An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine

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Bovine TB Eradication Strategy

A roadmap to reduce bovine TB and drive towards eradication

2021-2030

This roadmap sets out a renewed bovine tuberculosis (bTB) eradication strategy which will build on the progress made to date and drive disease levels down towards the target of eradication by 2030

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Minister's Foreword

Charlie McConalogue, TD
Minister for Agriculture, Food and the Marine

At its core, the purpose of the bTB Programme has always been primarily to support the trading ambitions of Irish farmers thereby supporting farm incomes. That remains as true today as it was when the Programme was first introduced in 1954. The bTB Programme is vital to enabling our cattle, meat and milk to access foreign markets, both inside and outside the European Union (EU).

The Programme formally began in 1954 to underpin access to the UK market. Since that time, bTB levels have been very substantially lowered which has helped secure trade access for cattle, meat and milk. However, that sustained level of progress has stalled in recent years.

Since reaching a historical low in 2016, bTB levels have increased each year. 2020 saw an acceleration in disease transmission resulting in 13 additional herds per week being restricted relative to 2019. Deterioration in disease is also mirrored in the financial cost of the Programme. The direct financial costs of the Programme are estimated to be over €97 million in 2020 marking a €15 million increase (+18%) since 2015. These trends are not sustainable.

In 2020, provisional data indicates that 4.37% of Irish cattle herds had a bTB breakdown, meaning 4,632 farmers and their families had to go through the stress, uncertainty, restrictions on trade and financial difficulties of a herd restriction and 23,055 cattle were detected as reactors. This compares to lows of 16,914 reactors and 3.27% of herds in 2016. Rising bTB levels also pose a threat to our trade access, with our trading partners regularly seeking assurances that our Programme is effective. Ireland is now the EU Member State with the highest bTB levels, while legislative changes at EU level relating to bTB will require additional controls in countries with bTB. Following Brexit, Ireland will be the only Member State with a continuing significant bTB

In order to succeed, policies must be science-based and regularly evaluated to ensure they are effective.

Stakeholders working collectively, with urgency, is crucial in enhancing the Programme so that this ambition can be achieved.

challenge. This is reflected in the ongoing reductions in EU co-funding support for the bTB Programme raising further funding challenges for farmers and the Irish taxpayer.

At the national level rising bTB levels may limit the markets available to us and increase processing costs, thereby directly effecting incomes of all farmers. Therefore, my goal is to achieve a continual, sustained reduction in bTB levels over the course of this roadmap to 2030 helping us drive towards eradication to the benefit of Irish farmers. Stakeholders working collectively, with urgency, is crucial in enhancing the Programme so that this ambition can be achieved. In order to succeed, policies must be science-based and regularly evaluated to ensure they are effective.

Of course, the strategy will be subject to ongoing evolution based on responding to changing risks and disease patterns and continually seeking to improve the effectiveness of the programme. Collectively, we owe this to the farming public.

If bTB was easy to eradicate, it would have already been achieved. The comprehensive Programme already in place has been successful to a point but clearly enhancements are required. There are no easy options left. That is why stakeholders must engage with the difficult and serious task of considering which additional measures can be introduced to further reduce disease levels. The State will support this effort with research, expertise, infrastructure, management systems, operational management resources and other funding in the public interest. I am particularly supportive of the governance structure under the bTB Stakeholder Forum which has been designed to support stakeholder involvement in the Programme and I look forward to receiving its advice.

Ní neart go cur le chéile

Executive summary

Context and challenges

BTB levels in Ireland reached a historic low in 2016 when herd incidence fell to 3.27%. BTB levels have increased annually since then and 2020 has seen a sharper rate of increase in disease with herd incidence reaching 4.37%. While this is of concern at a national level due to animal health status and related market access requirements, the most significant impacts are faced on-farm. Over 900 additional farm families experienced the farm-management and financial challenges associated with a bTB restriction in 2020 relative to 2016.

While there are clear animal health benefits and productivity benefits associated with Ireland's bTB Programme, its primary objective is to ensure Irish farmers have the necessary herd health status access to key export markets. This includes products of animal origin (e.g. beef and milk products) as well as live animal exports. The bTB Programme is required under EU legislation and increasingly is a requirement in third country trade agreements. The incoming EU Animal Health Law coming into effect in April 2021 also provides for enhanced measures related to bTB.

The diagnostic tests used in Ireland to identify bTB have been employed successfully in other countries that have achieved eradication. They are the best available in the world and the Department of Agriculture, Food and the Marine (DAFM) are continually assessing the most effective testing regime to support eradication in the Irish context. However, as with all diagnostic tests, the tests used to detect bTB have limitations.

In addition to the inherent test limitations, the potential for a reduced immune response of some infected animals whose immune system has been damaged by the infection means a level of undetected infection will always be a challenge to address. That is why we target the objectives in this Strategy in a risk-based manner at animals, herds and areas where extensive data tells us there is a higher probability of disease being present.

The wildlife/cattle interface is recognised as a significant risk pathway for disease transmission. Removal of badgers, where necessary and proactive badger vaccination to prevent bTB transmission will continue to form an integral part of our collective efforts to reduce bTB levels. Enhanced farmer assistance in identifying badger setts is particularly important to strengthen the effectiveness of the wildlife programme. In areas where deer may be playing a role in disease transmission to cattle, DAFM will also support efforts to address this.

Addressing cattle-to-cattle transmission remains a critical element of the bTB Programme particularly in the context of residual infection on farms and in movements. Preventative measures are supported by effective on-farm biosecurity measures and to this end the bTB Programme will benefit from the recently published National Farmed Animal Biosecurity Strategy.

In parallel with disease trends, the cost of the bTB Programme has escalated considerably in recent years. With the Programme costing close to €100 million in 2020, overall direct spending will be €1 billion in the period to 2030 unless significant reductions in disease can be achieved. Spending at this level represents significant commitment by farmers and the Irish taxpayer. This commitment cannot be taken for granted and highlights the urgency with which policies must be implemented that result in reduced disease transmission.

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BTB Stakeholder Forum discussions

Since its establishment in 2018, the bTB Stakeholder Forum has considered options for strengthening the bTB Programme. Policy analysis papers informed these discussions which resulted in a series of recommendations which have been central in informing the development of this Strategy.

In developing proposals, the Forum's objective was to deliver continued and sustained reductions in bTB levels over the period 2020-2030, driving downwards towards eradication.

The elements of the new bTB Strategy are:

1 Working in partnership

As the bTB Programme is primarily delivering a benefit to farmers and stakeholders in the supply chain who trade with international markets, it is critical their voices are a key influence in the bTB Programme. This will be facilitated through the ongoing work of the bTB Stakeholder Forum

The initial task of the Forum was to bring forward proposals to inform the development of this Strategy. While that task was far from straightforward, guiding implementation of the Strategy over the coming years is arguably more challenging. In meeting this challenge, the Forum will be supported by three working groups, a Scientific Working Group, a Financial Working Group and an Implementation Working Group.

2 Reducing cattle-to-cattle spread

A strengthened approach to cattle-to-cattle spread will be facilitated by a number of new targeted risk-based policies which specifically address:

- Risk of recurrence
- Herds experiencing a restriction significantly in excess of the average
- Inconclusive animals
- Biosecurity

3 Tackling disease transmission at the wildlife/cattle interface

- Badgers
- Deer
- Biosecurity

4 Local area action plans

- High Impact bTB plans
- Regional Veterinary Office (RVO) stakeholder meetings

5 Improving communications about bTB

- Clearer letters and streamlined breakdown reactor packs
- More effective biosecurity advice
- Information on risk reduction
- Regular RVO meetings

6 Legislative changes at EU level from April 2021

- Pre or post movement testing required
- Changes to requirements for buying into restricted herds

7 Financial

- Consideration of independent review of the On Farm Market Valuation Scheme
- Developing a sustainable funding model for the Programme informed by the independent Cost Benefit Analysis
- Assessing the financial supports available to farmers who experience a bTB restriction
- A newly established Financial Working Group will undertake this work and report to the bTB Stakeholder Forum

8 Improving programme effectiveness

- Regular monitoring and evaluation of policies
- Strategic research and development informed by the Scientific Working Group
- Respond to changes in risk or in disease patterns
- Regular strategic reviews

The strategy is underpinned by the principle of supporting and empowering farmers.

Introduction

BTB causes illness, production loss and death in cattle, and can also infect humans. While human infection was a significant issue in the 1950s and 1960s, cases in Ireland are now extremely rare. The objective of the bTB eradication programme now is to protect herds from infection, clear infection out of diseased herds, and secure our access to European and world trade markets, thereby protecting farm incomes. Under European Trade Law, where a Member State is not free of bTB, an effective eradication programme is compulsory and is a prerequisite for bovine animals and products trade within the EU. Separately, Office International des Epizooties (OIE) rules also require bTB testing to facilitate the international movement of animals and animal products. Increasingly, trade partners outside the EU are now requiring additional assurances related to bTB controls in respect of both animals and especially products, a situation which is likely to increase as Ireland seeks to gain access to new markets for bovine animals and products.

This roadmap sets out a renewed bTB eradication strategy which will build on the progress made to date and drive disease levels down over a 10 year period towards the target of eradication. It is focussed on measures which will further reduce transmission of bTB. It is a strategy which sets out the direction of travel and how the destination will be reached; it is not an operational document and does not contain detailed descriptions of how policies will be implemented. The strategy is underpinned by the principle of supporting and empowering farmers to reduce the bTB risk to their cattle by making informed choices to protect their herd and their neighbour's herds as well as maintaining overall national health levels. Equally, there is a particular focus on assisting herdowners whose herds are affected with bTB and to clear their herds of infection. The principle of addressing the risk posed to cattle by wildlife is enacted by reducing the susceptible population of badgers through a measured and epidemiologically backed programme of culling and vaccination, through research on bTB in deer and enabling local coordination of deer culling and through educating farmers on actions they can take to protect their cattle.

Stakeholders have recognised that further preventative measures are required if the ambition of reducing disease level and working towards the target of eradication is to be achieved. Steadily reducing the risk of disease transmission is the best way in which support can be provided to all Irish farmers – those whose herds are impacted by bTB and those whose herds are clear and who wish to remain free of the disease. The recommendations made in the interim report of the bTB Stakeholder Forum have informed the development of this strategy, and stakeholder involvement and greater leadership will continue to be critical to successfully eradicating bTB.

The risks, constraints and disease transmission issues which need to be addressed have been analysed and discussed within the bTB Stakeholder Forum, which made a series of recommendations to the Minister in the Interim Report. These recommendations inform and guide the direction of this renewed bTB strategy and the vision for the next 10 years. Within this strategic framework, policies will evolve and develop based on disease levels, experience, input from stakeholders within the Forum, technical developments and scientific research.

Stakeholders have recognised that further preventative measures are required.

The challenges

The bTB Programme is vital to enabling our cattle, meat and milk to access foreign markets, both inside and outside the European Union (EU).

Eradicating bTB from Ireland is a task which is made more complex by the presence of various constraints and challenges. These problems can interact and amplify each other; interventions to address them thus also need to be coordinated and designed with a holistic view of the overall objective in mind. The challenges associated with the eradication of bTB from Ireland are complex: the eradication effort has spanned multiple generations; there are various transmission channels; eradication tools are very good but not perfect; and interventions are part of an ongoing process which will continue to require further actions.

These challenges were set out and characterised in a set of consultation papers circulated to bTB Stakeholder Forum members in advance of its first meeting . Submissions from stakeholders were invited in response to these papers which were discussed and addressed through the Forum process. The key themes include:

Diagnostic Test Limitations

The tests used to detect bTB in cattle are very well characterised and reliable, but have limitations which must be taken into account if disease levels are to be driven down towards eradication. The sensitivity of a test is a measure of its ability to detect infected animals – the higher the sensitivity, the more likely it is that the test will detect an infected animal. Test specificity, in contrast, is a measure of how likely it is that a non-infected animal will correctly test negative.

The sensitivity of the single intradermal comparative tuberculin test (SICTT), commonly referred to as the "skin test", for detecting infected cattle is estimated as being, on average, around 80% but this can vary. In cattle with tuberculous lesions in Irish conditions, its sensitivity was estimated by Costello et al (1997) at 90%, while more recently Clegg et al (2011) used a different methodology to estimate its sensitivity in infected cattle (not just cattle with tuberculous lesions) at 52-60%. A meta-analysis by de la Rua-Domenech et al (2006) using data from several countries estimated the SICTT sensitivity at 80%, while a recent meta-analysis by Nunez-Garcia (2018) estimated sensitivity at 78% for standard interpretation and 84% for severe interpretation. The clear message is that while most infected cattle will be detected by the test, not all will, and this is the reason why the test is interpreted at a herd level; one should not assume that simply by removing the reactors, no infected cattle remain in the herd.

The reasons why infected cattle may test falsely negative include anergy (the bTB infection has damaged their immune system so that they do not respond to the test); early infection (the tests rely on an immune reaction which can take weeks to develop); immune suppression due to other disease; difficulties in performing the test; and other issues.

Ancillary tests are also used; the gamma interferon (GIF) blood test has higher sensitivity (estimated at around 90%) and detects infection at an earlier stage, but lower specificity (estimated at around 97%) than the SICTT test. Enzyme-linked immunosorbent assay (ELISA) tests to detect antibodies to bTB infection are also used when necessary in severe or chronic breakdowns; since cattle usually only produce antibodies later in the infection course, the ELISA test is less useful in the early stages of a breakdown than the SICTT or GIF test.

Test specificity is an important factor in determining whether a test is suitable for use in a mass screening programme, or whether it is more suited to use in a population at higher risk of infection. Specificity is a measure of how likely it is that a non-infected animal will correctly test negative. The

1 TB Forum Consultation Papers, available at gov.ie - TB Forum (www.gov.ie)

The Challenges

Vaccination is a long term, sustainable option for reducing the risk posed to cattle by badgers without eradicating a native Irish mammal.

specificity of the SICTT (i.e. the skin test) is estimated at 99.98%; on average, one uninfected animal per five thousand will have a false positive result with the skin test. This makes it very suitable for a mass screening programme, as it is used in Ireland. In contrast, the specificity of the GIF (i.e. the blood test) is estimated at around 97%; on average, three uninfected animals per hundred would be expected to have a false positive result with the GIF test. This makes it unsuitable for use as a mass screening test; with 6.9 million cattle in Ireland, this would lead to an estimated 207,000 cattle receiving a false positive result in a year.

In the future, as new diagnostic tests for bTB are developed and become validated, it will be important to consider how best to use them in the most appropriate way based on the test characteristics, the validation data and the risk pathways which they can help address.

Risk Posed by Undetected Infection

Cattle herds have a trading status of either officially bTB free or not, which has created a sense among many that the true disease status of a herd can similarly be clearly defined as either infected,(and thus restricted) or not infected (and thus officially bTB free and able to trade). The EU trade rules in relation to bTB, which underpin the Irish programme, allow a herd to resume trading after two clear herd tests. However, this does not reflect the reality that there is in fact a spectrum of probability that a herd is truly free of bTB infection. That spectrum of risk spans from confirmed bTB infection to very unlikely to have bTB infection. Due to the test limitations described above, a herd may still have infected cattle within it after passing two herd tests and regaining its trading status.

There are numerous risk factors which influence where a herd is on this risk spectrum, which have been well characterised in many scientific research studies in Ireland and elsewhere. The length of time for which a herd has been bTB-free is a key factor; if it is many years since a herd has had a breakdown, then (all other things being equal) it is far less likely to have undetected infection than a similar herd which has more recently had a bTB breakdown. The key feature of this persistence of risk is the presence of residually infected cattle which test false-negative. The length of time since the last bTB herd test also a factor; notwithstanding the risk posed by anergic cattle which test false-negative, one can have more confidence in the disease-free status of a herd which has recently passed a herd test than a similar herd which last had a test almost a year ago.

BTB Transmission at the Cattle/Wildlife Interface

Scientific research has confirmed that in Ireland, badgers can act as hosts of bTB and pass infection on to cattle. This acted as a significant constraint to the eradication of bTB in Ireland; in order to reduce disease levels in cattle, it was clear that this issue needed to be addressed.

From the early 2000s, DAFM commenced a programme of removing badgers under licence issued by the National Parks and Wildlife Service (NPWS) under the Wildlife Act where a serious breakdown had occurred in cattle which was epidemiologically linked to badgers. Due to Ireland's commitments under the Berne Convention on Wildlife to avoid the eradication of this native wildlife species, the total area under which this programme operated could not exceed 30% of the agricultural land in Ireland.

Vaccination of badgers by injection with Bacillus Calmette-Guerin (BCG) (a vaccine against tuberculosis used widely in humans since the 1920s) was trialled in several areas across Ireland and this scientific research, involving University College Dublin (UCD) and DAFM, found that vaccination

The Challenges

Farmer assistance in identifying badger setts is particularly important.

was no less effective than culling. Vaccination is a long term, sustainable option for reducing the risk posed to cattle by badgers without eradicating a native Irish mammal.

Deer can be infected with bTB and infected deer can pass the disease back to cattle. Scientific research carried out by UCD and DAFM has confirmed that in Wicklow, the same strains of bTB are circulating in cattle, badgers and deer and transmission between the three species is likely. This is thought to be driven partially by the high deer density in Wicklow; research in other countries has indicated that a key factor in deer/cattle transmission of bTB is deer density which can drive congregation of deer in places where they come into contact with cattle. Outside Wicklow, there is currently no evidence that deer are a significant source of bTB infection in cattle; while deer infected with bTB are occasionally found, they are far less common than in Wicklow. It is possible that local problems with deer and bTB may arise, based on local ecology and the interactions between cattle and deer.

Constraints to Policy Options

A number of constraints apply to the consideration of additional policy measures. Any bTB eradication policies in Ireland must comply with the provisions of EU animal health law, historically Council Directive 64/432/EEC and from April 2021 Regulation (EU) 429/2016 (commonly referred to as the Animal Health Law) and the delegated act which applies to eradication programmes including bTB, and any other regulations which may apply. These provisions are the minimum which must be applied in order to ensure access to the EU internal market for Irish cattle. This does not prevent a member state applying additional measures which go beyond this minimum. The requirements for Irish beef and milk to access foreign markets may include specific additional requirements related to bTB based on the conditions which the importing country has agreed with Ireland. Additional policy measures must take this into account and allow for further requirements as Irish livestock and livestock products achieve access to new markets. Additional measures being considered must have a plausible mechanism by which they would lead to a reduction in bTB prevalence. This does not mean that a pre-existing evidence base is needed demonstrating that the policy would be effective, since most bTB research evaluates existing policies rather than alternative policies. However, it is reasonable that any policy being proposed should be underpinned by knowledge of bTB epidemiology and a logical modality of action.

Risk Pathways

The pathways for bTB spread in Ireland are addressed by current disease control policies; nevertheless, it is clear that sufficient risk pathways remain to enable disease spread and it is important that additional policy measures are put in place to address these. Key elements to address these risk pathways include reducing the spread of bTB to herds which are currently free; eliminating bTB from infected areas; and empowering herdowners to manage and reduce their own risk of a bTB breakdown in a way which is consistent with their circumstances.

BTB Stakeholder Forum discussions on options to address risks and further reduce disease transmission

The Forum held seven full meetings[2] and five separate bilateral meetings between farming bodies and DAFM during 2018 and 2019, following which an Interim Report[3] was presented to the Minister in July 2019. This report covered the themes of disease policy and working in partnership. Financial issues were not included; instead, the Forum recommended that the Minister commission two independent reviews, one of the on-farm reactor valuation system and the second on the costs and benefits of the bTB eradication programme.

At the request of the Forum, a paper on disease control policy options[4] was written by DAFM veterinary staff and presented to the Forum in March 2019, in order to collate proposals which had been made at the Forum and to summarise options for herd risk categorisation which had been discussed at the Forum in November 2018. This paper describes how:

"Policy options to reduce the transmission of bovine TB and eradicate the disease have been examined repeatedly in previous decades in Ireland. In many cases, the same idea has been proposed multiple times but has not been adopted due to opposition from stakeholders. If TB eradication is to be achieved in Ireland, it will be necessary to consider again whether actions which would reduce the spread of bovine TB should be introduced. The alternative is to continue to reject policies which would reduce bovine TB; this would mean the goal of eradication becoming possible only over a very extended timescale of many decades, if at all.

A technical audit of policies which would reduce TB spread, combined with the level of stakeholder support/opposition, was provided by Downey (1991), showing that many of the options under discussion in the TB Forum have been discussed and considered but ultimately rejected in the past. A TB Farm Advisory Service to "obviate the risk of breakdowns and assisting farmers with clear herds to stay clear" was described in more detail by Downey (1992). Similarly, the idea of the herds being categorised according to their degree of infectivity and the path to derestriction being designed accordingly on a risk basis was described but never implemented.

Sheehy and Christiansen (1991) identified "battle fatigue" as an issue: "Tuberculosis in cattle today is seen by all as the Department's problem. This is an anomalous attitude considering that the main losers and potential gainers from more effective disease control are farmers themselves. Devolving to farmers the responsibility to maintain their herds clear of the disease could fundamentally change attitudes". They also considered the lack of levers to influence behaviour as a key constraint: "Farmers contribute to the cost of the Scheme through levies which are not related to the individual farmers disease control practices or consequent risk...the transformation of the present disease levy would differentiate in favour of good performance [and] could be an important positive influence on the efficiency of operation of whatever scheme is put in place".

2 Minutes of the Forum available here gov.ie - TB Forum (www.gov.ie)
3 bTB Forum Interim Report available here gov.ie - TB Forum (www.gov.ie)
4 Position paper on policy options available here gov.ie - TB Forum (www.gov.ie)

BTB Stakeholder Forum discussions on options to address risks and further reduce disease transmission

The Public Accounts Committee investigated the bovine TB eradication scheme in 1994. Their report was prompted by concerns from the Comptroller and Auditor General in 1989 that "failure to reduce disease levels speedily is primarily due to the fact that in this country the TB scheme has consistently been compromised through the use of soft options which have ignored proven procedures which must be followed if disease is to be reduced". They further concluded that "the scheme has been designed primarily to facilitate cattle sellers at the expense of the integrity of the scheme and to the cost of the cattle purchaser", and "that information regarding the disease status of an animal's herd of origin should be available to cattle buyers as a matter of course"."

The proposals which had been made at the Forum and were collated in this paper included:

- Provision of biosecurity advice to farmers
- Integrated breakdown management and communication
- Blackspot action plans
- Reducing the risk posed by badgers
- Reducing the risk posed by deer
- Increased focus on chronic TB herds
- Risk based categorisation of herds
- Enabling farmers to understand their own TB risk
- Voluntary informed purchasing
- Mandatory informed purchasing
- Risk based trading from 2021
- Supporting risk lowering behaviours through incentives

Each of these proposals received considerable discussion; however, several were rejected by the Forum. The rejected proposals included voluntary informed purchasing, mandatory informed purchasing, risk-based trading and supporting risk lowering behaviours through incentives.

The bTB Stakeholder Forum Interim Report on disease policy and working in partnership

In July 2019, the Forum chairman, Mr Michael Cronin, presented the Interim Report to the Minister for Agriculture, Food and the Marine. Mr Cronin reported in his summary that *"Following detailed discussions informed by available scientific evidence and stakeholder perspectives, the Forum reached agreement on recommending a selection of policy options which should have a significant impact on the reduction of bTB in the years ahead. The industry needs to continue to work towards bringing in additional policy measures that will eradicate TB."*

The report made a series of recommendations which are summarised below:

1. **Provision of biosecurity advice to farmers**
2. **Integrated breakdown management and communication**
3. **Blackspot action plans**
4. **Reducing the risk posed by badgers**
5. **Reducing the risk posed by deer**
6. **Increased focus on herds which require enhanced support due to their disease history**
7. **Risk based categorisation of herds**
8. **Enabling farmers to better understand their own bTB risk**
9. **Incentivised removal of inconclusives**
10. **Mandating the bTB Stakeholder Forum to monitor implementation of the strategy**
11. **Supporting regional eradication efforts**
12. **Blackspot response**

Strategic actions to reduce bTB levels towards eradication

The following section sets out the strategy by which all stakeholders, can move forward together, to reduce bTB levels in Ireland and drive towards eradication. This strategy is not fixed; rather it is designed to continually evolve and adapt as necessary to changing risks and circumstances. The bTB Stakeholder Forum will continue, supported by three new working groups on science, finance and implementation. This will enable ongoing discussions on how the overall strategy and individual policies can be improved based on disease levels, experience, input from stakeholders, technical developments, financial considerations and scientific research.

Working in Partnership

This relates to **Forum recommendation 10**.

EU audits and research related to the Irish bTB Programme have highlighted a lack of stakeholder involvement as a key impediment in achieving eradication. However, it is the ambition of the new strategy to ensure that the plan to eradicate bTB is driven by a cross sector approach focussed on delivering a successful outcome for farmers and the industry. Examples from other jurisdictions (e.g. Australia and New Zealand, and the Netherlands in the early 20th Century) demonstrate the valuable contribution stakeholders have made to the eradication efforts through formal collaborative structures. The importance of shared ownership of animal health programmes has been recognised in the National Farmed Animal Health Strategy (DAFM, 2016) and outlines that the principle 'working in partnership' should be a central tenet in any animal health initiative.

Close collaboration between the State and industry has demonstrated an ability to effectively review policy implementation and develop proportionate policy responses to mitigate scientifically identified risks. Over the course of the bTB Stakeholder Forum process, the bTB Programme in Ireland has benefitted from the insights provided through enhanced stakeholder engagement. Under an independent chairmanship, the Forum considered the many challenges Ireland faces if eradication is to be attained and brought forward a number of proposals to inform this strategy. It brought together representatives from farm organisations, agri-business, Coillte, the Irish Wildlife Trust, academia, veterinary practitioners, DAFM and individual farmers.

The Forum will continue to meet two to three times annually in plenary session, and as often as necessary to discuss specific issues. In addition, three working groups will be established to advise the Forum on technical science issues, finance and implementation, with terms of reference, membership and chairs to be decided by the Minister. The chairman of the Forum will submit an annual report to the Minister.

The **Scientific Working Group** will be composed of qualified personnel with a specific expertise on bTB (e.g. experts with a record of scientific publication) or who are currently employed in scientific research organisations working on bTB, and the group will have four overall aspects to its role:

(a) Providing scientific opinions to the Forum in response to questions put to the group by the Forum on matters of science and research.
(b) Updating the Forum on scientific developments of relevance to the bTB eradication programme.

Strategic actions to reduce bTB levels towards eradication

(c) Providing opinions to the Forum about themes for further scientific research which can guide and inform DAFM research funding calls for bTB issues.
(d) Independent scientific evaluation of the effectiveness of the programme, including an assessment of disease transmission risks and the extent to which those risks are mitigated by the programme.

The Scientific Working Group will report to the Forum.

The Finance Working Group will be composed of officials from DAFM and farming organisation representatives and will be tasked with:

(a) Informed by the independent Cost Benefit Analysis, developing a sustainable funding model for the ongoing financial requirements of the bTB Programme in line with the National Farmed Animal Health Strategy principles.
(b) In line with recommendations from the independent review of the On-Farm Market Valuation Scheme, proposing initiatives consistent with providing fair valuations of reactor animals in a timely and cost-effective manner

(c) Examining the adequacy of financial supports available under the bTB Programme and ensuring they are targeted effectively.
(d) Aligning eligibility for financial supports with risk-mitigation measures.

The Finance Working Group will report to the Forum

The Implementation Working Group will be composed of officials from DAFM, farming organisation representatives and other relevant stakeholders. This group will be extensively consulted and involved in the implementation of the strategic policy options under discussion. The role of the group will be to consider the details and modalities for the policies set out in the bTB strategy. Each meeting would be attended by DAFM, Farm Organisations and representatives of the groups directly involved in the implementation of the policy under discussion.

The Implementation Working Group will report to the Forum.

Strategic actions to reduce bTB levels towards eradication

Based on the Forum recommendations and informed by Forum discussions, a number of strategic actions will be put in place. These are set out in the following text; for ease of reference, the actions are linked back to the relevant bTB Stakeholder Forum Interim Report recommendations. These strategic actions describe the objectives to be achieved and summarise the ways in which this may be done. For each one, detailed policies will be developed to implement them. As it is not practical to provide a high level of detail on the precise modalities of implementation in a strategy document, these detailed policies will be discussed at the Forum, following consultation with the Implementation Working Group.

Preventing spread from herds with a high risk of recurrence

This relates to **Forum Recommendation 6.**

Herds which have a history of several breakdowns, or of a large extended breakdown, are at a higher risk of recurrence of another bTB outbreak after they go clear and they also present a higher risk to neighbouring herds. Cattle sold from these herds also present a greater risk of transmitting disease to other herds. DAFM will provide enhanced support to these herds so that they reduce their risk of recurrence and stay clear, while also reducing the risk of transmission of undetected infection onwards to other herds. This will include:

(a) A tailored bTB risk management plan for each of these herds, designed by a veterinarian familiar with the herd and the local context. This risk management plan will be designed for the specific circumstances of each breakdown farm, taking into account the type of farm enterprise, local factors, current farm practices and practical ways to address risk pathways.

(b) Cattle moving out of these herds may be required to have a pre-movement test in the 30 days preceding the movement, in order to address the risk of undetected infection spreading to the recipient herd.

The definition of these herds will be based on epidemiological research recently completed which examined the risk factors associated with recurrence of bTB. The risk factors identified mirror those identified as risks in other bTB studies. These include the length of the original breakdown, having had previous breakdowns, herd size and herd type. It is likely that the number of herds coming under this definition would be of the order of 500.

The actions taken in respect of these higher risk herds will address those risks. In addition to the measures mentioned above other measures could include resurveying of the surrounding area for badger activity, post clearance testing regimes and testing regimes to maximise test sensitivity and minimise the effects of desensitisation. It is envisaged that novel applications of the gamma interferon test will contribute considerably. Biosecurity training will be considered in line with the National Farmed Animal Biosecurity Strategy[5]. This policy will complement the extended breakdown herds policy below. The Implementation Working Group will be consulted on these measures and decisions on implementation will be informed by these consultations.

Cattle which test inconclusive to the bTB skin test are at a higher risk of being detected as infected in the future.

5 https://www.gov.ie/en/publication/d8cbf-animal-health-welfare-biosecurity/

Strategic actions to reduce bTB levels towards eradication

Enhanced actions to clear infection from extended breakdown herds

This relates to **Forum Recommendation 6.**

Where herds are experiencing an extended outbreak of bTB with evidence of continuing transmission of infection despite the removal of reactors, a tailored programme of enhanced disease control actions will be developed by DAFM officials in consultation with the herdowner in order to clear infection from the herd and reduce its future risk. These will be tailored to the risks present in the herd and will be implemented in addition to the statutory actions required for all breakdowns.

The Implementation Working Group will be consulted on this policy and decisions on implementation will be informed by those consultations.

Options may include the following:

(a) A detailed investigation to identify and remove all sources of infection;
(b) The use of additional targeted tests to identify infected animals; and
(c) The progressive removal of groups of cattle deemed to be higher risk; for example, cattle which have a bovine bias on the skin test, cohorts of infected cattle, cattle in an older age cohort which have had multiple bTB exposures.

The Veterinary Inspector with responsibility for the case will engage with the herdowner to identify and characterise risks in the farm management system; identify the process through which cohorts of animals are exposed to these risks and develop a plan to mitigate each risk. Currently 2480 herds have a breakdown less than 200 days, 86 herds have a breakdown between 200 and 299 days and 313 herds have a breakdown of 300 days or more.

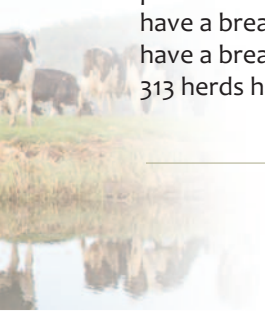
A pilot scheme to enable the herdowner to obtain biosecurity and risk reduction advice from a Private Veterinary Practitioner (PVP) will be supported through the Animal Health Ireland (AHI) Targeted Advisory Service Animal Health (TASAH) programme; this pilot started in late 2020 and is expected to be expanded in 2021.

Addressing the risk from inconclusive animals

This relates to **Forum Recommendation 9.**

Cattle which test inconclusive to the bTB skin test are at a higher risk of being detected as infected in the future in comparison to animals which have never had an inconclusive result; they therefore pose a greater risk of spreading disease onwards to other cattle within their herd. In some cases these inconclusives are retained for years, only to then cause a severe breakdown. The Programme will address the risk by:

(a) Communicating the risk posed by these cattle in otherwise clear herds to farmers, so that they can make an informed decision about whether they wish to retain them in their herd.
(b) Using the GIF blood test on inconclusives in otherwise clear herds in order to better detect truly infected cattle among the population of inconclusives, and thus reducing the risk of undetected spread within the herd. All inconclusives in otherwise clear herds will be blood tested shortly after the skin test at which they are first identified, and (if they pass that blood test and the inconclusive skin re-test) again at regular intervals while they are retained in the herd.
(c) In a bTB breakdown these historical inconclusive animals will be removed as dangerous in-contacts. This is because the likelihood of them being truly infected with bTB is much higher in a herd which has bTB, compared to inconclusives in a herd which is not known to have bTB.



Strategic actions to reduce bTB levels towards eradication

(d) Additionally, the risk posed by animals which are deemed severe inconclusives will be researched and evaluated through an epidemiological analysis. The results will be shared with the Implementation Working Group and options for addressing this risk will be discussed there.

Action plans for areas with increased localised bTB levels

This relates to **Forum Recommendations 3 and 12.**

Where higher levels of bTB are occurring in certain areas, DAFM will put in place action plans to address the risks and reduce disease spread. DAFM will consult with the Implementation Working Group and decisions on implementing these action plans will be informed by these consultations.

These plans will include actions such as:
(a) Supporting research on methodologies to define and identify such areas in a consistent way;
(b) Investigating the local factors driving the increase in disease and the actions needed to mitigate these drivers;
(c) Providing advice and information to herdowners in the area; and
(d) Additional testing of at-risk and contiguous herds in the area.
(e) Hold stakeholder meetings in person or virtually.

Aligning with changes in the EU Animal Health Law bTB regulations, which come into effect in 2021

Ireland's current bTB eradication programme and associated national regulations operate under the legislative basis of Council Directive 64/432 (EEC), which sets out the basic requirements for bTB eradication and access to trade within the EU. This regulation will be replaced by the new EU Animal Health Law Regulation (EU) 429/2016 and associated delegated act covering eradication programmes including bTB from April 2021. These set out a revised set of requirements for bTB eradication within the EU, compliance with which is required to trade within the EU. The new Irish bTB eradication programme will be aligned with these new requirements, assuring continued access to EU and global trade for Irish cattle and bovine products.

The most significant change in the regulations is the requirement for pre- or post-movement testing of cattle unless both the animal and the herd of origin were bTB tested in the preceding six months. This applies to countries or regions with significant bTB levels, including Ireland. A phased implementation approach will be taken to this requirement. The initial focus will be on animals moving from herds that have had a breakdown in recent years. DAFM will consult the Implementation Working Group on the implementation of this requirement. Initially animals from herds which have had a breakdown within recent years will require either a pre or post movement test unless both the animals moving and the herd have had a test in the previous 6 months.

The rules on the inward movement of cattle into herds which have bTB will also change. Currently, herds restricted due to bTB must have undergone one clear herd test before they can move cattle in (although provisions exist for emergency moves due to animal welfare issues, and for controlled finishing units). Under the new Animal Health Law, movements into herds with bTB will be able to take place subject to restrictions which address the risks of disease spread to the newly introduced cattle. In practice, this means that inward movements may take place prior to the herd completing a full clear herd test, subject to appropriate risk mitigation measures.

Strategic actions to reduce bTB levels towards eradication

These measures will be worked out and discussed with the Implementation Working Group, and will be sector/enterprise-type specific so that they are appropriate to the risk. This is likely to be of benefit to business continuity and farm management, while also mitigating bTB risk.

Reducing the risk posed by badgers

This relates to **Forum Recommendation 4.**

Badgers are a native Irish species which are protected under the Berne Convention on wildlife. Badgers which become infected with bTB can pass the disease on to cattle. The Programme reduces this risk by vaccinating badgers to prevent them becoming infected, and by culling badgers in areas where there are significant cattle bTB outbreaks with epidemiological links to badger transmission.

The Programme will continue to address this risk by:

(a) Continuing with the wildlife programme through a measured and epidemiologically backed programme of culling and vaccination of badgers, supported by additional resources, to prevent them from getting infected with bTB, and removing badgers where necessary, and working with farmers and others to identify and map setts;
(b) Providing specific advice to farmers on the actions they can take to reduce the risk from badgers; and
(C) Supporting ongoing research on the risks at the cattle/wildlife interface and how these can be effectively detected, understood and mitigated.

Reducing the risk posed by deer

This relates to **Forum Recommendation 5**.

The Programme will address concerns that deer play a role in spreading bTB to cattle by:

(a) Improved communication by DAFM to farmers on the ways they can take action themselves to address this risk.
(b) Landowners culling deer, or have hunters do it for them, during the open season, subject to the NPWS regulations. During the closed season, they may apply for a section 42 licence to cull deer where there is evidence of crop damage, such as grass poaching;
(c) DAFM assisting in facilitating groups of local farmers to coordinate culling actions to reduce deer density;
(d) Supporting research into the ecological and epidemiological factors affecting deer/cattle bTB transmission and the ways in which these may be mitigated.

It is noted that bTB Forum stakeholders recommended that the Irish Deer Management Forum should be re-established to provide a way for stakeholders to discuss an overarching, cross-sectoral approach to issues relating to deer. While bTB in deer is one of those issues, there are a range of other concerns and a variety of stakeholder perspectives, which can best be discussed and considered collectively rather than in isolation.

Communications

The bTB programme in Ireland can benefit from an enhanced communication strategy which can help to address the same common misunderstandings that arise repeatedly over decades. The complexity of the scheme, the limitations of the diagnostic tests, the difficulties of conveying risk, and the intricacy of the science have all contributed to the challenges faced in communicating clearly to stakeholders.

A comprehensive communications strategy will be developed as part of this roadmap to educate stakeholders of areas of common misunderstandings and to keep people abreast on an ongoing basis of all the measures being undertaken at local and national level to eradicate bTB.

Strategic actions to reduce bTB levels towards eradication

Tailored, simplified communications on the bTB eradication programme between DAFM and herdowners

This relates to **Forum Recommendations 1 and 8.**

DAFM will ensure that letters sent to farmers are clearer and simpler. The letters will include information on the herd which helps farmers to understand their risk, including a simplified risk categorisation for the herd and a summary of their bTB history and other relevant information to help with farm management decision making.

DAFM welcomes any suggestions to improve the current herd risk categorisation format which can then be discussed further at the bTB Stakeholder Forum, following consultation with the Implementation Working Group. When it is proposed to send further advisory communications to farmers on how to reduce the risk of bTB in their herd, the contents of such letters will be discussed with the TB Forum in advance and any decisions on implementation will be informed by these discussions.

Clearer messaging of the risks of bTB transmission and how to address those risks

This relates to **Forum Recommendations 1 and 8**.

DAFM will provide clear information on the ways in which bTB can spread and how these transmission routes can be blocked or mitigated. This will include biosecurity advice on buying in cattle, how the bTB tests work, how to reduce the risk of residual infection and how to reduce the risk from wildlife. It will also include advising farmers on the benefits of using the Irish Cattle Breeding Federation (ICBF) bTB genetic resistance scores for Artificial Insemination (AI) bulls and how to check the bTB genetic resistance of stock bulls using the genotyping database

This advice should also be tailored to different farming enterprise types and sectors, so that it can be as relevant and useful as possible to the recipient. Dissemination of the advices should be supported by stakeholders through their engagement with the farming public.

Biosecurity advice delivered to farmers, with a focus on practical, clear and effective actions to reduce risk and incentivise risk-lowering behaviour

This relates to **Forum Recommendations 1 and 8.**

Biosecurity is a critically important part of stopping bTB spread, but too often it is neglected or overlooked. Within the framework of the National Farmed Animal Biosecurity Strategy, DAFM will provide information on how to improve biosecurity on farm, including how to stop bTB entering a herd and also how to clean bTB out of a contaminated area after a breakdown has occurred.

DAFM will undertake more monitoring and inspections of cleansing and disinfection after breakdowns and put in place systems to encourage affected farmers to do more to reduce their own risk of a repeat breakdown through effective biosecurity. By taking effective action to clean and disinfect contaminated areas after infected cattle have been removed, farmers can reduce the risk of their other cattle becoming infected, thus reducing the likely length of a breakdown and reducing the likelihood of a recurrent breakdown after the herd goes clear.

Policy tools will encourage herdowners to make management choices appropriate to their circumstances which reduce their risk of a bTB breakdown, consistent with the National Farmed Animal Biosecurity Strategy.

The expertise of PVPs can be a valued and useful source of advice and information for farmers concerned about the risk of bTB to their herd.

Strategic actions to reduce bTB levels towards eradication

Additional training will be offered by DAFM to PVPs wishing to provide advice to their clients in this respect. The newly launched bTB TASAH visits, developed by DAFM in partnership with AHI and administered by AHI, will provide a vehicle for farmers to receive practical and tailored advice from PVPs on reducing their bTB risk.

DAFM will continue to collaborate with Teagasc and ICBF on the provision of advice and tools to farmers to enable them to reduce their bTB risk; for example, through cooperation with Teagasc advisors and through encouraging farmers to use bulls rated by ICBF as having higher genetic resistance to bTB.

Standardised RVO bTB annual meetings

This relates to **Forum Recommendations 2 and 11.**

Many DAFM RVOs host annual meetings to update their local stakeholders on bTB developments at both a national and regional level. These meetings provide an important forum for farmers, farm organisations and veterinary practitioners to discuss disease dynamics with regional DAFM officials and understand how the risk of disease transmission can be mitigated.

Annual bTB stakeholder meetings will be held by each RVO. These meetings will provide updates on national and local disease developments and advise on how to reduce the risk of bTB.

Improved DAFM bTB breakdown communication

This relates to **Forum Recommendations 1, 2 and 8.**

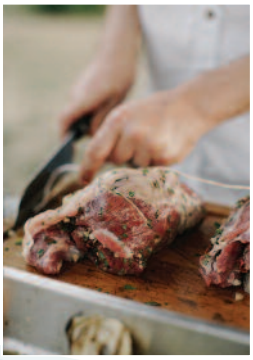
When a bTB breakdown occurs, a farmer relies primarily on DAFM officials to inform him/her of the various issues associated with the restriction. This includes the independent valuation of animals, isolation of reactors, additional bovine testing, cleansing and disinfection requirements etc. This can involve multiple interactions with various DAFM officials. All stakeholders recognise the elevated stress experienced by farmers in these circumstances and advocate improving the experience of herdowner interactions with DAFM regarding breakdown management.

Following a proposal from the bTB Stakeholder Forum, DAFM will work towards implementing a system providing a single point of contact arrangement for herdowners experiencing a breakdown, based on the use of new customer relationship management (CRM) software in RVOs. Each RVO has experts in the relevant fields of veterinary, compensation, valuation and wildlife. The new CRM system will allow for queries to be directed immediately to the relevant expert in each area and allow for faster response times, achieving the single point of contact objective but in an operationally effective way. DAFM will brief the Forum on the current and new CRM system and provide the Forum with updates on regular basis regarding level of calls received in RVOs and turn around times for call backs. DAFM will discuss further with the Forum any suggestions for improvement in this area.

These actions represent some steps to enhance the cooperation between all stakeholders in striving towards bTB eradication. Everyday cooperation between stakeholders all over the country is critical to advancing towards eradication. This may include facilitating testing, helping the veterinary inspectorate understand how the disease may have spread and informing DAFM's Wildlife team of the location of any badger setts.

Biosecurity is a critically important part of stopping bTB spread.

Financial aspects of the bTB eradication programme



The financial aspects of the bTB programme will be discussed and considered by the Finance Working Group.

Annual financing of the bTB Programme represents a significant investment by farmers, the State and the EU. This investment is a pre-requisite for accessing the internal market and market access for several third countries. Access to these markets is fundamental in supporting sustainable income levels of farm families throughout Ireland which as a whole export 90% of Irish bovine produce. Funds are provided to the bTB Programme on the basis policies will be developed and implemented that are consistent with the objective of eradication.

The level of investment in the bTB eradication Programme is significant and has been increasing markedly in recent years even during the period when disease levels were broadly stable, with net direct costs to the sector of the programme estimated to exceed €97m in 2020. It is of concern that direct costs of the Programme have increased from €82 million to €97 million (+18%) between 2015 and 2020. By 2030, if current expenditure rates continue that would equate to a direct investment by the sector of approximately €1 billion for the Programme.

For 2020, direct funding from the State will be approximately €57 million, funding from farmers, will be €35 million as well as farm labour, and funding from the EU will equate to just over €4 million.

A high-level breakdown of costs associated with the Programme is:

- BTB testing - €35 million
- DAFM staff costs and Programme supplies - €34 million
- Financial supports to farmers - €21 million
- Wildlife Programme - €4.6 million[6]
- Research - €2.2 million

Ireland benefits from EU support in implementing the bTB Programme. Part of the criteria associated with qualifying for this support is a requirement that progress is being made towards eradication. This position reflects the fact that EU taxpayers are providing financial support to assist relevant stakeholders for the set objective of disease eradication, primarily to the benefit of those stakeholders. If policies adopted by those stakeholders are not meeting stated targets towards eradication, financial supports are reduced or ceased. The €57 million contribution of Irish taxpayers, through the Exchequer is also made in the expectation that policies are implemented consistent with the eradication objective.

The maximum level of co-funding available from the EU for Ireland's bTB Programme has been steadily decreasing in recent years, largely as a result of other animal disease threats becoming more prominent at a European level and pressure on the overall EU agriculture budget. Having peaked at €12.7 million in 2014, funding has reduced gradually since then. Further significant funding cuts appear likely meaning the shortfall will have to be met by the remaining stakeholders.

6 A significant portion of the €34 million associated with DAFM staff and programme supplies is related to the Wildlife Programme

Financial aspects of the bTB eradication programme

In August 2020, the Commission imposed a 10% reduction in respect of the €8.2 million co-funding available for the 2019 Programme as a result of three consecutive years of increasing bTB herd incidence. This follows a separate €1 million funding reduction imposed by the Commission in 2019 in respect of the 2018 Programme. These deductions are in line with the standard protocol associated with the co-funding regime and are consistent with the fact that existing policies have failed to deliver on Ireland's commitment to continue on a path towards eradication since 2016. Therefore, Ireland received €8.8 million in respect of the 2018 Programme and €7.4 million in respect of the 2019 Programme reflecting cumulative reductions of €1.8 million in two years.

In line with the stated Commission policy on co-funding, €4.3 million is expected to be received from the EU for the 2020 Programme. This reflects a further 20% co-funding reduction in respect of the available €5.4 million funding for 2020. If Ireland's TB Programme qualifies for co-funding for subsequent years, the relevant funding conditions detail incrementally increasing reductions in supports where progress towards eradication is not achieved.

Furthermore, Ireland's bTB Programme for 2020 was only approved by the Commission in early January 2020 following extensive consultation with Department officials in respect of the policies that will be implemented in line with this strategy. However, the lower than anticipated co-funding ceiling of €5.4 million committed to by the Commission for the 2020 Programme reflects their view that the existing Programme requires strengthened measures. Ireland will only receive full approval for co-funding in respect of future years' Programmes once implementation of this strategy has been demonstrated and clear progress towards eradication can be illustrated.

As set out in the Working in Partnership section, the Finance Working Group will be composed of officials from DAFM and farming representatives and will be tasked with:

(a) Informed by the independent Cost Benefit Analysis, developing a sustainable funding model for the ongoing financial requirements of the TB Programme in line with the National Farmed Animal Health Strategy principles.
(b) In line with recommendations from the independent review of the On-Farm Market Valuation Scheme, proposing initiatives consistent with providing fair valuations of reactor animals in a timely and cost-effective manner.
(c) Examining the adequacy of financial supports available under the TB Programme and ensuring they are targeted effectively.
(d) Aligning eligibility for financial supports with proactive risk-mitigation measures.

The Finance Working Group will report to the Forum.

Further actions under this strategic roadmap

Continually improving programme effectiveness

The bTB situation in Ireland is dynamic; disease patterns change in response to new controls, changes in trading patterns, farm management trends and risk management behaviour by farmers. A continuously improving bTB eradication programme is the only way to stay effective and adapt to these challenges.

There are also financial reasons to continually improve the effectiveness of the programme. The measures necessary to eradicate bTB represent an important investment in their enterprise by farmers and for the wider public good by the State. However, this investment also represents a significant cost. Therefore, all stakeholders have a responsibility to maximise the return on this investment by ensuring policy tools within the bTB Programme are implemented as effectively as possible.

The new bTB eradication strategies described in this document are in addition the existing controls and the statutory requirements of bTB eradication programmes under EU law. All stakeholders will work to continually improve the effectiveness of all aspects of the programme in reducing disease spread in the following ways:

Systematic monitoring and evaluation

DAFM together with the bTB Stakeholder Forum will monitor the programme on an ongoing basis and carry out regular evaluations of programme effectiveness through the use of metrics and reviews, including independent scientific evaluation of the programme by the Scientific Working Group. These evaluations will feed into continuous programme improvements.

Strategic research and development

DAFM will continue to fund applied research and development into specific knowledge gaps, informed by the advice of the Scientific Working Group on research priorities, with the results of these research projects used to improve and inform programme development. The results of this work will be made publicly available, generally through the route of scientific publication.

Regular strategy updates in response to risk changes

As changes in risk are identified, including any new risks which may emerge, DAFM in consultation with the bTB Stakeholder Forum will update existing strategies in response, seeking to address any gaps.

Scheduled strategy reviews

DAFM, in consultation with the bTB Stakeholder Forum, will carry out in-depth strategy reviews at regular intervals. These reviews will take into consideration disease trends, the epidemiological situation, scientific research, stakeholder engagement, the reports of the Scientific Working Group, and other relevant data. They will evaluate the degree to which progress is matching the long-term target of eradication and will set out options to address any issues identified.

Recommended Reading

There is a substantial body of policy analysis available in relation to the Irish bTB eradication programme; readers who are interested in learning more are directed to the following resources as a starting point:

TB Forum discussion papers:
gov.ie - TB Forum (www.gov.ie)

Can bovine TB be eradicated from the Republic of Ireland? Could this be achieved by 2030? More, S, Irish Veterinary Journal, 2019: https://irishvetjournal.biomedcentral.com/articles/10.1186/s13620-019-0140-x

Understanding and managing bTB risk: Perspectives from Ireland. More S and Good M, Veterinary Microbiology, 2015: https://www.sciencedirect.com/science/article/pii/S0378113515000565?via%3Dihub

Value for Money and Policy Review of bTB Eradication Programme, 2008: Value for Money and Policy Review Bovine Tuberculosis Eradication Programme (1996-2006) (archive-it.org)

Office of the Comptroller and Auditor General, Annual Report Chapter 9, Bovine Tuberculosis and Brucellosis Eradication, 2000: https://www.audit.gov.ie/en/Find-Report/Publications/2001/2000-Annual-Report-Chapter-09-Agriculture-Food-and-Rural-Development.pdf

Public Accounts Committee (1994) Special Report on Bovine Tuberculosis Eradication.

Bovine TB Programme: What are the Realistic Expectations? Downey L, 1991, Eradication of Animal Disease Board, Dublin.

Keeping Animals Safe from Disease – A National Farmed Animal Biosecurity Strategy (2021-2024)
https://www.gov.ie/en/publication/d8cbf-animal-health-welfare-biosecurity/

An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine

www.gov.ie/agriculture