Project Application Form under the Recovery and Resilience Facility

1. Project Name

PROCESS DIGITALISATION UNDER THE FARM TO FORK STRATEGY

2. Description of the project (objectives, main activities).

The implementation of the project aims at mitigating the social and economic impact of the COVID-19 pandemic and support for the green and digital transitions, by contributing to restoration of the potential for sustainable growth of the economy, attracting private investments and job creation.

Investment in digitalisation in agriculture will have a lasting positive impact on the development of the production capacity and keeping jobs in the sector as a basis for its economic and social resilience. Accelerated modernisation and digital transformation of the agricultural sector will allow the production of sustainable products with a high added value ensuring stable and fair income.

Introduction of digital technologies and building of new business models in agriculture will foster the attracting new generations while slowing down negative processes such as deteriorating demographic structures among those engaged in agricultural activities and depopulation of rural areas tendencies.

Further building of broadband infrastructure in the country provided in the Recovery and Resilience Plan is a precondition for a wide entering and use of digital technologies in agriculture and rural areas. This, on the other hand, will contribute to the implementation of the digital transformation at national level as a horizontal priority of the Plan.

The expectations towards the agricultural sector to contribute to the enhanced environmental and sustainable standards are particularly high. In addition to ensuring food security, the European, respectively, the Bulgarian agriculture is a focus of significant ambitions concerning the green transition implementation. They form the basis of the Farm to Fork strategy and the Biodiversity strategy proposed by the European Commission outlining a vision for the development of flexible and sustainable food system in the EU and setting goals for common reduction of its footprint on the environment and climate.

The implementation of the proposed investment is not expected to inflict harm on any of the environmental goals set out in art. 9 of Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 (The Taxonomy Regulation).

The project integrates adequately the challenges faced by agriculture concerning the implementation of the green and digital transitions. It envisages the creation of modules whose use will help achieving the national goals stemming from the Green Deal and the Farm to Fork Strategy – reducing the excessive use of pesticides, fertilisers and veterinary medicinal products, sustainable management of resources, improving welfare, restoring biodiversity, ensuring food safety throughout the entire supply chain:

Creating a single Electronic Information System for data exchange between public bodies and the economic operators in the sector leads to creation of conditions for lasting improvement of the efficiency of the applied agricultural policy and the provided public services, reducing the administrative burden and optimizing the business environment.

The project provides for the creation of a comprehensive Electronic Information System in Agriculture (EISA) with separate modules to achieve:

- Electronisation of the information flows from and for carrying out of administrative activities;
- Electronisation of services provided to the farmers, their centralisation and use by the businesses in the course of performance of obligations and requirements depending on the type of agricultural

activity;

- Integration of administration's information systems and softwares for management of agricultural holdings in a Single platform for automated data exchange between the administration and the farmers. The platform will ensure a single data flow from and to the administration and the farmers and will avoid manual information transfers and maintenance of obsolete document formats.

The farmers will be a key participant in the Single Information System by submitting online data on the plant protection products used in the farm, fertilisers and veterinary medicine products. This will enable the implementation of a continuing official control in the use of these products and timely drawing up of prescriptions by the public bodies restricting their excessive use if such is established. The information flow to enter the Single system on the part of the agricultural holdings will allow for a continuing monitoring of the progress in the implementation of the national committments in agriculture related to the Green Deal.

At the same time and based on the information on a farm's activity the farmers may receive advice, adequate information and consultation to improve the agricltural practices applied by them.

Taking into account the guidelines by the European Commission on the relevance of the projects under the Recovery and Resilience Plan with the state aid rules, it can be suggested that the investments provided under the project do not fall within their scope. The creation of a Single Information System involves the exercise of public powers on the part of the Ministry of Agriculture, Food and Forestry in implementing the state policy in the agricultural sector. The activities carried out by the Ministry are not economic activities, thus their funding and digitalisation by public means does not constitute state aid.

The main acitivity under the project is the creation of a **Single Information System in Agriculture (SISA)**. Its creation involves the following:

1. **Development of a common platform for unification of all modules and integration of existing information systems through interfaces for:**

- Access to geographical data – borders and numbers of cadastral properties, protected territories, territories with constraints, areas eligible for support under direct payments, permanent grasslands, use agreements under art. 36 of the Ownership and Use of Agricultural Land Act.
- Receipt of information from farmers - declarations and applications under the Ownership and Use of Agricultural Land Act, survey cards, etc.
- Receipt of information on borders of arable areas, crops grown, enabling the automated filling of required data in the Electronic Services System (ESS) of State Fund Agriculture (submission of aid applications)
- Receipt of information on planned or performed activities related to the use of PPP and soil nutrition, recommendations and performance of activities.
- Access to data in the Communication Network
- Access to data in an Animal Register – identificator and type of animal, animal holdings, passport data
- Data update, monitoring of animals by using smart animal tracing systems and herd management, including entering of information on planned transportation of animals
- Entering of data on planned activities involving PPP and fertilisers, respectively notification through the existing systems.

The goal is to create unified communication interfaces providing standartised data. Depending on the required content and the maintained communication, the platform will unite information from various sources accessible through REGIX or through applicable programme interface. For instance, for providing data on registered legal grounds data integration is necessary for both data from the Geodesy, Cartography and Cadaster Agency – number and borders of property, and data from "Use" Register of the Ministry of Agriculture, Food and Forestry. In this case, both the REGIX adapter of the Agency and the intersystemic connection will be used (for instance, in terms of the Electronic Services System of State Fund Agriculture – given the large volume of data to be transferred in connection to submission and procession of aid applications (information on borders of arable

areas, crops grown, number and type of animals, etc.) the use of REGIX is not appropriate and integration of the type system-system will be applied) and as a result aggregate information will be generated – property and user. Respectively, the content of the data provided will be a totality of the input data. In practice, the platform serves as a hub between various sources and data formats, which can be united, formated and provided to the users. In the same vein, the receipt of data from users will be translated and formated in the respective applicable programme interface for external systems or as a REGIX application. In this regard, existing systems' functions are not doubled. The creation of the system is related not only with the programme development, but in its greater part it covers analysis of the existing systems, development of standardised formats, their documentation and implementation. From an architectural standpont, the project envisages the development of Enterprise Service Bus internal for the systems and sub-systems of the Ministry of Agriculture and its structures, which will allow the correct defining and sharing of information and which will allow the subsequent integration with the adapter/s of REGIX.

To ensure compatibility of data from both the various project modules and with existing systems, a common platform for programming interfaces will be developed.

Presently, there are no settled single standards for information exchange between the farmers and the administrative bodies. The envisaged activity will define the interfaces for communication and data exchange. In this regard, the platform is building up towards the open data portal to the extent that part of the data are designated for concrete user, and are not generally accessible and at the same time the users may update the information in the platform on the basis of the precise agriculture systems.

2. **Module concerning the use of plant protection products (PPP) and fertilisers through digitalisation of the books on their use**

This in effect will enable the controlling bodies to have a real time information on the quantity of the used PPP and fertilisers per farmer, per crop, per type of PPP and fertilisers (per functionality and quantity) and the PPP bought and used. The creation of the module will aid the implementation of the Green Deal targets (the Biodiversity strategy and the Farm to fork strategy) concering the significant decrease in the use of mineral fertilisers and chemical pesticides. The use of plant protection products in agriculture and the excess in nutrients (especially nitrogen and phosphorus) which is a result of excessive use of fertilisers, and the impossibility for the plants to absorb efficiently all nutrients, is the main source of pollution for the air, soils and water.

Digitalisation of the system to maintain the books on plant protection and fertilisers will lead to introduction of control indicators concerning the use of PPP and fertilisers. They will help reporting the national contribution for achieving the set European targets. The presence of indicators and updated information on the use of PPP and fertilisers at a farm level will enable the application of adequate measures for stimulating the farmers to meet their environmental committments.

The envisaged activity is in compliance with and contributes to the European Commission initiative to build a EU Soil Observatory (EUSO), which aims at improving their management and terminating the degradation processes. The data from the module, summarised by compiling information from the farmers' electronic books, will have a direct contribution to the achievement of the set goals at European level concerning resources monitoring.

3. **Informational-analytical module to control the use of antimicrobial veterinary and medicinal products by determining specific referential threshold use for antimicrobials (including for antimicrobial classes critically important for treatment of diseases in humans – polymyxins, cephalosporins and fluoroquinolones) in different categories and types of food-producing animals**

The module, by the set specific referential thresholds, will allow for automated estimation and categorisation of a specific animal holding based on the volume of the used antimicrobials in the following zones: target zone (use lower than the referential threshold); attention zone (use equal to the referential threshold) and action zone (use higher than the referential threshold). Such system functions in Germany (*National database "Hi-Tier"* –

the use of antibiotics in animals for fattening is reported to the database. High quantities of antibiotics are an indicator for a problem in the holding (risk group). A plan for reducing the use of antibiotics drafted by the servicing veterinary practitioner is applied, where the plan prescribes activities specific to the concrete farm aiming at improving animal health and reducing the use of antibiotics. if a holding falls within a risk group then there is an audit performed by the controlling bodies. Falling within the risk goup, subject to controls, takes place also when the reported quantities of the used antibiotics are too low or not reported at all.)

Creation of the module involves the development of a web-based platform enabling electronic issuance of prescription and receipt of information on the quantities of used antimicrobials divided into types of animals, active substance, Veterinary Medicinal Anatomic-Terapeutic Code, etc., enabling the Bulgarian Food Safety Agency (BFSA) to analyse and control the level of plan imeplementation for action against antimicrobial resistence (AMR). The data on prescribed (used) quantities of veterinary medicinal products and medicated feedingstuffs (electronic prescriptions) will be entered by the registered veterinary practitioners thus enabling the sale of these products by wholesale or retail operators to the animal owners. Entering of results of the antibioticograms made will contribute to the use of appropriate antimicrobials and improving the health status of the animals. The system will allow for the functioning of the pharma monitoring system – the registered veterinary practitioners will be able to enter information electronically on adverse reactions and other deviations in the use of veterinary medicinal products while the information will be automatically accessible to the producers and traders of such products and the competent bodies alike, including in other Member States.

Apart from the use of antimicrobial veterinary medicinal products the module will allow for entering and monitoring of the imports, production, trade and storage fo a wider range of veterinary medicinal products (VMP) and medicated foodstuffs and their application on the animals. The module will enable to monitor the realisation of VMP thus minimizing the unregulated trade with VMP and medicated foodstuffs.

The application of the system will lead to a more efficient control on the use of the VMP. It envisages the compilation and processing of data on the used quantities per farm/herds/groups of animals and per animal depending on the type and production category, by monitoring and control of the withdrawal periods (the interval of time needed to clean the animal's body of the VMP to certain maximum residue limits. Thus the production of safe animal production and protection of public health will be ensures.

In the long-term, the system aims at preventing the excessive use of VMP on the animals leading to antimicrobial resistence, improving the health status of the animals, reducing the environmental pollution with VMP residue, as a result of animal treatment.

The need to create the system is also related to Bulgaria's committments as a EU Member State stemming from the new EU legal framework in the fields of veterinary medicinal products and medicated foodstuffs to be applied as of the beginning of 2022. It provides for a wide range of measures to promote the reasonable use of antimicrobials and reduction of their use in general, by introducing an obligation for the Member State to collect data on the use of antimicrobials.

The module will be created in a way so as to ensure a relationship and data exchange with the Single Register of Veterinary Medicinal Products, as well as with other systems, such as the Integrated Information System (VetIS) of the Bulgarian Food Safety Agency, with the information systems and databases of the Europeam Medicines Agency – EMA (with the Information system for management of the licenses medicines for use in animals and humans (ESVAC) register of the products licensed for use under a centralised procedure and the databases in connection to the application of Regulation (EU) 2019/6 on veterinary medicinal products (will be in effect after 28 January 2022) – database on the registered veterinary medicinal products and the associated database on pharma monitoring and database on production, import and wholseale;), etc.

4. **Monitoring module From Farm to Fork – from primary production to end consumption based on the principle of a unique identification code (QR code, barcode, etc.) in view of informing consumers and promoting the production of quality and affordable food.**

The module will collect and store in a centralised manner the data from producers, importers distributors, wholesale and retail operators, will monitor the movement throughout the logistic chain and will provide correct and verified information to all participants in the process, as well as to the controlling bodies in connection to the production, transport, security monitoring of supplies and conditions for storage of food products. This will allow for the identification of a specific batch of products and raw materials used for their productions and to monitor this batch and any of its constituent parts during production and/or distribution to the end consumer.

To enable the functioning of the type "Check and monitor" it will be necessary to integrate a matrix of data with coding of key elements according to the type of production and the stage in the value chain (product code, batch number, expiry date, unique identification number, etc.) in applying the good practices of GS1 standard or equivalent. The functioning of the module will be tied to the module for use of plan protection products and fertilisers in relation to the products of plant origin and the control module for the use of VMP, thus monitoring whether the respective product is produced with a reasonable use of pesticides, fertilisers and VMP. Thus, a market advantage will be created for these food producers which apply these principles.

5. **Module for online training, including content of the training modules and consultations for farmers, while at the same time maintaining information concerning contemporary technological and environmental solutions for growing main groups of agricultural crops and farm animals in a conventional and biological manner in compliance with the requirements for sustainable use of natural resources and climate change adaptation.**

The module for online trainings and consultations will be developed as a platform containing basic information based on the latest scientific breakthroughs in the field of plant and livestock production. The platform will also ensure functionality for a quick link between scientits from various fields and the farmers in view of solving current issues.

The platform will provide the following functionalities:

- Knowledge base – contains up-to-date informaiton on crops, plant sorts and animal breeds, good agricultural practices and technical solutions for precise agriculture. The information is grouped around topics in sections "Animals", "Plants", "Environment", "Agricultural economy". In this part of the platform a team of authors under the management of moderators of separate sections will publish regularly up-to-date information in the form of articles, documents, video materials and news. This information will be public and accessible for all platform users. The system will provide the users with functionality for content search from the knowledge base using key words or topics.

- Digital skills base – contains a package of basic knowledge for using electronic systems related to implementation of agricultural activities in the holdings. Better awareness and acquired basic digital skills will help the farmers in finding the most suitable digital solutions for their holding.

- Consultations – this part of the platform provides functionality for applying for and receiving consultations for specific issues by a single farmer or group of farmers with similar interests. The interested persons can pose their question in the system and to choose the manner in which to receive the answer, asynchronously – by a message in the platform itself or email, or synchronously – by phone or video conference. The platform will enable the scheduling of appropriate date to receive consultation by taking into account the urgency of the issue and the work schedule of consulted and consultee.

- When consultations are asyncrhonous and do not involve confidential information, with the consent of the consulted farmer, the questions and answers will be stored in a knowledge base with the option of a subsequent search by other farmers who have similar questions.

- Webinars – this part of the platform enables the organisation of webinars and trainings on topics,

which are important for the farmers. In a state of epidemiological situation this type of online platforms are one of the most efficient and safe means for distant learning. The webinar system will provide the option for connection through a mobile application, computer or phone.

6. **Communication network consisting of field sensors and rain sensors and development of module for data management to provide information for soil moisture, air and soil temperature and precipitation quantity**

The goal is that every Bulgarian farmer should have access to the most important information concerning the development of crops in view of optimal planning of agro-technical activities and making adequate managment decisions.

The communicational layer of the system at a sensor level – transceiver station, will be developed by using standartised protocl with an open code for low energy communication based on LoraWAN. The communications of the transceivers to the central servers will be built through the use of standard TCP/UDP protocols over Internet environment. The Internet connectivity of the separate transceivers is based on GPRS/4G mobile connection. The system envisages the installation of 600 transceivers with a scope of up to 200 km2 and a possible number of separate sensors for each transceiver up to 1000. Thus, basic meteorological information at a level of each 10 ha arable land will be ensured. The exact number of transceivers will be determined in the preparation of a task for selection of contractor on the basis of simulation software for determining the scope and exact coverage of each transceiver. To the extent that the agricultural area in the country is distributed in a relatively even manner throughout the entire territory, it is technically impossible that only agricultural areas be included within the coverage of a single transceiver. Furthermore, depending on the concrete micro topography in the transceiver area it is possible that the coverage be lower or higher. As a result, the calculation of the transceiver number by simple division of the total agricultural area to the area of theoretical coverage of a single station is inapplicable. In determining the required number of transceivers at this stage an average radius of coverage is used with a size, on average, 8 km, by taking into account the fact that in some cases this radius can be 3-4 km, and in others – 12-15 km.

The data from all sensors will be integrated in a platform with the option to extract data in raw and aggregated form. There will be spatial information for each field sensor concerning its location, with a one-off entering upon its placing on the field. The communication between the transceivers is based on a LoraWAN protocol for low energy consumption. A main advantage of the protocol, apart from the low energy consumption from the end devices, is that upon dropping out of a transceiver and the presence of another one within the coverage of the sensor, the information will be automatically transmitted to the working transceiver or to the one with the strongest signal. Upon connection drop between a sensor and a tranceiver, this will be reported at a platform level. Upon connection drop between a transceiver and a central server, the data sent from the sensors to the respective transceiver, will be buffered in the transceiver memory.

The transceivers will communicate with the central server through a TCP/IP protocol via 4G/LTE mobile network or WAN interface through Internet if such is present at the place of transceiver installation (for instance, office of municipal service “Agriculture”).

Integration:

- Integration with the open data portal and the use of shared resources of the electronic governance;
- The integration between the information-analytical module for use of antimicrobial VMP and the Single Register of the Veterinary Medicinal Products, as well as with other systems, such as the Integrated Information System (VetIS) of the Bulgarian Food Safety Agency. This integration shall not be perceived as doubling of activities since the integration between the registers between the Ministry of Agriculture and the Bulgarian Food Safety Agency serves the needs and goals of the two bodies and falls within the context of the initative. Only specific data will be transferred to REGIX through adapter, which need to serve the needs of other bodies in providing electronic administrative services.
- Integration with the System for Control of Trade with Animals and Animal Products – TRACES, Notification System and Early Warning System upon establishing of packaging with plants and plant products imported in or traded within the EU – EUROPHYT, Animal Decease Notification System – ADNS, Information

system for agricultural management and monitoring of the market, for report on application of market standards in production and marketing of certain food – ISAMM information system for management of licenses medicines for use in animals and humans, of the European Medicines Agency – EMA and the CTS system.

The integration of the information systems will lead to their compatibility, the data from the modules can be automatically generated, the risk of mistakes in entering of the information will be reduced. The goal of system integration is to achieve effectiveness in the management, processing and automated data exchange, information and documents in relation to the official control.

3. Beneficiary.

Ministry of Agriculture, Food and Forestry

4. Time schedule for project Implementation, including activities, stages [1].

Project implementation period: 48 months (July 2021 - June 2025)

Timetables for activities are as follows:

Schedule for Activity Implementation: Creation of Electronic Information System in agriculture

Month	Activity: Creation of Electronic Information System in agriculture																										
	1. Development of a common platform for unification of all modules and integration of existing information systems through interfaces				2. Creation of a Module for the use of plant protection products and fertilizers				3. Creation of information-analytical Module for the use of antimicrobial veterinary medicinal products				4. Creation of Module for traceability From Farm to Fork				5. Creation of Module for online training (platform)						6. Creation of communication network consisting of field sensors and rain sensors				
	1.1. Drawing up of analysis of the current state of play	1.2. Drawing up the technical task of the project	1.3 Carrying out a public tender procedure	1.4. Development and putting into operation of the interfaces, staff training	2.1. Drawing up of analysis of the current state of play	2.2. Drawing up the technical task of the project	2.3 Carrying out a public tender procedure	2.4. Development and integration of the module	3.1. Drawing up of analysis of the current state of play	3.2. Drawing up the technical task of the project	3.3 Carrying out a public tender procedure	3.4. Development and integration of the module	4.1. Drawing up of analysis of the current state of play	4.2. Drawing up the technical task of the project	4.3 Carrying out a public tender procedure	4.4. Development and integration of the module	5.1. Drawing up of analysis of the current state of play	5.2. Drawing up the technical task of the project	5.3 Carrying out a public tender procedure	5.4. Development and integration of the module	5.5 Preparation of scientific materials	5.6 Preparation of educational materials for digital skills	6.1. Drawing up of analysis of the current state of play	6.2 Drawing up the technical design for the location of the stations	6.3. Drawing up the technical task of the project	6.4 Carrying out a public tender procedure	6.5. Implementation of the required activities and putting into operation of the communication network, staff training
2021																											
m. 07	X				X				X				X				X						X				

[1] The schedule will be relevant for determining of intermediate targets under the Recovery and Resilience Plan and has a direct relationship towards releasing tranches from the financial aid under the Recovery and Resilience Plan

m. 08	X				X				X				X				X						X				
m. 09	X				X				X				X				X						X				
m. 10	X				X				X				X				X						X				
m. 11	X				X				X				X				X						X				
m. 12	X				X				X				X				X						X				
2022																											
m. 01		X				X				X				X				X						X			
m. 02		X				X				X				X				X						X			
m. 03		X				X				X				X				X						X			
m. 04		X				X				X				X				X						X			
m. 05		X				X				X				X				X						X			
m. 06		X				X				X				X				X						X			
m. 07		X					X				X				X				X						X		
m. 08		X					X				X				X				X						X		
m. 09		X					X				X				X				X						X		
m. 10		X					X				X				X				X						X		
m. 11		X					X				X				X				X						X		
m. 12		X					X				X				X				X						X		
2023																											
m. 01			X					X				X				X				X	X	X				X	
m. 02			X					X				X				X				X	X	X				X	
m. 03			X					X				X				X				X	X	X				X	
m. 04			X					X				X				X				X	X	X				X	
m. 05			X					X				X				X				X	X	X				X	
m. 06			X					X				X				X				X	X	X				X	
m. 07				X				X				X				X				X	X	X					X
m. 08				X				X				X				X				X	X	X					X
m. 09				X				X				X				X				X	X	X					X
m. 10				X				X				X				X				X	X	X					X
m. 11				X				X				X				X				X	X	X					X
m. 12				X				X				X				X				X	X	X					X
2024																											
m. 01				X				X				X				X				X	X	X					X
m. 02				X				X				X				X				X	X	X					X
m. 03				X				X				X				X				X	X	X					X
m. 04				X				X				X				X				X	X	X					X
m. 05				X				X				X				X				X	X	X					X
m. 06				X				X				X				X				X	X	X					X
m. 07				X				X				X				X				X	X	X					X
m. 08				X				X				X				X				X	X	X					X
m. 09				X				X				X				X				X	X	X					X
m. 10				X				X				X				X				X	X	X					X
m. 11				X				X				X				X				X	X	X					X
m. 12				X				X				X				X				X	X	X					X
2025																											
m. 01				X																							X
m. 02				X																							X
m. 03				X																							X
m. 04				X																							X

m. 05				X																					X
m. 06				X																					X

4.1. When can the project implementation start at the earliest after its approval?

Straight after receipt of approval for the project

5. Indicative financial resource by activity, including sources of financing (national budget, European funding, private funding, IFIs)

The estimates for the indicative financial resource for the implementation of the project activities are based on market and internet research.

The total value of the project amounts to BGN 23 874 045

The allocation of funds by activities is indicated in the table.

Activities	Total amount (BGN)	Deadline for implementation	Explanation/Description of the indicative value (cost granulation)
TOTAL INDICATIVE PROJECT BUDGET	**23 874 045**	**30.6.2025**	The total amount of the project is formed as a sum of the indicative values of all planned activities
1. Development of a common platform for unification of all modules and integration of existing information systems through interfaces	**5 925 956**	**30.06.2025 г.**	The total amount of the costs of the activities for development interfaces is a sum of the indicative values of the envisaged sub-activities
1.1. Drawing up of analysis of the current state of play	29 110	**30.12.2021 г.**	The indicative budget shall be established on the basis of a market investigation
1.2. Drawing up the technical task of the project	69 910	**30.12.2022 г.**	The indicative budget shall be established on the basis of a market investigation
1.3. Development and implementation of software solution, staff training and warranty support	5 826 936	**30.06.2025 г.**	The indicative budget shall be established on the basis of a market investigation
2. Creation of a module for the use of plan protection products (PPPs)	**1 494 542**	**31.12.2024**	The total amount of the costs for the implementation of the activities for creation of the module is a sum of the indicative values of the envisaged sub-activities
2.1. Drawing up of analysis of the current state of play	7 346	31.12.2021 г.	The indicative budget shall be established on the basis of a market investigation
2.2. Drawing up the technical task of the project	17 637	30.06.2022 г.	The indicative budget shall be established on the basis of a market investigation
2.3. Development and implementation of software solution, staff training and warranty support	1 469 560	31.12.2024 г.	The indicative budget shall be established on the basis of a market investigation

3. Creation of an information-analytical module for control of the use of antimicrobial VMPs	**1 494 542**	**31.12.2024**	The total amount of the costs for the implementation of the activities for creation of the module is a sum of the indicative values of the envisaged sub-activities
3.1. Drawing up of analysis of the current state of play	7 346	31.12.2021 г.	The indicative budget shall be established on the basis of a market investigation
3.2. Drawing up the technical task of the project	17 637	30.06.2022 г.	The indicative budget shall be established on the basis of a market investigation
3.3. Development and implementation of software solution, staff training and warranty support	1 469 560	31.12.2024 г.	The indicative budget shall be established on the basis of a market investigation
4. Development of a tracking module "From Farm to Fork"	**4 099 916**	**31.12.2024**	The total amount of the costs for the implementation of the activities for creation of the module is a sum of the indicative values of the envisaged sub-activities
4.1. Drawing up of analysis of the current state of play	20 155	31.12.2021 г.	The indicative budget shall be established on the basis of a market investigation
4.2. Drawing up the technical task of the project	48 389	30.06.2022 г.	The indicative budget shall be established on the basis of a market investigation
4. 3 Development and implementation of software solution, staff training and warranty support	4 031 372	31.12.2024 г.	The indicative budget shall be established on the basis of a market investigation
5. Creation of an online training module, incl.:	**1 414 895**	**31.12.2024**	The total amount of the costs for the implementation of the activities for creation of the module is a sum of the indicative values of the envisaged sub-activities
5.1. Drawing up of analysis of the current state of play	5 313	31.12.2021 г.	The indicative costs for implementation of the activity represent 1 % of the indicative value of the module, determined on the basis of market research
5.2. Drawing up the technical task of the project	12 871	30.06.2022 г.	The indicative budget shall be established on the basis of a market investigation
5.3 Development and implementation of software solution, staff training and warranty support	1 072 711	31.12.2024 г.	The indicative budget shall be established on the basis of a market investigation
5.4. Preparation of scientific materials	230 400	31.12.2024 г.	The indicative value of the cost is determined on the basis of information received from the Agricultural Academy for the required amount of work and a source of information on the amount of remuneration of the relevant experts.
5.5. Preparation of educational materials for digital skills	93 600	31.12.2024 г.	The indicative value of the cost is determined on the basis of internet survey for an indicative amount of hourly remuneration for the preparation of scientific and educational materials – Standard table for admissible amount of the hourly remuneration of persons, employed in connection with the implementation of projects under priority axes 2 and 3 of the Science and Education for Smart Growth Operational Programme, position IT expert, senior expert level
6. Setting up a Network for communication of field and rain sensors and a data management module	**0**	**30.6.2025**	The total amount of the costs for the implementation of the activities for creation of the module is a sum of the indicative values of the envisaged sub-activities

6.1. Drawing up of analysis of the current state of play		31.12.2021 г.	The indicative budget shall be established on the basis of a market investigation
6.2 Drawing up the technical design for the location of the stations		30.06.2022 г.	The indicative budget shall be established on the basis of a market investigation
6.3. Drawing up the technical task of the project		31.12.2022 г.	The indicative budget shall be established on the basis of a market investigation
6.4. Implementation of the necessary activities and commissioning of the Network for Communication, staff training and warranty support, incl.:		30.06.2025 г.	The indicative budget shall be established on the basis of a market investigation
- purchase and installation of a base station		30.06.2025 г.	The indicative budget shall be established on the basis of a market investigation
- purchase and installation of a sensor node with sensors for soil moisture or rain		30.06.2025 г.	The indicative budget shall be established on the basis of a market investigation
- software development		30.06.2025 г.	The indicative budget shall be established on the basis of a market investigation

5.1. Indicative allocation of the financial resource, depending on the type of expense:

- Construction/rehabilitation of infrastructure (General construction work) - 0 %
- Physical capital (purchase of machinery and equipment) - 27,5%
- Human capital (skills development, re-training…) - 0 %
- Labor (wage costs, advisory services …) - 2,6%
- Technology (costs for acquisition of intangible fixed assets - patents, software…) - 69,9%

6. Indicators

6.1. Result indicator/s

1. 1. Development of a common platform for unification of all modules and integration of existing information systems through interfaces
    - Initial value – 0 (2021 г.)
    - Interim value – prepared analysis report of the current state, prepared terms of reference for the project, public procurement for assignment of the development of the interfaces was carried out - 24 months after the start of the project (30.06.2023)
    - Terminal value – implemented standardised interfaces - 24 months from the assignment of the development of the interfaces (30.06.2025)

2. Developed Module for the use of plant protection products (PPPs) and fertilizers
    - Initial value - 0 (2021)
    - Interim value – prepared analysis report of the current state, prepared terms of reference for the project, public procurement procedure for the development of the module was carried out - 18 months after the start of the project (31.12.2022)
    - Terminal value – implemented module - 24 months from the assignment of the development of the module (31.12.2024)

3. Developed information-analytical module for the use of antimicrobial veterinary drugs
    - Initial value – 0 (2021 г.)
    - Interim value – prepared analysis report of the current state, prepared terms of reference for the project, public procurement procedure for the development of the module was carried out - 18 months after the start of the project (31.12.2022)
    - Terminal value – implemented module - 24 months from the assignment of the development of the module (31.12.2024)

4. Developed tracking module "From Farm to Fork”

- Initial value – 0 (2021 г.)
- Interim value – prepared analysis report of the current state, prepared terms of reference for the project, public procurement procedure for the development of the module was carried out - 18 months after the start of the project (31.12.2022)
- Terminal value – implemented module - 24 months from the assignment of the development of the module (31.12.2024)

5. Developed online training module (platform)
   - Initial value – 0 (2021 г.)
   - Interim value – prepared analysis report of the current state, prepared terms of reference for the project, public procurement procedure for the development of the module was carried out - 18 months after the start of the project (31.12.2022)
   - Terminal value – implemented module - 24 months from the assignment of the development of the module (31.12.2024)

6. Developed Network for communication of field and rain sensors
   - Initial value – 0 (2021 г.)
   - Interim value – prepared analysis report of the current state, prepared terms of reference for the project, public procurement procedure for the development of the network was carried out - 24 months after the start of the project (30.06.2023)
   - Terminal value – communication network put into operation - 24 months from the assignment of the network development (30.06.2025)

6.2. Effect indicator/s

1. Available information on PPPs and fertilizers sold and used for all users
   - Initial value – 0 (2021)
   - Terminal value (31.12.2025) – available information on the quantities of PPPs and fertilizers sold and used

2. Availability of information on antimicrobial VMPs sold and used by all users
   - Initial value – 0 (2021)
   - Terminal value (31.12.2025) – available information on the quantities of antimicrobial VMPs sold and used

3. Available working effective system for full traceability of food products - from primary production to final consumption, on the principle of unique identification code
   - Initial value – 0 (2021)
   - Terminal value (31.12.2025) – functioning system for product traceability in the agro-food chain

The digitalisation of agriculture has the potential to significantly increase the competitiveness and sustainability of agricultural holdings, improve rural life and reduce the impact of agricultural activity on the environment and climate. The variety of expected positive impacts from the application of digital and innovative technologies in agricultural activity does not allow the derivation of specific target values for a large part of the expected impacts. However, the following more significant effects can be identified:

- Dematerialisation of the information flows from and for fulfill the administrative activity;
- Dematerialisation of the services provided to farmers, their centralisation and their use by businesses in the course of fulfilling the obligations and requirements depending on the type of agricultural activity;
- Integration of the information systems of the administration and the software for management of the

agricultural holdings in a Unified platform for automated data exchange between the administration and the farmers
- Implementation of effective control over the use of PPP, fertilizers and VMP, limitation and planned reduction of the quantities used for protection of human and animal health and protection of the environment;
- Sustainable trend to decrease antimicrobial resistance;
- Ensuring food safety and protection of public health through an effective traceability system along the agri-food chain;

Improved knowledge and qualification of farmers regarding the application of good agricultural practices and opportunities for introduction of technical and technological solutions, acquired basic digital skills for working with electronic systems related to agricultural activities. Facilitated access of producers to consultations and trainings on specific issues and problems related to their activity.

7. Does the project require the opening of a procedure pursuant to the Public Procurement Act (PPA)?

Yes

7.1. If a procedure under the Public Procurement Act is required, what part of the activities and financial resources will be subject of the public procurement?

Regarding the activities - 46.1%;
In terms of financial resources - 98.6%

7.2. If a procedure under the Public Procurement Act is required, what is the indicative schedule for its implementation?

According to the deadlines set under the Public Procurement Act

8. Demarcation and complementarity.

8.1. If similar projects have been implemented (regardless of their source of funding), describe how this project builds on/complements what has been achieved with previous projects.

No similar projects have been implemented. The envisaged systems and technologies will allow integrated and consolidated processing of the accumulated data from available registers and systems within the Ministry of Agriculture, Food and Forestry (MAFF) and its individual structures. In this way, the Ministry will be able to extract additional information through analytical tools and implement its data-driven policies.
The concept of register reform includes the establishment of a Unified Register of Phytosanitary Control and a Unified Register of Veterinary Medicinal Products at the Bulgarian Food Safety Agency (BFSA).

Regarding the module for plant protection products and the planned activity of the BFSA for the establishment of a Unified Register of Phytosanitary Control:

Both activities are based on the regulatory framework for the use of plant protection products (PPPs), but have different target groups of users. In the activity of the MAFF the target group and the users of the system are agricultural producers, while the project of the BFSA is focused on the administrative structures and does not cover users outside the structures of the BFSA. The establishment of the module for the use of plant protection products and electronic diaries will allow the creation of a standardized exchange of information between farmers and the administration, using also the data from the unified register of phytosanitary control.

Regarding the establishment of a module for control of the use of antimicrobial veterinary medicinal products (VMPs) and the planned activity of the BFSA for the establishment of the Unified Register of Veterinary Medicinal Products (URVMP):

The URVMP only provides for the consolidation of the existing registers for the issued licenses for production, trade and use of veterinary medicinal products. It is not envisaged to enter up-to-date data on imported, produced and used VMPs and feeds, as well as their application on farms. Also there is not envisaged an analytical sub-system with which to perform analyses of used VMPs and medicated feeds with signalling in case of deviations in quantities, as well as the possibility to issue electronic prescriptions, enter and process results from antibioticograms or build a system for exchange of pharmacovigilance data or ensure traceability of products obtained from the treated animals concerned. The module aims to collect data on the use of antimicrobials, as this information does not currently exist and is not provided for in the register reform project. The data will be reported to the EC, because such an obligation arises under a Regulation, which shall enter into force since 2022.
The target group of users of the two platforms is also different, as the unified register of the BFSA is intended for the users of the BFSA administration, while the module for registration and tracking of VMPs covers both BFSA and manufacturers and traders of such products, registered veterinarians. and animal owners. QR code tracking will also allow the transfer of information to users. The system for tracking the import, production, trade and use of VMPs will be integrated with both the URVMP and VetIS and with the envisaged Unified Register of Animals and Livestock Farms. The module of the system will monitor the prescription and application only of veterinary medicinal products that are entered in the Unified Register of Veterinary Medicinal Products (URVMP) by competent authorities having the relevant rights for trade, distribution, prescribing and application (also entered in the URVMP), including databases of the European Medicines Agency - EMA (European Surveillance of Veterinary Antimicrobial Consumption (ESVAC), register of products licensed for use under a centralized procedure (and databases related to the application of Regulation (EU) 2019/6 on veterinary medicinal products that will function after January 28, 2022)) and a possibility for their electronic prescription will be provided for – an electronic prescription. Also, the prescription of VMPs will be possible only to livestock farms registered in the Integrated Information System (VetIS) of the Bulgarian Food Safety Agency (BFSA), and direct data exchange with these systems is necessary in order to perform the analytical functions of the module. In this sense, the connection of the module with these systems is not a duplication of the provided connections under the project for Register Reform of the BFSA. The elements of the BFSA register reform project will ensure the functioning of this module.
In this sense, the ones included in the current project proposal for establishment of PPP and VMP modules do not overlap with activities that will be implemented under the measure “Implementation of measures according to the Concept for Register Reform” of the Updated Roadmap to the e-Government Strategy.

The following <u>ELECTRONIC ADMINISTRATIVE SERVICES</u> (EAS) will be provided for the different target groups of users:

- ***<u>EAS for citizens</u>***

- reference in which livestock farms the principles of prudent and responsible use of antimicrobial VMPs are applied - the aim is for consumers to make their informed choice when choosing food of animal origin

- reference for control of the withdrawal periods of VMPs used in productive animals - the aim is through the system to guarantee to citizens the consumption of safer and better quality food, as products from animals with restrictions on sale will not reach the market

- electronic prescription and introduction of information for antibioticograms: the judicious use of antimicrobial VMPs is the basis for reducing the risk of developing antimicrobial resistance, as a correct diagnosis will be ensured and thus the appropriate antimicrobial agent will be selected.)

- **<u>EAS for business (animal owners, registered veterinarians, producers and traders of VMPs)</u>**

- administrative relief for animal keepers (it will be possible to make various inquiries and documents necessary both when applying under the measures of the new CAP and in the control process ex officio, and not to have the owner to submit such inquiries and documents. This is important because the use of antimicrobials is an element of control in the agri-food chain and as a priority the reduction of their use in the next programming period will be subject both to control and a condition for applying for various measures. So the check will be done mainly through the system)

- QR code traceability (combined with citizen-centred EAS) - a market advantage for those food producers who apply the principles of prudent and responsible use of antibiotics

- issuing electronic prescriptions and information on the results of susceptibility tests (antibioticograms) - the service is intended for both registered veterinarians and animal owners, as there will be provided optimal results in treatment with less cost for the animal owner for the use of the most effective VMP for the respective condition, as registered veterinarians will be able to enter information on the results of susceptibility tests (antibioticograms)

- electronic tracking of withdrawal periods - farmers and registered veterinarians will be facilitated with regard to the requirement to comply with withdrawal periods when using VMPs, as the system will monitor the withdrawal periods of applied VMPs and through the connection with VetIS there will be blocked the sale of products before the withdrawal period has expired

- ensuring electronic exchange and functioning of the pharmacovigilance system - registered veterinarians will be able to electronically enter information on adverse reactions and other deviations in the use of VMPs and the information will be automatically available to VMP manufacturers and traders, including in other Member States.

- ***EAS for the administration***

- fulfilment of the obligations for reporting the used quantities of VMPs according to the EU legislation when submitting information through automatic exchange between the two systems, instead of manually filling in data with a high probability of technical errors, which will facilitate the BFSA. To this end, a link to the systems of the European Medicines Agency will be provided;

- tracking the use of VMPs will allow data analysis in order to determine a government policy to achieve prudent use of antimicrobials;

- quantitative inquiries and cross-checks in order to optimize the control carried out by the competent authority with regard to the sale, prescription and use of antimicrobials and thus unauthorized use will be minimized. Based on the risk assessment of previous discrepancies, more targeted control will be achieved;

- feedback, tracking and control in case of established discrepancies for the respective sites in case of positive samples from the National Monitoring Program for Residue Control, including in case of signals from other Member States, received under the Rapid Alert System for Food and Feed;

- electronic exchange of data on the pharmacovigilance system - as part of the electronic pharmacovigilance system, the exchange of information will also be available to the competent authority, including in fulfilment of its reporting obligation to the other Member States and the EMA, which will also allow a rapid withdrawal from the market, in case such a measure is required.

8.2. If similar projects are envisaged to be implemented under the Partnership Agreement programs, the centrally managed facilities of EU or the Just Transition Fund, outline the demarcation with this project.

When preparing the Strategic Plan for the implementation of the CAP for the period 2021-2027, a clear demarcation will be made with possible interventions in the field of digitalization, training and consulting. The Strategic Plan will include interventions to support farmers who use the system and link farm management software to the electronic system, in order to stimulate organic farming, reduce the use of PPPs, synthetic fertilizers, the loss of nutrients in the soil and the sale of antimicrobials.
The project proposal concerns investments for the construction of a Unified Information System in Agriculture, which will integrate the information systems of the administration and the software for management of agricultural holdings. The only beneficiary is the Ministry of Agriculture, Food and Forestry, as an institution responsible for the implementation of policies in the agricultural sector: support for farmers with European and national funds, provision of a number of administrative services for the sector, control over the entire production chain and supply of agricultural products etc.

The planned activities of the project do not cover investments in agricultural holdings. The introduction of digital solutions and technologies in agricultural holdings will be encouraged by including appropriate interventions in the Strategic Plan. Support for private investment in digitalization through the Strategic Plan will ensure the provision of the flow of information from farmers on the fertilizers, PPPs and veterinary medicinal products used on their farms, necessary for effective official control and monitoring of progress towards the objectives of the Green Deal.

9. Does the project directly contribute to the implementation of any of the Council's Specific Recommendations addressed to Bulgaria in the framework of the European Semester in the period 2017-2020? Please describe how.

The implementation of the project will have a direct contribution to achieving the goals of both the digital and green transition and corresponds to a large extent to the Council recommendations for 2019 and 2020 on the National Reform Program of Bulgaria and the Convergence Program related to the need to promote digital governance, provide digital services, increase energy and resource efficiency and public administration and e-government reform.

1. The Digital Agriculture Project is linked to the Council's recommendations concerning the digital transformation and the introduction of new business models in the following areas:

- The introduction of digital technologies and the construction of new business models in agriculture will contribute to attracting the younger generations, thus slowing down the negative processes of deterioration of the demographic structure of those engaged in agricultural activities and the trends of depopulation of rural areas.
- The digital transformation of the agricultural sector will help increase productivity, add value, improve the quality and safety of production, which will strengthen the economic sustainability of agricultural holdings and the industry as a whole.

Specific link to the recommendations:

Recommendations for 2019:

- item 15 - for the need for reforms, combined with efficient management and more efficient public investments, as well as for increasing the digitalization in the enterprises and introduction of new business models;
- item 18 - concerning the promotion of digital skills, according to which Bulgaria is at one of the lowest levels in the EU;
- Recommendation 4 - to improve employability by strengthening skills, including digital ones;

Recommendations for 2020:

- item 25 - on the importance of digitalization and innovation, in the implementation of which Bulgaria is below the EU average;
- Recommendation 3 - on the need to focus investment in the field of green and digital transition

2. The implementation of the investments under the project also contributes to the implementation of the Council's recommendations on public administration and e-government reform in the following areas:

The implementation of the reforms in the administration in the field of agriculture will be carried out in parallel with those in the other areas of the public administration. Through electronic flows of information between the administration and the economic entities in the sector, effects can be achieved such as:

- providing electronic administrative services to citizens;
  reduction of the administrative burden for the business;
- limiting the opportunities for applying corrupt practices;
- improving control over the implementation of CAP support schemes and measures;
- creating conditions to address the challenges of green and digital transition.

Specific link to the recommendations:

Recommendations for 2019:

- item 16 - on the finding of slow reforms in public administration and e-government, leading to a weak business environment

Recommendations for 2020:

- item 24 - emphasizing the strategic importance of efficient public administration, well-functioning digital governance, effective control over the implementation of policies and reduction of administrative burdens to improve the business environment and encourage investment, as a tool for restoring growth;
- Recommendation 4 - concerning the improvement of the efficiency of the public administration and the strengthening of e-government as conditions for limiting to a minimum the administrative burden for the business.

10. Does the project contribute to the implementation of reform in a given sector? Please describe how.

The digital transformation of the public administration in the field of agriculture will help reduce the bureaucratic burden, optimize production processes, increase productivity, stabilize farmers' incomes, achieve a sustainable bio-industry, maintain food quality and safety, strengthen the competitiveness and market presence of Bulgarian products on the European and world markets.

Agricultural activities have a significant contribution to climate change and biodiversity through greenhouse gas emissions, nutrient surpluses in soil, water and air, tillage leading to erosion and more. On the other hand, the increasingly extreme effects of adverse climatic events have a negative impact on agricultural productivity and performance, which requires the adaptation of the production practices to the changing conditions, as well as long-term investments and reforms which will transform processes from production to the consumption.

The project envisages the creation of a comprehensive electronic information system in agriculture, including five modules - for tracking plant protection products, fertilizers and veterinary products, for tracking food products "From farm to fork"; for online training and consultations; for building a communication network of field and water sensors. The operation of the modules will allow continuous objective official control over the use of plant protection products, fertilizers and veterinary products, which will ensure the application of environmentally friendly practices on farms and reduce the footprint of agricultural activities on soil, water, air and biodiversity.

11. Does the project contribute to the development of any aspect of sustainable economic development? Please describe how.

The accelerated digitalization of agriculture will lead to increased productivity, added value, improved quality and safety of production, which will improve the economic sustainability of farms and the industry as a whole. Resources will be used in a more environmentally friendly and efficient way, which will minimize the negative impact of agricultural activities on the environment, biodiversity and landscape.

The introduction of digital technologies and the construction of new business models in agriculture can contribute to attracting the younger generations, counteracting the negative processes of deterioration of the demographic structure of those engaged in agricultural activities and the trends of depopulation of rural areas.

Improving the digital knowledge and skills of farmers through an online training platform, part of the Unified Information System, will stimulate investment activity aimed at accelerating the introduction of innovations and digital technologies in agriculture. This will support the ability of the agricultural sector to adapt to the challenges of the changing environment, related to the increased expectations for reducing its environmental footprint while ensuring food security.

12. Does the project contribute to the implementation of the objectives of the National Development Program BULGARIA 2030? Please describe how.

The implementation of the project for Digital transformation of agriculture has the potential to contribute to the implementation of the three objectives of the National Development Program BULGARIA 2030:

- Accelerated economic development - by increasing the sustainability and competitiveness of the agricultural sector;
- Demographic rise - by creating favorable conditions for the development of agrarian business from young

people;
- Reducing inequalities - by promoting agricultural activities that contribute to strengthening the viability of rural areas.

There will be a direct contribution to the implementation of Priority 2. Science and Scientific Infrastructure, Priority 3. Intelligent Industry, Priority 4. Circular and Low Carbon Economy, Priority 5. Clean Air and Biodiversity, Priority 6. Sustainable Agriculture, Priority 8. Digital connectivity, Priority 9. Local development, as well as an indirect impact for achieving the other priorities.

The implementation of the digital transformation of the agriculture will also contribute to the achievement of the UN Sustainable Development Goals and in particular Objective 2 "End of hunger - achieving food security and better nutrition, promoting sustainable agriculture", Objective 15 "Protecting, restoring and promoting the sustainable use of terrestrial ecosystems, sustainable forest management, combating desertification, halting and reversing land degradation and preventing biodiversity loss", etc.

Agriculture has the potential to produce affordable, safe and high quality products, as well as to contribute to climate, environment and biodiversity. The wider penetration of digital technologies in agriculture will improve farm's economic sustainability, allow the use of resources in a more environmentally friendly and efficient way, which will minimize the negative impact of agricultural activities on the environment, biodiversity and landscape.

Preserving agriculture is the key for preserving the vitality of rural areas. The introduction of modern digital technologies and agricultural practices will attract young people in the industry, which will slow down the processes of depopulation of the vulnerable rural regions in the country.

13. Does the project contribute to the implementation of the objectives and priorities set out in the Integrated National Energy and Climate Plan? If yes, please describe how.

The Integrated Plan in the field of energy and climate of the Republic of Bulgaria 2021-2030 outlines the following commitments of agriculture related to the implementation of the national goals in this field:

- reduction and/or optimization of the emissions from the agricultural sector (for the periods 2021-2025 and 2026-2030 the emissions should not exceed the removals calculated as the sum of all removals in total in all reported categories of areas (No-debit commitment))

- raising the awareness and knowledge of both farmers and the administration regarding their actions and the impact of their actions on climate change

Achieving the ambitious goals concerning agriculture requires the establishment of a Unified system for monitoring and control of the implementation of the requirements, which will cover both public authorities and individual business operators, they will be encouraged, trained and consulted to apply relevant sustainable agricultural practices.

This will be achieved through the creation of a Unified Information System in Agriculture (UISA), which will allow electronic data exchange between the public administration and farmers and effective control over the application of plant protection products, fertilizers and veterinary products. On the other hand, the effect of the optimized public control will be enhanced by the use of precision farming systems and smart animal systems at farm level, the implementation of which will be promoted through interventions included in the Strategic Plan for Agricultural and Rural Development.

A module (platform) for online training and consultations will be set up in the UISA, which will provide farmers with information related to the introduction of modern technological and environmental solutions for farms. The platform will provide basic digital knowledge and skills to farmers, an opportunity for quick communication with representatives of the scientific community and will provide online consultations for timely solution of specific problems.