
Consultant's view on successful planning of I&R

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Following the establishment of Animal I&R systems throughout all EU member states, further countries are currently planning and implementing national Animal I&R systems in order to ensure international market access. Successful implementation of I&R is usually undertaken with the technical assistance of international consultants. The efforts involved in implementing a successful I&R system are often underestimated either by the beneficiaries and stakeholders and also by the donors. It is thus one of the major tasks of the consultants to assist the project partners in the planning of a sound approach for the Animal I&R which is technically, organisationally and economically feasible and is based on a careful and sound evaluation of country specific condition applying for all aspects of I&R.

Key words: traceability, animal identification, animal registration, eartags, cattle database, animal movements, agricultural consulting, I&R.

Effective traceability systems, both for live animals and animal products, underpin the ability of national authorities to rapidly respond to disease outbreaks and food safety incidents. They allow the source of problems to be identified, their full implications to be understood and the necessary control actions to be taken. As such, they have an essential role in ensuring consumer confidence in the safety and integrity of the food chain. In particular, the European Union has formulated a new food safety policy with an integrated approach for the safety of products of animal origin, the so called "from farm to fork" or "from stable to table" concept. This policy is aiming to maintain consumer confidence and to ensure an effective functioning of the internal market of the EU.

Summary

Introduction

The registration of holdings, animals and animal movements forms a fundamental part of any traceability system. Almost all member states of the European Union have successfully implemented an Animal I&R system for cattle, using a national database, as required by the respective EU legislation. Animal I&R systems for pigs, sheep and goats are in the process of implementation or the launching of those systems is planned for, in the near future. In almost all of the EU member states it was necessary to develop totally new systems. These new systems in many cases could only use limited parts of the existing Animal identification and registration systems that were set up in the past for breeding, recording, herd management and local health control purposes and often covered only a certain part of the total animal population. As a consequence, huge investments in hard- and software as well as in adequate staff and technical resources were necessary to develop and implement a successful system.

However, while applying these systems throughout the EU it became obvious that those requirements would also be imposed on third countries exporting live animals or animal products to the EU. Based on these trends it can be expected that world trade requirements will demand a functioning Animal I&R system for any exporting country of livestock and animal products.

In recent years national and international donors of Technical Assistance programmes have emphasized the importance of the implementation of reliable Animal I&R systems as a core requirement to assure future international market access for livestock and products of animal origin. International funded projects on Animal I&R outside the EU member states are currently planned or on-going in Albania, Bosnia & Herzegovina, Botswana, Bulgaria, Chile, Jamaica, Kosovo, Lithuania, Macedonia, Romania, Serbia, Turkey, Ukraine and other countries.

However, establishing an Animal I&R system is a major project, typically demanding many man-years of work to complete. The implementation of such systems requires a sound legal, organisational and operational basis with adequate human and financial resources, as well as adequate IT-systems for data entry, validation and correction, data storage and for the distribution of information to farmers and veterinarians.

The efforts needed in order to achieve a successful implementation of the systems are often underestimated by the beneficiaries and stakeholders as well as by the donors. The following paper describes the role of the Consultant within the process of system planning and system implementation. Based on experiences gained from already completed and on-going projects the authors have opted for a more systematic approach for project planning and implementation and present their consideration on key issues for system implementation.

Consultants role in Animal I&R projects

Consultants are frequently contracted by donors to assist in the planning and implementation of an Animal I&R system for a specific beneficiary country and its relevant institutions involved in Animal I&R. In this

context it is the responsibility of the Consultant to combine the technical, project budgetary and timing expectations of the donor with the specific situation in the beneficiary country in respect of the availability of technical, financial and human resources before arriving at the solution.

The expectations of the donor mostly result from internationally agreed public and animal health policies. However, those expectations are modified to the specific interest of a donor in his specific sphere of influence. In this respect, the European Union is imposing the same standards for Animal I&R on third countries as for its EU member states if those countries are interested in exporting livestock or livestock products to the EU.

Donors providing technical assistance projects on Animal I&R very often expect a turnkey solution allowing for only little variation from the desired standards. However, straightforward extension of existing I&R systems may fail, due to different socio-economic conditions applying in most of the beneficiary countries. Other complications may arise from different farm structures, different organisation of livestock and veterinary services, different professional skills of the keepers, other communication facilities or limited financial means etc. In addition ethnic frictions might complicate the situation. In total, all those restrictions complicate the simple copying of already existing systems and prevent the quick implementation normally expected by the donor.

The donor mostly administers public funds. Therefore, from the donor's standpoint the consultant is expected to cope with a very formal administrative procurement approach. Accordingly, there is a big additional risk of excessive bureaucracy and administrative burden resulting in considerable interference with the development of the project.

In the first instance, the desire of the beneficiary to implement an Animal I&R, is politically driven in order to maintain market access for their livestock products. However, as most of the beneficiary institutions have only limited experience of the practical operation of an Animal I&R, they underestimate the efforts needed to establish and operate a comprehensive Animal I&R system. Accordingly there is the tendency to delegate important decisions to the consultants and to expect a turnkey solution especially in the beginning of the system planning phase.

Ownership and responsibility of the Animal I&R system are only gradually taken over as the project progresses. This, however, involves a certain risk, in that the beneficiary – in view of his responsibility – may wish to modify the basic approach, as initially designed at the inception phase, at an advanced stage of the project where redesigning would impede the project's progress.

Expectation of the donor

Expectation of the beneficiary

Role of the Consultant in Animal I&R projects

Although facing the expectations to deliver a turnkey solution the only way for the Consultant to act is as an advisor and mediator between the deviating expectations of the donor and of the beneficiary on the one hand and the requirements of a functional and sustainable I&R system in the background of country-specific conditions, on the other hand. In particular in the planning phase of the Animal I&R project it is thus the major task of the Consultant to provide a comprehensive system description and to assist in the analysis of all relevant aspects for the operation of an Animal I&R system and to help donors and beneficiaries to agree on a feasible approach that fits to the specific countries condition. It is necessary that ownership and responsibility for the system should be taken over by the competent organisation within the beneficiary country in the early phase of the project. For this purpose study tours and training activities, are another priority task to be undertaken in the initial phase in order to create the necessary expertise within the competent authority. It is a recommendation to assign a sufficient time period for the planning phase of the Animal I&R system with a minimum of 6 to 9 month before starting with system implementation.

Recommendations for the successful planning of an Animal I&R system

Successful planning of an I&R system can be seen as systematic approach where complex interacting and independent I&R components are assembled, customized according to the national profile, and finally formed into an efficient, coherent, and stable I&R system. The following chapter is divided into two parts. The first part presents the main conditions and factors to be considered when starting with the design of the general framework of the Animal I&R system. The second part outlines technical key issues to be considered when planning the detailed operation of the Animal I&R system.

Analysis of framework and system planning.

Description of the animal production system within the country

The description shall ensure a thorough understanding of the animal production sector and should include aspects such as livestock farm structure, regional distribution and density of livestock species, productivity of the animals, seasonal distribution of calving, animal movements by owners/traders, use of village and/or mountain pastures, structure of livestock markets and abattoirs, organisation of public veterinary services, availability of private veterinarians, availability and organisation of livestock services (recording/AI) and others.

Analysis of expectation of consumers within in the country

After the BSE outbreak, most consumers have become more aware of health issues in view of the possible implications for human health of food of animal origin and of beef in particular. It should be established to what extent a high level of veterinary public health and the need for the traceability of food of animal origin is a priority for consumers and in addition what is already laid down as a political objective in the country's food safety policy.

In a careful market analysis on animals and animal products it should be determined what are the main trends in the country's animal production figures and its foreign trade (import/export) of animals or animal products. As an important goal, the economical relevance of international market access has to be evaluated as a major benefit of the introduction of an Animal I&R system.

Analysis of relevant markets for animals and animal products including export and import

The Country's veterinary legislation for animal health and veterinary public health has to be reviewed in order to identify relevant aspects and requirements for the introduction of the Animal I&R system. If it is of importance for the countries trade relations, then the relevant international standards, such as from OIE, or from important trade partners (such as EU) must be included in order to obtain a complete picture of the relevant legal requirements in order to be able to draft an appropriate legal base for the I&R system.

Analysis of legal framework and description of the situation of animal health and veterinary public health

Beside the veterinary legislation other legal conditions within the country have to be reviewed such as premiums for animal husbandry, livestock breeding, data management and statistics if they have any impact on requirements for the introduction of the Animal I&R system.

It is further necessary to make available an up-to-date report on the country's situation and status on animal health and veterinary public health in order to analyse if there are specific aspects to be considered for the Animal I&R system implementation.

In the context of a lacking of awareness about Animal I&R, it might happen that commitments are entered into by the beneficiary country without full consideration of the implications resulting from introduction of I&R. Therefore it is essential to clarify the willingness of the stakeholders to participate in the project. This can be done by questionnaires and appropriate workshops as well as by the formation of working groups of all the involved stakeholders.

Clarification on the willingness of the stakeholders to participate in any proposed I&R system

Livestock farmers represent the most important stakeholders of I&R. In this respect it should be noted that farmers from EU countries mainly comply with I&R requirements because of high subsidies which are paid on the basis of (error-free) animals stored in the central database. When no subsidies are applied, considerably less compliance can be expected. Therefore, detailing the private benefits and strict compliance requirements are the only means for ensuring satisfactory participation in I&R. This applies particularly in situations where farmers will ultimately have to fund the system costs.

Transparency in a functional I&R system usually causes difficulties with cattle traders who may wish to hide the origin of animals as a trade secret or sometimes illegally import animals without the necessary health

certificates from abroad. Therefore animal traders often strenuously oppose the introduction of I&R and can severely interfere with its implementation.

If such obstacles are identified the only way to overcome these is a countrywide promotion campaign, where the reasons, objectives and benefits are explained to the farmers and other stakeholders. In this respect, the associated private benefits should be highlighted such as the health protection to one's own animals, the proof of ownership, the prestige of participation in a modern I&R system and the prevention of difficulties with state authorities.

Definition of relevant objectives?

As already indicated an Animal I&R system has to serve several purposes beside the primary veterinary purpose, namely to provide a tool for animal and holdings identification and animal tracing in case of disease outbreaks. It is important to identify those purposes as they might help to justify the introduction of the system and to ensure proper financing. Other objectives may be the execution of preventive measures, allocation of subsidies, animal recording, animal breeding, provision of national statistics, private veterinary purposes, animal insurance, prevention of fraud and others.

Calculation of costs

The calculation of the costs of an Animal I&R system is an important activity which has to be considered side by side with the detailed planning of an Animal I&R system. In principle costs have to be calculated for relevant investments and initial activities as well as for the maintenance and the on-going operation of the system.

Investment and initial costs may arise from the following components:

- Costs for establishing the central I&R infrastructure such as for office premises and equipment, hardware and others;
- Costs for central data base software including its customization and additional programming;
- Costs for establishing the holding register in case of a census including relevant services and the data entry;
- Costs for execution of the first tagging campaign such as ear tags and pliers, cattle passports and communication costs.

The calculation of costs for the on-going operation has to consider components such as for:

- Central Animal I&R unit staff;
- Ear tags for animal identification and replacements;
- Animal I&R forms and/or passports;
- I&R service fees (including travel);
- Depreciation;
- Inspection;
- Communication and mail charges.

While there is a good opportunity to cover the investment and initial costs to a certain extent by TA and procurement projects of international donors, the costs for the maintenance and operation of the Animal I&R system have to be financed from sources within the beneficiary country. It is recommended that in the initial phase, a major part should be covered from the national Governmental budget, but it is reasonable to gradually increase the proportion funded by farmers and other stakeholders.

Definition of financing concept for the investments and the operation of the system

One purpose of the cost calculation is to prepare a precise budgetary plan for the implementation of the I&R system. The other purpose is to evaluate the costs compared to the benefits expected (such as a public good for consumers or international market access) in order to justify whether the proposed system is of benefit to the country and if it is economically feasible.

Cost-Benefit analysis

Complete, timely and correct data capture is a sensitive issue with regard to I&R system integrity and system robustness. In this respect, data capture by handwritten forms is more risky as an average error rate of about 3 % per character applies in practice. On the other hand, automated scanning of the holding or animal's information from appropriate barcodes allows for almost error free data capture. At present, there are many Pocket PCs featuring integrated scanners on the market and their use allows for immediate and accurate recording on the spot.

Technical key issues

Organisation of data capture

Development of software for registering the animals in a central database and including all movements up to the animal's death sounds very easy in principle. Therefore, beneficiary countries often opt for own software development in the first instance. However, when the software functionality is analysed in detail, it becomes apparent that the software needs to be highly sophisticated and requires many man years of work for its successful completion. Therefore national attempts to develop own software are often delayed or have been found to fail.

Software development or software procurement

Because of the often tightly set time schedule for I&R project, there is almost no alternative but to procure the appropriate software packages from the market. In this respect it should be noted that no commercial I&R software has been approved by the EU up to now.

Unique numbers for holdings and animals form the basis of the I&R system. In order to avoid communication errors, the animal or holding ID should be as small as possible with the constraint that a minimum turn-over period of 100 years should be provided. Due to lack of experience, the beneficiary often tries to put additional information into the number, such as birth region, breed, municipality code etc. The consultant should strictly oppose such proposals, as this additional

Numbering system: for holdings, for herds or for each individual animal

information usually loses its value but significantly inflates the number of digits and therefore leads to additional communication errors as well as to higher costs for ear tag handling and distribution.

The internal animal ID used within the database or on barcodes should be represented by an appropriate 15-digits ISO code (3-digit country code, followed by '00' and the 10 digit animal ID, where leading '0' fill up to 10 digits) in order to provide world wide uniqueness and to match with numbering system applied in many other countries.

Identification/ear tagging: by farmers, by veterinarians or personnel of other support services

In principle it should be clear that the keeper always takes responsibility for the correct application of I&R issues within his herd. However, there might be situations where due small farm structure or poor keeper skills etc. the I&R services may need to be assigned to 3rd parties.

I&R service providers may comprise of veterinarians, AI staff or trained staff responsible for certain defined holdings or regions. In principle there is no preference of any of those subgroups so long as easy and continuous access to the keepers is ensured. However, where the service providers are equipped with expensive devices such as Pocket PCs, scanners and communication lines to the central data base, the number of service providers must be limited to such numbers as can be funded from the available budget. In any case the design should avoid to create a job machine for specific occupational groups as the utilisation of service providers for Animal I&R may increase system operation costs by more than 20 %.

Work flow, data flow

The I&R system covers a wide range of activities applied in different places and application areas. It is strongly recommended to address the entirety of a activities by a written I&R workflow document which additionally specifies each of the planned working steps and the order of execution. Additionally, the triggered data flow should be described. Typically, the workflow document includes the following issues:

- Farm Census for establishment of holding register (in case there is one);
- Maintenance of keeper/holding addresses – new/change of information;
- Ordering and allocation of new and replacement ear tags;
- Withdrawal of the ear tags;
- First tagging campaign;
- Notification of births;
- Routine registration and tagging;
- Issuing of Cattle Passports;
- Communication of movements (leaving, entering, death), (farm; abattoir; livestock markets; fairs; alpine grazing areas; village pastures);
- Re-prints of forms;
- Importation of animals (from countries following EU rules; from third countries);

- Exportation of animals;
- Error correction procedure (in the field; centrally), (a priori; a posteriori);
- On spot inspections.

By this means, the entirety of system elements becomes visible and weaknesses in respect of crude system planning become evident. The workflow document forms the final base for further planning of systems details. In order to avoid severe revision of the implementation process, the basic workflow should be seen as a binding document, which should be agreed on by the beneficiary.

From the background of a strong data connectedness, maintenance of the I&R requires strict compliance of all participants as failures, e.g. missing participation, missing or delayed registration, missing or delayed communication of movements etc., result in corrupted data that quickly may lead to propagated errors of the central database and loss of data integrity. Therefore, participation and full compliance with the I&R system needs to be ensured by appropriate means.

In this respect, minimum control by inspections as e.g. formulated by EU Commission Regulation (EC) No 2630/97 are only slightly capable of improving the farmers' compliance, as control density still remains at a low level. In cases where private benefits such as granting subsidies based on correct data entries are not existing, the 10 % minimum level of controls might not be enough to create I&R awareness and to ensure collaboration of the farmers. Therefore it is strongly recommended to implement additional advice and support for the farmers rather than imposing fines to them in case of irregularities. This applies in particular for the initial phase after implementation when farmers still need to become familiar with the system. Other than official inspections, this task can be overtaken by service units commissioned with the execution of I&R services. If the number of communications falls below 1 event per cow and year this should be seen as indicator for visiting and advising the farm how to perform correctly.