	Frequency	Comments (if other)	Indicator type (Output, Results,	DPSIR cycle	Comment (if multiple)	Top	Middle	Bottom
Circular Economy	Production and consumption	Domestic Material Consumption (DMC) per capita	Tonnes per capita		Yes	No	Available		1 year		Impact	Drivers		Yes		
Circular Economy	Production and consumption	Resource productivity (RP)	euros / kg i) in euro per kg, chain-linked volumes (2010)		Yes	No	Available		1 year		Results	Multiple	(GDP): driver (DMC): pressure	Yes		
Circular Economy	Production and consumption	Consumption footprint	Number Percentage		Yes	No	Available		1 year		Impact	State change		Yes		
Circular Economy	Waste management	Recycling rate of municipal waste	%		Yes	No	Available		1 year		Results	Response		Yes		
Circular Economy	Secondary raw materials	Circular material use rate	%		Yes	No	Available		1 year		Results	Response		Yes		
Circular Economy	Water (use)	Water Exploitation Index + (WEI+)	River basin districts; Map (EU-wide); % (with thresholds)		Yes	Yes	Available		Other	Every quarter per year	Impact	State change		Yes		

Source information								Intended (future) use of indicator		Current use of indicators (in existing lists)															
Sources	Indicator Owner	Metadata	Indicator code	EC Primary owner	EC Associated owner	Data collection through IEEP legislative	Code in reporting inventory	Notes	European Green New Deal	Progress on Commission six headline	Sustainable Development Goals	European Semester (Country	Environmental Implementat	EEA – 7EAP monitoring set	8EAP	DG Environment - Annual	Strategic Plan of DG ENV	Strategic Plan of the Commission	Circular Economy Monitoring	Circular Economy Action Plan	Resource Efficiency Scoreboard	Biodiversity indicators (SEBI).	Agri-environmental indicators.	European Forest Fire Information	IUCN - Biodiversity indicators	Mapping and Assessment of	Common Agricultural Policy (CAP)	Zero Pollution Stategy	SEVESO	Product policy framework	OECD
https://ec.europa.eu/eurostat/web/products-	Eurostat	https://ec.europa.eu/eurostat/cache/metadata/en	t2020_rl110	DG ENV.B.1 and B.3			https://ec.europa.eu/eurosta																				
http://appsso.eurostat.ec.europa.eu/nui/show.do?	Eurostat	https://ec.europa.eu/eurostat/cache/metadata/en	env_ac_rp	DG ENV.B.1 and B.3			Would complete the CE	x	x									x	x								
https://ec.europa.eu/jrc/en/publication/consumpt	JRC	https://ec.europa.eu/jrc/en/publication/consumpt		DG ENV.B.1 and B.3			Would complete the CE										x									x
https://ec.europa.eu/eurostat/tgm/table.do?tab=	Eurostat	https://ec.europa.eu/eurostat/cache/metadata/E	cei_wm01	DG ENV.B.1 and B.3		Directive 2008/98/EC on Waste Framework	If you had to choose 27	x		x		x				x										
https://ec.europa.eu/eurostat/web/products-	Eurostat	https://ec.europa.eu/eurostat/cache/metadata/en	SDG_12_4	DG ENV.B.1 and B.3				x		x						x		x								
https://www.eea.europa.eu/data-and-	EEA	https://www.eea.europa.eu/data-and-	CSI 018 , WAT 001	DG ENV.B.1 and B.3																	x					

Inventory of key environmental indicators

The indicator fields are in groups. These groups and the nature of each field is described below.

Group 1: Categorisation
This type of information was used to better sort the indicators.

EAP Priority
This describes under which of the likely 8th Environment Action Programme (EAP) Priorities the indicator can be classified.

Sub-headings
To better fit the indicator in sub-themes within the EAP priorities. It is important to note that some indicators appear under more than one subheading.

Indicator (name)
The name of the indicator as noted by the creator / holder of the indicator.

Group 2: Factual
This set of information provides details on the indicators themselves.

Parameter (unit/definition)
The unit or definition of how the indicator is measured.

Threshold/Target
The target or threshold set by relevant policy / legislation for the indicator in question. Where relevant – not all indicators have a defined target.

Member State Data
Dropdown list of 'yes' or 'no'. Where yes is if the indicator has Member State level data (though not necessarily complete coverage of all MSs).

Regional data available
Dropdown list of 'yes' or 'no'. Where yes is if the indicator has regional level data.

Status (readily available?)
Dropdown list of 'available', 'not available' and 'not set', which indicates the availability of the indicator. This is defined as whether the indicator had publicly available data when the indicator was added to the database. 'Not set' is typically work in progress.

Status comments – to clarify if there is additional qualitative information on the status of the indicator. *For example, if there are known plans to develop a not available indicator.*

Frequency
Dropdown list of '1 year', '2 years', '3 years', '5 years' and 'other'. Indicating the frequency with which the indicator data is disseminated.

Comments (if other) – to clarify if the indicator has selected 'other' for the Frequency input. For example ,if the frequency is not set, or the data was from a one-off report, with no known plans to repeat.

Indicator type (Output, Results, Impact)

Dropdown list of '*Output*', '*Results*' and '*Impact*'. This uses the evaluation concepts described in the EU's Better Regulation Guidelines. In this context they are defined as follows:

- **Outputs** refer to existing policies and targets for all environmental policy areas and their transposition/implementation to the Member State level. Consistency with the Environmental Implementation Review is desirable;
- **Results** refer to progress of key targets in EU legislation for all environmental policy areas. Consistency with the Environmental Implementation Review is desirable;
- **Impacts** refer to key indicators on the environmental state in each policy area, on the basis that the results should have a positive impact in these areas.

DPSIR cycle

Dropdown list of 'Drivers', 'Pressures', 'State change', 'Impact', 'Response' and 'Multiple'. This is based on the EEA framework, which categorises indicators based on how they affect the environmental and human systems. The options are described as follows:

- **Drivers** refer to the beginning of the chain of causal links on environmental impacts. This is in regard to economic sectors and human activity;
- **Pressures** refer to the effects these drivers have on the environment, i.e. emissions and waste;
- **State change** refer directly to physical, chemical and biological effects the pressures have;
- **Impact** refer to how these state changes have a broader impact. This can be via effecting ecosystems or human health;
- **Response** refer to the political response to such impacts. This include prioritisation, targets and indicators explicitly.

Comment (if multiple) – to be able to provide multiple DPSIR responses, if multiple.

Pyramid level

Dropdown list of 'yes', if applicable. This describes the indicator's allocation to one of three Pyramid levels. These levels indicate the priority assigned in terms of reporting.

- **Top Pyramid level** refers to a small number (10-20) of headline indicators per policy area or EAP goal. They should best capture the outputs, results and impacts of EU environmental policy in each respective policy area. For efficiency, they should align with those selected for monitoring the European Green Deal;
- **Middle Pyramid level** refers to indicators that provide useful detail for policy makers in specific environmental policy areas, and they go into more detail than the reporting on the overall state of environmental policy at the highest political level. These indicators are well known in the various policy areas and may already be used in different existing indicator sets, for example, the Circular Economy Monitoring Framework;
- **Bottom Pyramid level** refers to the most detailed indicators. These are used for detailed analyses, potentially infrequently so. The acceptance of new indicators is to be expected to this level when they emerge.

Group 3: Source information

This group of information points provides details on where the indicator, its data and metadata can be found. It also describes which DGs and units within the European Commission make use of the indicators.

Sources

A hyperlink (for most) to where the indicator can be easily accessed. The links are typically to Eurostat.

Indicator Owner

Dropdown list of 'Eurostat', 'EEA', 'DG Environment', 'World bank', 'OECD' and 'JRC', which specifies the organisation which is the main complier or creator of the indicator. The ownership of indicators ascribed in the EEA / Eurostat list was used (where available).

Metadata

A hyperlink to where metadata on the indicator can be accessed. This was principally sourced from the Eurostat/EEA environmental indicator catalogue, however some were taken directly from the indicator owners.

Indicator code

A specific code for which the indicator is catalogued as by the indicator owner. This should be used to find the indicator, in case the hyperlinks break. Mainly from the Eurostat/EEA environmental indicator catalogue, however some were taken directly from the indicator's owners.

EC Primary owner

Which DG and Unit is the primary user of the indicator, from a policy perspective.

EC Associated owner

Which DGs and Units are associated with the ownership/use of the indicator. Some indicators are of interest to more than one unit.

Data collection through reporting

Which piece of EU legislation the indicator is linked to (if any) according to the inventory for reporting obligations in EU environmental legislation.

Code in reporting inventory

Provides an Inventory Reference Number, which links the indicator to an indicator from the inventory for reporting obligations in EU environmental legislation.

Notes

Any additional notes that have been provided by the European Commission are found here. This covers issues such as questions different DGs have on the indicator, additional information provided by the DGs on the indicator, or discussions on the quality of the indicators.

Group 4: Intended (future) use of indicators

This group provides information on what the future use of the indicator is. I.e. where it is presumed or known that it will be used in future indicator sets.

8EAP

Input of "x" if relevant. The 8th Environment Action Programme (8EAP). (work in progress).

European Green Deal monitoring

Input of "x" if relevant. Which specifies if the indicator could be used for European Green Deal monitoring.

Progress on Commission six headline ambitions

Input of "x" if relevant. Which specifies if the indicator is used for the progress on the Commission's six headline ambitions, from the Political Guidelines for the Commission for 2019-2024.

Resilience Dashboard.

Commission report includes prototype dashboards (by the JRC) on measuring social, economic, green, geopolitical and digital aspects of resilience.

Zero Pollution Strategy and monitoring

Input of "x" if relevant. Yet to be published.

Biodiversity Monitoring Framework

To be added when available.

Farm to Fork monitoring

Indicators to be defined – will include environmental / agriculture aspects (DG SANTE lead).

Product policy framework

Input of "x" if relevant. The complete framework is still in development.

Group 5: Current use of indicators (in existing lists)

This section of input highlights what the indicator is currently used for, i.e. which EU strategy and policy monitoring indicators sets it is contained in.

Sustainable Development Goals (SDGs)

Input of "x" if relevant. The EU's SDG indicators. (n.b. this list is updated annually).

European Semester (Country Reports)

Input of "x" if relevant. The European Semester country reports. Each country report has an annexe containing a selection of the SDG indicators for the country in question.

Environmental Implementation Review (EIR)

Input of "x" if relevant. The Environmental Implementation Review (EIR). The indicators will be revised in 2021.

EEA – 7EAP monitoring set

Input of "x" if relevant. The EEA's 7th Environment Action Programme (7EAP) monitoring indicator set.

DG Environment - Annual Activity Report

Input of "x" if relevant. The annual activity reports of the European Commission DGs.

Strategic Plan of DG ENV

Input of "x" if relevant. Report by DG Environment.

Strategic Plan of the Commission

Input of "x" if relevant. Political Guidelines of the Commission for 2014-2020.

Circular Economy Monitoring Framework

Input of "x" if relevant. The Circular Economy Monitoring Framework. Currently under revision.

Circular Economy Action Plan (CEAP) (2)

Input of "x" if relevant. The New Circular Economy Action Plan.

Resource Efficiency Scoreboard

Input of "x" if relevant. The Resource Efficiency Scoreboard.

Biodiversity indicators (SEBI)

Input of "x" if relevant. The Streamlined European Biodiversity Indicators (SEBI).

Agri-environmental indicators (AEIs)

Input of "x" if relevant. The Agri-environmental indicators (AEIs).

European Forest Fire Information System (EFFIS)

Input of "x" if relevant. The European Forest Fire Information System (EFFIS).

IUCN - Biodiversity indicators

Input of "x" if relevant. The IUCN Biodiversity indicators.

Mapping and Assessment of Ecosystems and their Services (MAES)

Input of "x" if relevant. This report.

Common Agricultural Policy (CAP)

Input of "x" if relevant. The Common Agricultural Policy (CAP) monitoring and evaluation framework.

OECD

Input of "x" if relevant. OECD datasets.

Trinomics B.V.
Westersingel 34
3014 GS Rotterdam
The Netherlands

T +31 (0) 10 3414 592
www.trinomics.eu

KvK n°: 56028016
VAT n°: NL8519.48.662.B01