

ANNEX to the Commission Decision C(2018)1514 of 16.3.2018

The annual work programme for the implementation of the pilot projects "EU butterfly monitoring and indicators", "Using satellite images to improve the implementation of the Natura 2000 network" and "Integrating smart sensors and modelling for air quality monitoring in cities" for 2018

1. Pilot project - EU butterfly monitoring and indicators.

1.1. Introduction

On the basis of the objectives given in the budget remarks this work programme contains the actions to be financed and the budget breakdown for year 2018 for procurement (implemented under direct management) (1.2)

1.2 Procurement

The overall budgetary allocation reserved for procurement contracts in 2018 amounts to EUR 800 000.

Legal basis: Pilot project within the meaning of Article 54(2)(a) of Regulation (EU, Euratom) No 966/2012.

Budget line: 07 02 77 42

Subject matter of the contracts envisaged

The project will create a representative butterfly (Lepidoptera) monitoring network across the Union for developing a suite of Lepidoptera indicators to potentially contribute to the improvement of the targeting and efficiency of conservation measures under the Council Directive 92/43/EEC¹ and also for informing the biodiversity impact of European sectoral and land use policies.

The objectives are:

1. to construct a unified, high-quality database and automated data entry system,
2. to support and develop a unified, sustainable and cost-effective European monitoring network based on trained volunteer recorders, supported by new coordinators, together with local access to the on-line data recording system
3. to produce policy-relevant Lepidoptera indicators for a range of habitats, analyse results and disseminate findings to policy makers and the public
4. Project management and administration

Expected results will include:

- a unified database of validated and standardised Lepidoptera counts from across searchable European monitoring schemes

¹ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora OJ L 206, 22.7.1992, p. 7–50

- Volunteer-based and expert-validated Lepidoptera monitoring schemes in most European countries, and increased opportunities for young people to become involved in a European-level project of practical value and policy importance
- A suite of policy-relevant Lepidoptera indicators for different habitats within the EU and Europe as a whole. A series of reports which interpret the significance of Lepidoptera indicators and trends
- The development of Lepidoptera as potential policy-relevant indicators at EU level; sharing of best practice; and improved awareness amongst the public.

Activities will include:

- Producing a unified, high-quality database and automated data entry system for Lepidoptera monitoring records;
- Produce policy-relevant Lepidoptera indicators for a range of habitats and improve the geographical scope of the European grassland butterfly indicator;
- Produce a unified, sustainable and effective European monitoring network;
- Supporting further development and improving the quality and sustainability of a number of existing and fledgling schemes;
- Providing training and essential translations of key documents and facilitating learning among volunteers supported by new coordinators;
- Analysing and disseminating results to different (international) institutions, policy makers, researchers and the public.

Type of contract: service contract

Indicative number and amount of contracts envisaged: One service contract of an estimated value of 800 000 EUR is envisaged.

Indicative timeframe for launching the procurement procedure

The procurement procedure is expected to be launched in the first quarter of 2018.

Implementation

This action will be implemented under direct management by the Directorate General for Environment

2. Pilot project - Using satellite images to improve the implementation of the Natura 2000 network.

2.1. Introduction

On the basis of the objectives given in the budget remarks this work programme contains the actions to be financed and the budget breakdown for year 2018 for procurement (implemented under direct management) (2.2)

2.2 Procurement

The overall budgetary allocation reserved for procurement contracts in 2018 amounts to EUR 1 000 000.

Legal basis: Pilot project within the meaning of Article 54(2)(a) of Regulation (EU, Euratom) No 966/2012.

Budget line: 07 02 77 43

Subject matter of the contracts envisaged

This pilot project aims at using available satellites images to better understand and tackle the threats to Natura 2000 areas stemming from habitat loss.

Under the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora² and under the Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds³, Member States are obliged to protect Natura 2000 sites. However, in practice thousands of hectares of natural habitats are lost due to factors such as conversion of natural grasslands into cropland, intensification or abandonment of grassland use, urbanisation, water abstraction and drainage, etc.

Freely available satellite imagery from the European Union's Copernicus programme and LANDSAT (Land Remote-Sensing Satellite System) are able to provide high-resolution images for whole Europe, with image archives now spanning several decades. In order to understand how much habitat has been lost in Natura 2000 sites per ecosystem type and over time, multiple satellite images collected from the same area will need to be aligned, analysed and processed. These images will then be converted into habitat maps and verified using existing maps and other data.

The maps will then be presented on an online platform, identifying hotspots of habitat loss in the Natura 2000 network of sites. The platform will have to be user friendly, with downloadable data, as this will enable citizens, civil society organisations and scientists to use the project results to the fullest.

Ultimately, the project will contribute to maintaining land use in Natura 2000 areas that is compatible with conserving biodiversity, and contribute to resolving conflicts over land use. As such, the project will also contribute to achieving the Sustainable Development Goals (SGD), such as SDG 15 on sustainable forest management, halting and reversing land degradation and halting biodiversity loss. The project is also fully in line with Action 3 of the Nature Action Plan aiming at improving knowledge, including through enhanced and more efficient monitoring, and ensuring public online access to data necessary for implementing the above-mentioned Directives (e.g. through satellite imagery from the Copernicus programme).

² OJ L 206, 22.7.1992, p. 7–50

³ OJ L 20, 26.1.2010, p. 7–25

In line with the budgetary remarks for this pilot project, the contract is expected to focus on the following actions and expected results:

- develop methodologies to identify, on the basis of satellite imagery, the above-mentioned Directives-relevant land use changes that occurred over the last 20 years in Natura 2000 sites throughout the Union; for land use changes that occurred more recently, these methods should also fully take account of the recent improvements in terms of quality (resolution and types of sensors) and frequency of available imagery; the primary focus should be on identifying losses of semi-natural grasslands and the drivers of these losses, but other land use changes (e.g. loss of forests habitats that are important for biodiversity, etc.) should also be considered for the development of such methodologies
- test these methodologies in a number of pilot projects that will need to involve a comprehensive uncertainty analysis, including groundtruthing, in view of further finetuning these methodologies
- develop solutions for dealing with large data volumes in an effective and cost-efficient way; and identify the required download and storage capacities
- developing a public-access pilot online tool that will display qualitative, quantitative and temporal information on land use and land use changes in Natura 2000 sites, and inform users about these changes in the most policy relevant way (for example, in the form of heatmaps identifying hotspot of grassland losses).

Type of contract: service contract

Indicative number and amount of contracts envisaged: One service contract of an estimated value of 1 000 000 EUR is envisaged.

Indicative timeframe for launching the procurement procedure

The procurement procedure is expected to be launched in the second quarter of 2018.

Implementation

This action will be implemented under direct management by the Directorate-General for Environment.

3. Pilot project — Integrating smart sensors and modelling for air quality monitoring in cities.

3.1. Introduction

On the basis of the objectives given in the budget remarks this work programme contains the actions to be financed and the budget breakdown for year 2018 for other activities (administrative agreement implemented under direct management) (3.2)

3.2 Other Action

The overall budgetary allocation reserved for other action in 2018 amounts to EUR 1 000 000.

Legal basis: Pilot project within the meaning of Article 54(2)(a) of Regulation (EU, Euratom) No 966/2012.

Budget line: 07 02 77 47

Subject matter of the contracts envisaged

The project, to be implemented with the support of the Joint Research Centre (JRC), aims at the development and on-line implementation of deployment and calibration procedures for air quality sensors, including researching potential, ways of integrating lower-cost sensors with conventional air quality monitoring systems. Additionally, the research encompasses quality assessment and control as well as the optimal set-up of sensor networks. As part of this, the performance of lower-cost sensors as compared to conventional air quality monitoring and air quality modelling throughout the sensors' life cycles will also be documented. Furthermore, general guidance on the use of lower-cost air quality sensors, including power supply and network connectivity will be developed.

The JRC will set up an urban air quality sensor network in one or more test cities consisting of a limited selection of lower-cost sensors. These pilot monitoring network(s) will be a platform for the development and on-line implementation of calibration procedures for air quality sensors, and they will be a practical demonstration of the unique hybrid approach of combining high-resolution modelling with high-resolution monitoring.

In the process of setting up the sensor network, research will be carried out to determine spatial deployment strategies for sensors (macro- and micro-scale siting criteria). To support the assessment of the performance of lower-cost sensors, the project will simultaneously gather air quality data from other sources (conventional air quality monitoring, air quality modelling, satellites, etc.). The performance of lower-cost sensors is going to be compared to these other sources of air quality information based on technical criteria such as uncertainty, bias, hysteresis, response time, effects of temperature and humidity on measurements, selectivity, sensitivity etc. This will feed into further research on ways to calibrate lower-cost sensors, covering aspects such as mode of calibration, location, time and frequency of calibration.

The project will also help the development of guidance on whether and how to use lower-cost sensors to improve air quality modelling and conventional/official monitoring networks, as well as improved guidance on how to use lower-cost sensors to measure air quality based on the project's various findings.

The JRC works in a number of ways on improving monitoring, modelling and assessing air quality, through its own reference laboratory, networks with other scientific organisations and with international standardisation and meteorology bodies. It actively participates in two relevant scientific networks: the Air Quality Reference Laboratories network for issues related to monitoring and the Forum for Air Quality Modelling in Europe for issues related to modelling.

It is therefore important to ensure continuation and further development of this work with a view to maximising synergies across sensor work streams at Union level and securing continued JRC scientific leadership on these matters.

Indicative timeframe for launching the procedure

The administrative agreement is expected to be signed in the first quarter of 2018.

Implementation

This action will be implemented under direct management by the Directorate-General for Environment.