

# Protecting pollinators in the EU

## SUMMARY

Europe hosts a rich diversity of wild pollinators, including over 2 000 species of bees, more than 480 species of butterflies, almost 1 000 species of hoverflies and thousands of other insect species. In the European Union (EU), 78 % of native flora and 84 % of crops are either partially or fully dependent on insects for pollination. Significant pollinator loss has been documented over time across the EU. According to the European Red List of Bees, around 9 % of all bee species are threatened in the EU. The EU grassland butterfly indicator has recorded a 39 % decline in grassland butterfly abundance since 1990. Studies in selected European countries have provided further examples of pollinator declines. Such loss entails risks for both societies and ecosystems.

EU legislation relevant to pollinator protection includes the Habitats Directive; the regulatory framework on pesticides; and the common agricultural policy (CAP). The EU rules governing the approval of pesticides require consideration of pesticide effects on honeybees. The European Food Safety Agency (EFSA) is currently reviewing its 2013 guidance on the risk assessment of pesticides on bees, which was never formally adopted due to insufficient support from Member States. One key aspect of the review process is the setting of specific protection goals, defining the maximum acceptable level of harm to bees, on which EU ministers have recently agreed.

Assessments of action at EU level identified gaps in the key EU policies addressing the main threats to wild pollinators. Although progress has been made in the implementation of the EU pollinators initiative (EPI), adopted in 2018 to tackle the decline of wild pollinators, more needs to be done, in particular to address the loss of habitats in farming landscapes and the impacts of pesticides. The EU Biodiversity and the Farm to Fork strategies set out specific targets that can help advance pollinator conservation. Integrating them into the new CAP however remains a major challenge.

Pollinator protection is a key issue for the European Parliament, which made clear that the revision of the EFSA bee guidance document should ensure a level of protection at least equivalent to that laid down in 2013. Parliament also called for an urgent revision of the EU pollinators initiative, a ban on all neonicotinoid-based pesticides and the inclusion of EU-wide binding pesticide reduction targets in the upcoming revision of the directive on the sustainable use of pesticides.



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## Background

Pollination is the transfer of pollen between the male and female parts of flowers to enable plant fertilisation and reproduction. While pollination can also occur via [wind and water](#), most cultivated and wild plants depend, at least to some extent, on animal vectors (pollinators) to transfer pollen. This is the case for nearly 90 % of wild flowering plant species, and over 75 % of the main crops grown for human consumption globally (e.g. fruits, seeds and nuts; [coffee and cocoa](#)).

Most animal pollinators are insects, including bees, hoverflies, butterflies, moths, wasps, beetles and other fly species, although other [pollinator species](#) do exist, for instance birds, bats and other mammals and reptiles. Bees are nevertheless [the most important](#) pollinator group. Almost all bee species are pollinators. While a few are managed (such as the western and the eastern honeybees, some bumblebees, stingless bees and solitary bees), the vast majority of the 20 077 bee species that are known globally are wild (meaning, free living and unmanaged). Despite bees' importance, [a diverse array](#) of pollinator species (with different food preferences, foraging behaviour and activity patterns) is critical to effective, sustainable pollination.

Europe hosts a rich diversity of wild pollinators, including 2 051 species of bees; 482 species of butterflies; almost 1 000 species of hoverflies; and thousands of other insect species. In the EU, 78 % of native flora and 84 % of crops are either [partially or fully](#) dependent on insects for pollination. According to some estimates, up to [€15 billion](#) of the EU's annual agricultural output can be directly attributed to pollinators.

### Beekeeping in the world and the EU

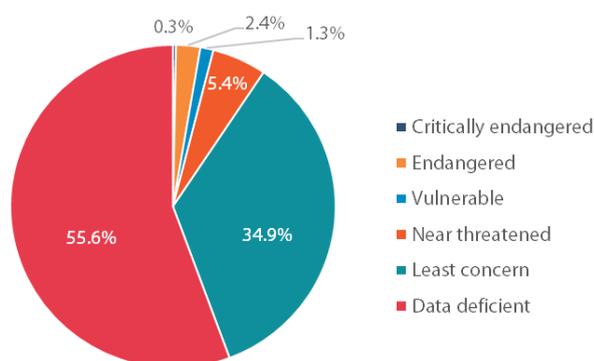
The western honeybee is the most widespread managed pollinator in the world, long domesticated for honey production and/or crop pollination. There are about [81 million hives](#) globally, which produce an estimated 1.6 million tonnes of honey each year.

The EU has 18.9 millions of beehives, and over 615 000 beekeepers ([data](#) from spring 2021). It is the world's second biggest honey producer after China (respectively 12 % and 24 % of global production). It is, however, only 60 % self-sufficient and imports honey to cover domestic consumption, mainly from Ukraine and China.

## Status and trends in pollinators

According to a [2016 assessment report](#) of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), wild pollinators have declined in occurrence and diversity (and abundance for certain species) at local and regional scales in north-west Europe. The [European Red List of Bees](#), reviewing the conservation status of Europe's native species of bees using the [criteria](#) of the International Union for Conservation of Nature (IUCN), found that in the EU, 9.1 % of all bee species are threatened (of which 0.3 % are critically endangered, 2.4 % endangered, and 1.3 % vulnerable). This proportion is however uncertain, as [over half of the bee species](#) were classified as 'data deficient', due to a lack of scientific information to assess status (see Figure 1). The EU grassland butterfly indicator, showing the population trends for 17 butterfly species, has recorded a [39 % decline](#) in grassland butterfly abundance since the start of the

Figure 1– IUCN Red List status of bees in the EU-27



Source: [Nieto A. et al](#), 2014.

observations in 1990, most of which occurred in 1990-1998 and 2002-2012 (see Figure 2). In the long term, grassland butterflies are declining at a current rate of [22 % per decade](#). Experts from the Joint Research Centre note that this indicator – the only one consistently measured at EU level – is also symptomatic for other wild pollinators. According to the [European Red List of Butterflies](#) (2010), 7.1 % of butterflies are threatened with extinction within the EU. A [European Red List of Hoverflies](#) is expected in 2021. Work is starting on a [Red List of moths](#).

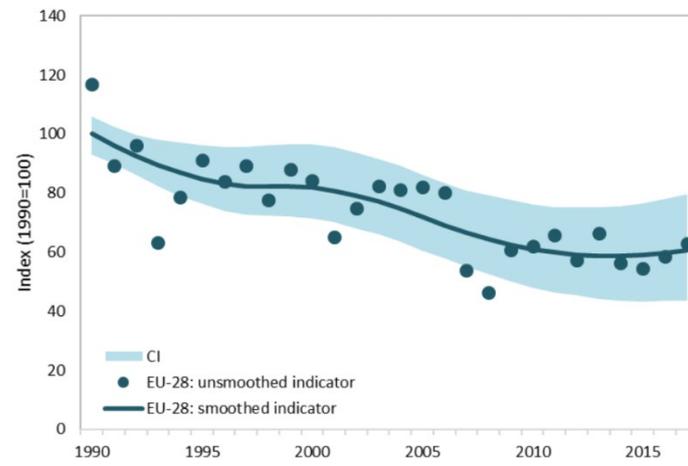
Studies in selected European countries provide [further examples](#) of pollinator decline. For instance, a [2006 study](#) found evidence of declines in local bee diversity in the United Kingdom (UK) and the Netherlands. A [subsequent analysis](#) suggests that these negative trends occurred before 1990, and may have slowed in recent decades. Populations remain however [far below](#) pre-decline levels of the early 20th century. In Sweden, a [long-term comparison](#) of bumblebee abundance on red clover between the 1940s and 2010 found drastic decreases in four species. A similar [study](#) in Denmark showed that 5 of the 12 bumblebee species observed in the 1930s were no longer observed. In the

Netherlands, researchers noted an [84 % decline](#) in butterfly species since the late 19th century. Another [study](#) found that 70 % of western Mediterranean butterfly species declined between 1994 and 2014. In the United Kingdom, the range sizes for [a third](#) of wild bee and hoverfly species shrank between 1980 and 2013. Findings regarding [moth populations](#) are mixed. Several papers reported overall declines in moth abundance or diversity, or both, at national, regional or site scales in various European countries. [Other research](#) suggests that moth biomass may be increasing. As regards other insects, possibly including pollinators, a [2017 analysis](#) found a 76 % fall in the biomass of flying insects across 63 protected areas in Germany between 1989 and 2016. Another German study reported [arthropod declines](#) in grasslands and forests.

Pollinator loss entails risks for both societies and ecosystems. Worldwide, [research shows](#) that changes in pollinator health, diversity and abundance have generally led to locally reduced pollination of pollinator-dependent crops (decreasing the quantity, quality or stability of yield) and contributed to altered wild plant diversity at local and regional scales. As wild plants provide a wide range of resources such as food and shelter for many other species, loss of pollinator species can have [cascading effects](#) within ecosystems and habitats. The loss of flower resources has adverse impacts on pollinators themselves. A [study](#) identified parallel declines in native plants and the bees pollinating them in the United Kingdom and the Netherlands. Similarly, Dutch [researchers](#) found that decline in preferred host plant species was one of two main factors linked with wild bee decline.

Current scientific knowledge [suggests](#) that drivers of pollinator decline are multiple. Key [threats](#) to pollinators include land-use change, intensive agricultural management and pesticide use, environmental pollution (e.g. from heavy metals, nitrogen and light), invasive alien species (IAS), pathogens and climate change. These pressures often occur in combination.

Figure 2 – EU grassland butterfly indicator



The shaded areas represent the 95 % confidence limits surrounding the smoothed trend (confidence interval).

Source: [Joint Research Centre](#), 2021.

## EU action in favour of pollinators

### Policy tools

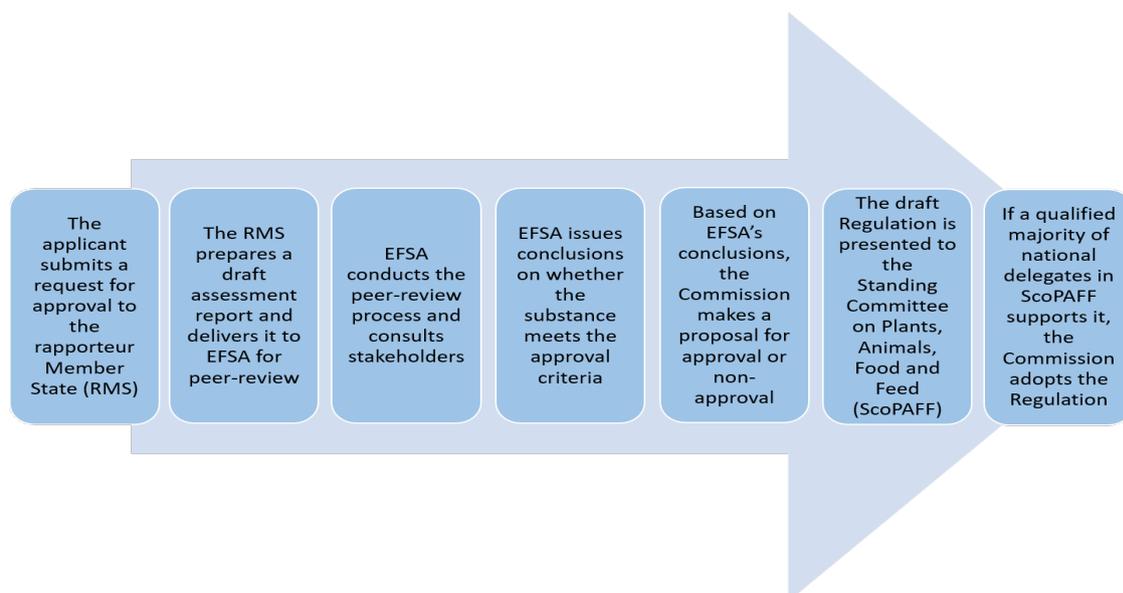
In the EU, a number of legal acts are [relevant](#) to pollinator protection, including the Birds and Habitats Directives; the legislative framework on pesticides ([Directive 2009/128/EC](#), [Regulation \(EC\) No 1107/2009](#)); the common agricultural policy ([CAP](#)); cohesion policy (including its urban dimension); the EU research and innovation funding programme and LIFE.

The [EU Habitats Directive](#), which, together with the Birds Directive, forms the cornerstone of EU nature conservation policy and led to the establishment of the [Natura 2000 network](#) of protected areas, protects some key habitats for pollinating insects, the most important being [grassland, sclerophyllous scrubs and temperate heath](#). The Habitats Directive also directly protects selected pollinator species, including [butterflies](#), moths and beetles.

A dedicated [regulation](#) addresses the threat from invasive alien species. For instance, the yellow-legged (Asian) [hornet](#), a predator of honeybees, wasps and other pollinators such as hoverflies, is listed among [the IAS of Union concern](#), requiring concerted measures (on prevention of introduction, surveillance, early detection, rapid eradication and control) across the EU.

The EU [legislation on plant protection products](#) (PPPs) requires consideration of pesticide effects on honeybees. PPPs are subject to a [dual approval process](#): active substances are approved at EU level (see Figure 3) and commercial products (incorporating one or more active substances) are then authorised at Member State level. Active substances can only be allowed on the market if, following a risk assessment based on EU or internationally agreed test guidelines, it has been established that their use in PPPs under the proposed conditions will result in negligible exposure of honeybees, or 'has no unacceptable acute or chronic effects on colony survival and development, taking into account effects on honey bee larvae and honey bee behaviour'.

Figure 3 – Procedure for the approval of active substances at EU level



Source: EPRS, based on [European Commission](#); [European Court of Auditors](#).

Approval can be renewed for a maximum duration of 15 years upon application by the manufacturer, subject to a similar procedure to that for initial approval. The European Commission may review the approval of a substance at any time.

## Assessing the impact of pesticides on bees – Latest developments

The evaluation of risk is conducted as a single crop/single pesticide assessment, and undertaken by EFSA, the European Commission and Member States, as outlined above. To support the process, EFSA developed a [guidance document](#) on the risk assessment of PPPs on bees in 2013 ('Bee Guidance Document'). Updating the previous [risk assessment methodology](#) – dating back to 2002 – in line with the PPPs regulation requirements, the EFSA guidance considers not only the acute toxicity, but also the chronic toxicity of the active substance and/or PPP to honeybees. It also takes into account toxicity to larvae, and proposes risk assessment schemes for bumblebees and solitary bees.

Due to insufficient support among Member States in [ScoPAFF](#), the 2013 guidance was never implemented in the regulatory approval/renewal process, even if it was used in some cases, such as the above-mentioned review of thiamethoxan, clothianidin and imidacloprid. The basis for conducting the risk assessment for pesticides to bees thus remains the guidance from 2002. In July 2019, Member States supported [a draft Commission regulation](#) amending [Commission Regulation \(EU\) No 546/2011](#) on uniform principles for evaluation and authorisation of PPPs, which covered the sole part of the 2013 guidance document for which there was agreement, i.e. that related to acute toxicity to honeybees. In October 2019, the European Parliament [opposed the adoption](#) of the draft Commission implementing act under the regulatory procedure with scrutiny, asking for a new proposal based on the latest scientific and technical knowledge. The proposed act should include uniform principles not only with regard to acute toxicity for honeybees, as in the rejected draft, but at least also with regard to chronic toxicity and larval toxicity for honeybees and acute toxicity for bumblebees, in particular given that Organisation for Economic Co-operation and Development [test guidelines](#) are available for all of those parameters.

At the Commission's request, EFSA is [currently reviewing](#) its bee guidance document to take new scientific knowledge that has emerged since 2013 into account. One key aspect of the process is the setting of specific protection goals, defining the maximum acceptable level of harm to bees. In its 2013 guidance, EFSA recommended a threshold corresponding to a colony size reduction of less than 7 %, considered to have a [negligible effect](#) for colony strength. In the context of the review, EFSA proposed [four potential approaches](#) for setting the protection goal. A majority of Member States expressed a preference for 'approach 2 for honeybees, deriving threshold of acceptable effect on colony size based on their natural variability' (i.e. the fact that colony size varies throughout the year due to a number of factors other than pesticide exposure, e.g. weather conditions and food availability). To investigate such variability, EFSA uses the [BEEHAVE model](#) for simulating colony dynamics. Member States agreed that setting a threshold for a maximum permitted reduction in honeybee colony size due to pesticides within the simulated variability would offer sufficient protection, but expressed diverging views as regards the acceptable level of colony size reduction. Some would favour the 7 % limit recommended by EFSA in 2013, others would accept a colony size reduction of up to 23 %. Eleven Member States suggested a protection goal within a range of 10 % to 12.8 % of colony size reduction. In its recent [resolution](#) on the EU Biodiversity Strategy for 2030, Parliament made clear that the revision of the EFSA bee guidance document and the future implementing acts should ensure 'as a minimum an equal level of protection as that laid down in 2013'. It noted that the ApisRAM modelling system currently [being developed by EFSA](#) would be more in line with the biology of honeybees than BEEHAVE and less open to [conflicts of interest](#).

To break the stalemate, the Commission [proposed](#) to bring the issue to the political level, and to hold a debate at the June Council for Agriculture and Fisheries, suggesting as a starting point for the discussion a 10 % colony size reduction as the specific protection goal. On [28 June 2021](#), [a majority](#) of Member States supported the proposed protection goal of 10 %. Parliament's Committee on the Environment, Public Health and Food Safety (ENVI) requested that EFSA provide [a scientific opinion](#) on developing a holistic risk assessment of multiple stressors in honeybees, which was published on [20 May 2021](#). The Committee held an [exchange of views](#) on the protection of pollinators, bee health and the bee guidance document with EFSA and the Commission on 21 June 2021.

Because of identified risks to bees, all outdoor uses of three [neonicotinoid insecticides](#) ([imidacloprid](#), [clothianidin](#) and [thiamethoxam](#)) were banned in May 2018. The approval of a further neonicotinoid, [thiacloprid](#), was withdrawn on 3 February 2020. Derogations are however possible in specific cases. Under the PPPs regulation, Member States may grant [emergency authorisations](#) for 'limited and controlled use' of PPPs not authorised on their territory, to contend with a 'danger which cannot be contained by any other reasonable means'. Mandated by the Commission, the European Food Safety Agency (EFSA) [is currently looking](#) into repeated granting of such authorisations for using the four neonicotinoids in sugar beet protection.

The other building block of the EU pesticide legislative framework is [Directive 2009/128/EC](#), often referred to as the Sustainable Pesticide Use Directive or SUD. The SUD aims to achieve sustainable use of PPPs by reducing the risks and impacts of PPP use on human health and the environment and promoting [integrated pest management](#) (IPM), as well as alternative approaches or techniques, such as non-chemical alternatives to pesticides. The directive notably restricts the use of pesticides in specific areas, including public spaces, Natura 2000 sites and other nature conservation areas. To implement the directive, Member States are required to draw up [national action plans](#) (NAPs), setting out their quantitative objectives, targets, measurements and timetables for reducing the risks and impacts of PPP use. While there are [no legal requirements](#) in the SUD to include in the NAPs objectives, targets and actions for reducing impacts and risks on pollinators specifically, Member States may do so. The plans need to be reviewed at least every five years. The SUD is [scheduled for revision](#) in the first quarter of 2022, to bring it in line with the objectives of reducing the use and risk of pesticides by 50 %, and the use of more hazardous pesticides by 50 % by 2030, set out in the EU [Farm to Fork](#) and [Biodiversity](#) strategies.

Under the current CAP, the [cross-compliance](#) mechanism links the granting of CAP support to the application of basic environmental requirements, such as the nature directives for biodiversity, and good agricultural and environmental conditions of land ([GAEC](#)). GAEC 7 on retention of landscape features is of particular relevance to pollinators. Under the first pillar of the CAP, the [green direct payment](#) scheme rewards farmers for complying with three mandatory practices. Those most relevant for pollinators are the maintenance of permanent grasslands; and the ecological focus areas (EFAs), providing buffer strips for pollinators and [land lying fallow for melliferous plants](#). [Measures](#) under rural development programmes (CAP second pillar) that may support pollinator conservation include [agri-environment-climate payments](#), Natura 2000 payments and support to organic farming. Under the [green architecture](#) for the future CAP (that should be in force as from January 2023), EFAs should be replaced by 'a minimum share of agricultural area devoted to non-productive features or areas' ([GAEC 9](#)). Eco-schemes should support and incentivise farmers to undertake agricultural practices beneficial for biodiversity. In June 2021, Parliament and Council negotiators reached a [provisional agreement](#) on the three regulations making up the CAP reform package.

Other EU instruments include the [LIFE programme](#), which has co-financed over 1 750 projects on nature and biodiversity since its launch in 1992, including some [directly or indirectly](#) supporting pollinators. Pollinator-relevant projects may also be funded under the [EU framework programme for research and innovation](#). [EU cohesion policy funds](#) can support investments in protecting and restoring nature and biodiversity; climate change mitigation and adaptation; and sustainable urban development, for instance the deployment of nature-based, [green infrastructure](#).

## EU pollinators initiative

In 2018, the Commission adopted the [EU pollinators initiative](#) (EPI), proposing an integrated approach for addressing the decline of wild pollinators and for using existing tools and policies more effectively. The initiative set long-term objectives (towards 2030) and short-term actions under three priorities: improving knowledge of pollinator decline, its causes and consequences; tackling the causes of pollinator decline; and raising awareness, engaging society-at-large and promoting collaboration. The EPI provides for some 30 actions, including, for instance, designing an EU-wide pollinator monitoring scheme to have good quality data for assessing the status and trends of pollinator species in the EU and developing a pollinator indicator. The European Commission [would include](#) a pollinator indicator in the CAP performance and monitoring framework, once finalised and operational. The Commission also envisaged issuing guidance on pollinator conservation for farmers, local authorities, businesses and citizens. Action envisaged at [international level](#) includes integrating pollinator conservation considerations and measures into EU supported policies, plans and programmes in third countries, in line with the objectives of the [International Pollinators Initiative](#). The EU joined the [Coalition of the Willing on Pollinators](#) in November 2018.

## Assessing action taken and next steps

The European Court of Auditors, in a [special report](#) from July 2020, concluded that EU initiatives taken so far to protect wild pollinators have been too weak to bear fruit. It identified gaps in the key EU policies addressing the main threats to wild pollinators (biodiversity and agriculture policies, pesticides legislation) and found that the EPI lacks governance and control mechanisms to address such threats. It recommended assessing the need for additional measures for wild pollinators; better integrating actions to protect them in EU policy instruments addressing biodiversity conservation and agriculture; and improving their protection in the pesticides risk assessment process. The Council adopted [conclusions](#) on the report end 2020.

In its October 2020 assessment on the [state of nature](#), based on Member States' reporting under the Birds and Habitats Directives, the European Environment Agency found that pollinators' habitats, including grasslands and sclerophyllous scrub, have worse [conservation status](#) and [trends](#) than other habitats. The main reasons identified for the poor status of grasslands include abandonment, natural succession, intensive grazing and the application of fertilisers.

In an [analysis](#) of the potential for CAP measures to support wild pollinators on farmland, experts found that ecological focus areas (EFAs) largely fail to deliver all necessary pollinator resources at sufficient quantities in European agricultural landscapes. They saw a need to create a variety of interconnected, well-managed habitats complementing each other in the resources they offer. To this end, the future CAP should take a holistic view to implementation that integrates the different delivery vehicles aimed at protecting biodiversity (e.g. [enhanced conditionality](#), eco-schemes and agri-environment-climate measures). Collaboration between farmers and other stakeholders should be incentivised to target measures spatially. Experts also called for an effective monitoring framework with target-oriented indicators to improve habitat quality.

A [report](#) by the Institute for European Environmental Policy (IEEP) for the Commission, looking into the implementation of CAP measures for pollinators in six countries, found that despite the range of measures available, pollinator needs were rarely explicitly considered when strategic decisions were taken about how to implement CAP pillar 1, or how to programme rural development funding. It therefore recommended identifying and prioritising such needs at the regional level within Member States, building on existing policy frameworks such as the [Natura 2000 Prioritised Action Frameworks](#) (PAFs), and action plans for biodiversity, EU habitats and sustainable use of pesticides. It also suggested establishing the baseline status of wild pollinators to inform target setting and selecting relevant indicators for monitoring progress under the future national [CAP strategic plans](#) (CSPs) monitoring; and defining how CSPs will protect pollinators through conditionality measures and a coherent package of intervention measures in both pillars.

Another IEEP [report](#), assessing the integration of pollinator conservation into existing NAPs for sustainable use of pesticides, found that while many mention bees or pollinators in their targets or objectives, most of them lack detail and do not clearly distinguish wild pollinators from honeybees. There was little evidence of monitoring of impacts to improve knowledge and target measures. In a [special report](#) from early 2020, the European Court of Auditors identified weaknesses in the current EU framework on pesticide use, recommending proper enforcement of integrated pest management (through incorporation of IPM criteria into the future CAP conditionality), and improvements in the [harmonised risk indicators](#).

A May 2021 Commission [report](#) notes that progress has been made in the implementation of the EPI, notably on key policy enablers, with the development of a field-based [EU pollinator-monitoring scheme](#). For the Commission, the EPI remains a valid policy tool, but significant challenges remain in tackling the drivers of pollinator decline. More needs to be done, in particular to address the loss of habitats in farming landscapes and the impacts of pesticides.

The EU biodiversity strategy for 2030 sets new targets for nature conservation and restoration, including expanding the current network of legally protected areas to cover at least 30 % of the EU's

land area; and setting [legally binding EU nature restoration targets](#) to restore degraded ecosystems. Other quantified targets for 2030 include reducing the use and risk of pesticides by 50 % and the use of more hazardous pesticides by 50 %; reducing losses of nutrients from fertilisers by 50 %, thereby decreasing fertiliser use; bringing at least 10 % of agricultural area under high-diversity landscape features (such as buffer strips, fallow land or hedges) and 25 % of agricultural land under organic farming management. Integrating the targets from the Farm to Fork and biodiversity strategies into the new CAP was among the [sensitive issues](#) in interinstitutional negotiations on [the reformed CAP](#), which concluded with a provisional agreement in June 2021.

The Commission committed to revise the EPI, based on the feedback received from other institutions; and on consultations it will launch in the second half of 2021.

## European Parliament demands

In its December 2019 [resolution](#) on the EPI, Parliament asked to turn the initiative into a full-scale action programme for pollinators, earmarking sufficient resources to this end. It advocated the inclusion of EU-wide binding pesticide reduction targets in the upcoming revision of the SUD Directive, following an appropriate impact assessment; and called on the Commission to extend the ban imposed on imidacloprid, clothianidin and thiamethoxam to all neonicotinoid-based pesticides. Parliament called for a pollinator indicator in the CAP. The EP urged for full adoption of the 2013 EFSA bee guidance document, including the requirements relating to chronic and larvae toxicity as well as species other than honeybees.

In its [resolution](#) on the EU biodiversity strategy for 2030, Parliament called for an urgent revision of the EPI, underlining that it should include a new EU-wide pollinator monitoring framework with robust measures, clear time-bound objectives and indicators, including impact indicators, and necessary capacity-building. It stressed the importance of high-diversity landscape features in agricultural areas in contributing to biodiversity and pollinator protection and restoration, as well as the role of beekeepers; noted that increasing green spaces in urban areas can also contribute to these goals; and called on the Member States to include measures targeting various groups of pollinators in their draft strategic plans.

## MAIN REFERENCES

IPBES, [The assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services on pollinators, pollination and food production](#), 2016.

Potts, S. et al, [Proposal for an EU Pollinator Monitoring Scheme](#), Joint Research Centre, 2021.

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