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Food and the Marine

# Bovine TB Stakeholder Forum



# Consultation Papers Informing Bovine TB Stakeholder Forum

	<b>Table of Contents</b>	<b>Page</b>
	<b>Introduction</b>	<b>3</b>
<b>Section</b>	<b>Paper 1 – Working in Partnership</b>	<b>5</b>
1	Context and literature review	<b>5</b>
2	Enhancing the role of industry in Ireland’s bTB Eradication Programme	<b>6</b>
3	References	<b>9</b>
<b>Section</b>	<b>Paper 2 - Additional Policy Measures</b>	<b>10</b>
1	Context and literature review	<b>10</b>
2	bTB diagnosis	<b>12</b>
3	Perspectives from previous reviews	<b>13</b>
4	Constraints to policy options	<b>13</b>
5	Risk pathways	<b>14</b>
6	Frameworks for additional policy measures	<b>16</b>
7	References	<b>18</b>
<b>Section</b>	<b>Paper 3 - Costs and Benefits</b>	<b>20</b>
1	Introduction	<b>20</b>
2	Financing of the bTB Programme	<b>20</b>
3	International experience in the financing of bTB Programmes	<b>21</b>
4	Sustainability	<b>24</b>
5	Conclusions	<b>25</b>
6	Appendix 1: bTB Programme Financing and Expenditure 2017	<b>26</b>
7	References	<b>27</b>

# Introduction

On May 8<sup>th</sup> 2018, Government approved a proposal from the Minister for Agriculture, Food and the Marine, Michael Creed TD to commit to the eradication of Bovine Tuberculosis (bTB) by 2030.

Since 1954, Ireland has culled around 2.5 million bTB reactor animals in our efforts to eradicate bTB. In that time, significant costs have been incurred by farmers, the State and the EU. Trends in expenditure and disease levels have varied over the past 64 years but if the 2017 estimated expenditure levels of €84m are used as a guide, this would equate to total programme expenditure of €5.5bn in today's monetary terms since 1954. If the ambition to eradicate bTB by 2030 is achieved, by this time another €1 billion will have been spent if current trends continue. Achieving eradication by 2030 will mean that real and substantial savings will accrue to the industry and the State after that. This should provide a strong financial incentive to all stakeholders in driving policies that can achieve eradication by 2030.

Similar to the economy as a whole, the health of Ireland's agri-food sector is determined by its ability to trade internationally. Engagement with 3<sup>rd</sup> countries is on-going in advance of Brexit in an effort to diversify trading options for Ireland's agri-food sector. Increasingly, animal health issues are forming part of Ireland's bilateral trade agreements, including requirements specific to bTB which are additional to the controls in place under EU law. An enhanced 2030 Eradication Strategy will provide further assurance to prospective trading partners that Ireland is firmly committed to the quality of its produce and exports.

In recent years, research confirmed that Ireland's badger population was a significant factor influencing bTB prevalence in bovines. This issue is now being actively addressed while respecting the badger's protected status under the Berne Convention. Following this, and other developments in the areas of diagnostics, quality control, identification/traceability, it is considered that all relevant policy tools are available to stakeholders to achieve bTB eradication by 2030.

Part of the Government's enhanced commitment to eradicate bTB by 2030 involves the establishment of a bTB Stakeholder Forum tasked with proposing policies to help achieve eradication within this timeframe. Establishing a Stakeholder Forum is in line with the four main principles outlined in the National Farmed Animal Health Strategy launched by Minister Creed in 2017. The four principles are:

1. We must work together to improve animal health standards.
2. The roles and responsibilities of all stakeholders must be clear.
3. The principle of 'prevention is better than cure' must be consistently applied
4. Finally, animal health programmes will have clear objectives, and will be sustainably and appropriately funded.

Reflecting these principles, the Forum's deliberations are to be informed by three consultation papers which highlight some of the key areas that can assist in achieving eradication. These papers focus on:

1. Working in Partnership;
2. Additional Policy Measures; and
3. Cost and Benefits.

# Paper 1 Working in Partnership

## 1. Context and literature review

Ireland's current bTB Eradication Programme is detailed on the website of the Department of Agriculture, Food and the Marine

(<https://www.agriculture.gov.ie/animalhealthwelfare/diseasecontrol/bovinebTB/diseaseeradicationbTB/>). The Programme is comprehensive and is under constant review to ensure it adapts to emerging risks and challenges. As the herd incidence level is now at historically low levels, the challenge is to protect the 97% of herds that are bTB free in any 12-month period and mitigate the risk of future bTB breakdowns. This requires enhanced efforts by all stakeholders.

EU audits and research related to the Irish bTB Programme have highlighted a lack of stakeholder involvement as a key impediment in achieving eradication. Examples from other jurisdictions (e.g. Australia and New Zealand) demonstrate the valuable contribution stakeholders have made to the eradication efforts through formal collaborative structures. For example, in the New Zealand National Pest Management Strategy, '*robust processes of consultation*' (Livingstone et al., 2015) were credited with '*generating a sense of partnership and ownership of the strategy*'. In Australia, it has been suggested that the involvement of their industry-government partnership, BTEC (Australia's brucellosis and tuberculosis eradication programme) '*in both funding and policy development was an essential factor in achieving the outcome of the campaign*' (Radunz, 2006). Australia's National Johne's Disease Control Plan was also developed by all relevant bodies, leading to a shared position, a common goal and long-term commitment (Animal Health Australia, 2007).

In reviewing the success of the Australian bTB programme, More et al (2015) highlighted amongst the Key Lessons Learned, industry commitment and support as a critical factor in achieving bTB eradication. The joint ownership the eradication programme enjoyed resulted in a '*strong and constructive relationship between government and industry*' with the programme '*largely administered by state governments under state legislation, but working under nationally agreed guidelines*'. The clear conclusion is that shared policy development facilitates shared implementation and a greater chance of achieving eradication.

In assessing the case for more private sector involvement in Irish animal health services, More (2008) explored the concept of public and private goods. The paper cites research (Ekboir, 1999; Holden, 1999; Sen and Chander, 2003) which outlines the wide acceptance that the public and

private sectors have a role in animal health but importantly that debate arises when attempting to determine the appropriate balance between the two (Ekboir, 1999).

Reflecting its appraisal of appropriate levels of public intervention, Australia had previously classified bTB as a Category 3 disease. This categorisation is aligned with 50/50 funding from government and industry. Following eradication, bTB in Australia is now classified as a Category 4 disease and is associated with 20% government funding and 80% industry funding. Appropriate funding of the Irish Bovine Tuberculosis Programme is explored in the accompanying 'Costs and Benefits' paper.

More (2008) highlights that the Irish bTB programme is managed by the Department of Agriculture, Food and the Marine and that the role of industry in policy development and enforcement is limited. It should be noted that industry does now play a more active role in Ireland in contributing to the development and implementation of control programmes of non-regulated disease of livestock through its co-funding of Animal Health Ireland. It is clear that in the management of a regulated disease programme such as bTB, there is scope for industry to play a greater role.

## **2. Enhancing the role of industry in Ireland's bTB Eradication Programme**

It is accepted that Ireland is now at a critical juncture in attempting to eradicate bTB. CVERA (Centre for Veterinary Epidemiology and Risk Analysis) (Asensio, 2018) has concluded that BCG vaccination of badgers has the potential, if added to current controls, to achieve eradication of *M. Bovis* infection in the cattle badger system in Ireland, as it now estimates that the reproductive rate of the disease has fallen marginally below 1. This means that eradication is now possible but with the policy tools of the current programme, this would likely still take several decades. For that reason, CVERA has recommended that additional/more stringent controls are applied in cattle along with BCG badger vaccine in order to ensure and/or accelerate the eradication process.

A refined bTB programme with enhanced stakeholder engagement has the potential to significantly speed up the eradication timeline.

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. Progress in respect of a renewed bTB Strategy will be subject to oversight by the independent NFAHS Review Body.

Establishing a bTB Stakeholder Forum is the first step in seeking to further develop the role stakeholders play in attempting to eradicate bTB. Through the Forum, stakeholder views will be

sought in developing policy proposals which will feed into the 2030 bTB Eradication Strategy. That process has been approved by Government.

Following the ratification of the 2030 bTB Eradication Strategy, successful implementation of the policies designed to fast-track eradication will benefit from stakeholder support. Hereafter are set out a number of options to harness stakeholder support.

**a. Continue with existing working in partnership arrangements**

This would effectively represent a no-policy change. Policy development and implementation would continue to be mainly driven by the Department of Agriculture, Food and the Marine with occasional ad-hoc consultation with stakeholders. This approach would not address criticisms of the current model which argue that more stakeholder involvement would benefit the bTB eradication programme.

**b. Mandate the bTB Stakeholder Forum to monitor implementation of the 2030 bTB Strategy**

Once the bTB Stakeholder Forum finalises its work and provides its policy proposals to the Minister for Agriculture, Food and the Marine, this group can be disbanded. Alternatively, the Forum (which comprises members from farming representative bodies, meat and dairy industry, farming and research communities, veterinary profession and DAFM officials) can be tasked with monitoring implementation of the revised 2030 bTB Strategy and when deemed appropriate proposing amendments to policies that are consistent with achieving eradication. Meetings of the Forum could occur at regular intervals.

**c. Supporting Regional eradication efforts**

Achieving eradication will require consistent, country-wide efforts. Recent stakeholder consultation has demonstrated that there are many misconceptions related to some of the policies related to the bTB Programme. Currently, Regional Veterinary Offices (RVOs) are proactive in engaging with farmers and the veterinary profession in managing breakdowns. It is proposed that each RVO host an annual open stakeholder meeting to review bTB trends in the region. This could include items such as an epidemiological overview of the main contributory factors to bTB outbreaks in the region and how farmers can reduce their herd's risk of contracting bTB.

#### **d. Black-spot response**

On occasion, a severe bTB outbreak can affect a discrete geographical area leading to financial and mental stress for the effected farming community. In these circumstances, it is imperative that all stakeholders are clear on the proposed course of action to find, confine and eradicate the disease from that area. It is proposed that in such cases, RVOs will convene a meeting of local farming representatives and Private Veterinary Practitioners to provide an overview of the actions being undertaken by the Department. It will also focus on biosecurity measures the farming community can take to mitigate their herds' risks of contracting the disease or alternatively ensuring their herd becomes clear again as quickly as possible. Black-spot responses may also be supplemented by public meetings to inform local herdowners of developments.

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## Paper 2      Additional Policy Measures

This position paper sets out a range of additional policy measures which, if implemented, could contribute to the eradication of bTB in Ireland by 2030. The objective of this paper is to create a basis for discussions by the bTB Stakeholder Forum on ways in which bTB levels can be further reduced, in addition to existing controls.

### 1. Context and literature review

Attempting to improve on the existing bTB programme to achieve eradication by 2030 will require addressing the risk posed by newly infected cattle, cattle with older residual infections which may be latent and difficult to detect, herds with chronic TB infections or which suffer repeated breakdowns, areas with an elevated risk of TB, and the on-going risk posed by bTB in badgers. This requires enhanced efforts by all stakeholders.

The technical aspects of Irish bTB eradication policy have been described previously (More and Good 2006; More and Good 2015). Policy is decided within the legislative framework of EC regulation 64/432, which underpins the ability of Irish cattle to be traded within the EU.

Irish bTB policy is tailored to the Irish context and has evolved over many years; however, it is still instructive to reflect on the experiences of other countries which have tackled bTB with varying degrees of success.

In Australia, bTB was eradicated after a long and expensive campaign, described by More et al. (2015). Key elements of the program were significant stakeholder ownership, industry commitment, an agreed final outcome, a strict regulatory regime, and effective elimination of residual infection. Strategies included risk-based trading restrictions which confined trade from herds with a history of bTB to herds with the same health status; herd restrictions lasted at a minimum from 14 months to eight years, depending on the degree of risk. Risk was assessed at the level of the group (herd or area) rather than the individual animal. No significant role was played by any wildlife reservoir in Australia.

In New Zealand, bTB has not yet been eradicated but levels have been significantly reduced to 42 infected herds in total in 2016. The New Zealand program is described at the bTBFreeNZ website (<https://www.bTBfree.org.nz/>) with a goal of eradication from cattle and deer by 2026 and eradication in possums by 2040. Key elements include an aggressive approach to eradicating the wildlife

reservoir (the bush-tailed possum), strict management of infected herds, and a risk-based trade system and movement controls based on defining higher risk areas.

In the UK, there are four different policies, described here

(<https://www.gov.uk/government/policies/bovine-tuberculosis-bovine-bTB>). Scotland is officially free of bTB. In England, bTB is concentrated in certain regions, particularly the South-West. The country is divided into high-risk, low-risk, and edge areas, with more severe controls applying in the high risk and edge areas. The role of badgers in spreading bTB to cattle has been controversial for many years in the UK (McCulloch and Reiss, 2017). Current policy is to licence the culling of badgers in high risk and edge areas, with the culling carried out by the private sector. Vaccination of badgers with BCG is also carried out by the private sector, under licence. A strategy review with the aim of achieving bTB free status by 2038 in England was recently launched (<https://www.gov.uk/government/publications/a-strategy-for-achieving-bovine-tuberculosis-free-status-for-england-2018-review>).

The bTB programme in Wales is described here

(<https://gov.wales/topics/environmentcountryside/ahw/disease/bovinetuberculosis/bovinebTBERadication/?lang=en>) The Welsh policy includes designating areas as high, intermediate or low bTB risk; encouraging risk-based trading strategies; pre and post movement testing according to the risk categorisation of the herd.

In Northern Ireland, bTB policy is described here (<https://www.daera-ni.gov.uk/topics/animal-health-and-welfare/animal-diseases-diseases-affect-cattle/bovine-tuberculosis>). Badger culling is not carried out in Northern Ireland (other than as part of research projects). A recent consultation on bTB policy was launched in Northern Ireland (<https://www.daera-ni.gov.uk/consultations/bovine-tuberculosis-eradication-strategy-northern-ireland>) seeking submissions on a range of policy options, including wildlife control, decreasing compensation payment for reactors, and improved outbreak management (<https://www.daera-ni.gov.uk/sites/default/files/publications/daera/bovine-tuberculosis-eradication-strategy.pdf>).

In the United States, the federal bTB eradication program began in 1917, based on tuberculin skin testing, slaughter of infected animals and restrictions of infected herds. Despite considerable opposition, the program was highly successful (Olmstead and Rhode, 2004). bTB in the USA is now generally confined to certain geographical areas (along the southern border and parts of Michigan).

The current US bTB programme is described here

([https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/sa\\_animal\\_disease\\_information/sa\\_cattle\\_health/sa\\_tuberculosis/ct\\_bovine\\_tuberculosis\\_disease\\_information](https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/sa_animal_disease_information/sa_cattle_health/sa_tuberculosis/ct_bovine_tuberculosis_disease_information)).

## 2. bTB diagnosis

There are variations in how bTB is diagnosed in different countries, based on the context. The single intradermal comparative tuberculin test (SICTT) is mandated in the EU, but member states can decide the conditions under which a severe interpretation is applied based on the epidemiological situation, within the context of EC Regulation 64/432. The gamma interferon (GIF) test is widely used, but in different ways. In New Zealand, it is used with as a way for official veterinarians to identify animals at higher risk within infected herds which are then compulsorily culled (Sinclair et al, 2016). In England, GIF testing is used in edge areas; a higher cut-off is applied to identify animals likely to be infected in herds which have not been restricted. In Northern Ireland, the GIF test is used with the same cut-off as in England, but is only used in herds with confirmed bTB infection; the positive animals are not compulsorily culled but if the farmer chooses to cull the positive animals, compensation is paid.

In England, the use of non-validated novel diagnostic tests is permitted to identify animals within bTB-infected herds which are likely to be infected but which tested negative to the skin test. Animals identified as positive by non-validated novel diagnostic tests may be culled voluntarily with no compensation, but are not compulsorily culled.

The imperfect nature of current test methods for bTB has implications for eradication programmes which must take this factor into account in order to achieve 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. The sensitivity of the SICTT test for detecting cattle with tuberculous lesions in Irish conditions was estimated by Costello et al (1997) at 90%, while more recently Clegg et al (2011) used a different methodology to estimate its sensitivity at 52-60%. A meta-analysis by de la Rúa-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.

### 3. Perspectives from previous reviews

The Irish bTB eradication programme has been reviewed on several occasions. In 2008 a detailed and comprehensive Value For Money review was completed which proposed a range of carefully considered recommendations for improving the programme (DAFM, 2008). These included reviewing cost sharing and using key performance indicators to evaluate programme effectiveness.

Sheridan (2011) reviewed progress in the Irish bTB programme from 1954 to 2010, including the renewed focus during 1988-1991 under the ERAD executive agency. This agency was wound up and responsibility for management of the bTB programme was brought fully back within DAFM following an analysis which determined that, at that time, sufficient tools were not available to eradicate bTB from cattle in Ireland and that eradication must remain a long-term objective until the issue of bTB transmission from badgers to cattle was effectively addressed, and additional systems to improve delivery had been put in place. This has now largely been achieved, although the on-going risk posed by badgers with bTB to cattle remains and must be continually managed.

More and Good (2015) reviewed the risks and future challenges to bTB eradication in Ireland, highlighting the problems of residual infection in cattle, re-infection of herds from local sources such as environmental contamination or wildlife, and following cattle introduction. The key issues identified as being necessary to progress towards eradication included determining how much additional controls are needed, and re-engagement with the farming community.

### 4. Constraints to policy options

A number of constraints apply to the consideration of additional policy measures.

- a.** bTB eradication policies in Ireland must comply with the provisions of EU animal health law, specifically EC Reg. 64/432 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.
- b.** 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.

- c. 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.

## 5. Risk pathways

The pathways for bTB spread in Ireland are addressed in an effective way 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 address these.

Considerable research has been carried out on the factors affecting bTB risk. Allen et al (2018) looked at the spread of bTB in Britain and Ireland and argued that bTB eradication is being constrained by a range of factors which interact additively to impede control efforts, including the role of wildlife, the nature of cattle farming systems, and environmental contamination.

The factors affecting the future risk of Irish herds breaking down with bTB have been investigated in several ways. Herds which have had bTB have a higher risk of another bTB breakdown compared to herds which have not had bTB for ten years, with the number of reactors in the original episode also increasing risk (Clegg et al, 2015). 7.4% of breakdowns were attributable to the introduction of an animal from a source herd with a bTB breakdown. In a separate study on the factors increasing the risk of a large breakdown compared to a small one, risk factors included previous bTB exposure in the herd, bTB in an associated herd, and increased bTB incidence in the local area (Clegg et al 2018). Earlier work by Oleg-Popelka et al (2004) had also identified a previous herd history of bTB and increased local herd bTB prevalence as predictors of future herd breakdowns.

The research demonstrates that not all herds which are currently regarded as free of bTB are at the same risk, and that information on previous herd history and local area factors can be used to understand and predict the risk of bTB. An effective eradication campaign must take these risks into account and address them with targeted control measures.

The principle risk pathways and current mitigation measures are:

Risk Pathway	Mitigation Measure	Dependencies
<b>Infected herds directly spreading bTB locally to other herds across shared boundaries or short distances</b>	Restriction of infected herds; local contiguous herd programmes; farm biosecurity	Effectiveness of detection of infected herds; effectiveness of restrictions; effectiveness of contiguous programmes
<b>Infected herds spreading bTB to other herds via cattle movements</b>	Restriction of movements from infected herds	Effectiveness of detection of infected herds; effectiveness of restrictions
<b>Infected cattle not detected by the programme</b>	Herd-level restrictions, high risk herd testing programme.	Effectiveness of bTB test at individual level; effectiveness of high risk herd testing programme
<b>Infected badgers transmitting bTB to cattle</b>	Wildlife programme; badger vaccination programme	Effectiveness of wildlife programme
<b>Indirect infection of cattle via environmental contamination</b>	Cleansing and disinfection after reactor removal	Effectiveness of C&D procedures; length of survival of bTB in the environment; amount of contamination; infectious dose required to infect cattle

## **6. Frameworks for additional policy measures**

It is proposed to set out three frameworks for additional policy measures: reducing the spread of bTB to herds which are bTB-free; eliminating bTB from infected areas; and empowering herdowners to manage and reduce their own risk of bTB.

Just under 97% of cattle herds are designated free of bTB on an annual basis (i.e. the annual herd incidence). It is critically important that these herds are protected from the spread of bTB and supported in maintaining their bTB-free status. This would reduce the burden on these farmers and enable resources to be focussed on infected herds more effectively.

There is a strong body of evidence showing that herds with a history of bTB are at far higher risk of future breakdown compared to similar herds without such a history. This research makes a strong case for additional policy measures addressing this risk.

### **a. Reducing the spread of bTB to herds which are bTB-free**

This theme relates to the “prevention is better than cure” aspect of the National Farmed Animal Health Strategy.

Options:

- i.** Apply extended restrictions to herds which have had bTB recently, to prevent them trading with herds with no recent history of bTB.
- ii.** Assign bTB risk categories to all herds, ranging from low to high, and restrict trading to herds of the same risk status or lower (for selling cattle) or higher (for buying in cattle).
- iii.** Assign geographically-based risk categories to areas, ranging from low to high, and restrict trading to herds of the same risk status or lower (for selling cattle) or higher (for buying in cattle).
- iv.** Improve farm-level biosecurity to reduce the risk of bTB incursion from local sources.
- v.** Enable those purchasing cattle to know the level of risk attributable to those cattle so that herdowners can take action to control their own risk exposure.

## **b. Eliminating bTB from infected areas**

Options:

- i.** Herds with chronic bTB problems are put on a program of escalating measures to eliminate infection and mitigate the risk of future breakdown.
- ii.** Develop a risk-based system to categorise infected herds, where the probability of infection within the herd is estimated based on the actions taken to mitigate critical risk points. The process for achieving herd freedom from bTB involves addressing risks in a systemic and tailored manner.
- iii.** Establishing area-based action plans to eliminate bTB from local areas which may include known infected herds and herds which are not known to be infected.

## **c. Empowering herdowners to manage and reduce their own risk of bTB**

Options:

- i.** Put in place measures to enable herdowners to better understand the risks posed by bTB and to take actions to mitigate those risks according to their risk appetite.
- ii.** Enable herdowners purchasing cattle to know the history of those cattle in relation to risk factors for bTB, particularly any time spent in herds with a history of bTB.
- iii.** Incentivise risk-mitigation behaviour by herdowners by linking compensation arrangements with actions taken to reduce bTB risk.
- iv.** Improve farm biosecurity measures to mitigate bTB risk pathways.

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# Paper 3      Costs and Benefits

## 1. Introduction

The agri-food sector is an important component of Ireland's economy, accounting for 7.8% of GNI\* and 8.6% of employment \*(DAFM, 2018). An effective bTB eradication programme is required under European law in order for Ireland to export cattle to other member states. Even in the absence of trade, the EU requires Member States to work towards eradication of List B diseases (which includes bTB). The export of milk and milk products, germinal products and access to some beef markets also require effective bTB controls. Therefore, it is clear that Ireland's bTB Programme is a fundamental pre-requisite in facilitating a functioning and thriving agri-food sector; this importance is likely to increase as Ireland gains access to further export markets.

Ireland's bTB Programme is estimated to have cost €84 million in 2017. This is funded by the Exchequer (€42 million), farmers (€32 million) and the EU (€10 million). Funding from the EU has reduced from €12 million in recent years and indications are that the level of EU co-funding is likely to reduce further. The main programme costs relate to testing of animals, DAFM staff costs and administering compensation payments to farmers. A full outline of the costs of the Irish bTB Programme for 2017 is provided in Appendix 1.

In Section C 'Reflecting Costs and Benefits' of Chapter III of the National Farmed Animal Health Strategy (NFAHS) (DAFM, 2017), key principles are outlined. The high level objective is stated as being that *"Animal health programmes will be appropriately and sustainably funded on the basis of a formal objective evaluation of benefits and costs"*.

## 2. Financing of the bTB Programme

In line with research highlighting the benefits of shared governance, shared financing of animal health programmes is also a prominent feature of international best practice and has been a notable principle of the Irish bTB eradication programme for several decades.

A 'Cost/Benefit Analysis of Irish bTB Schemes' was undertaken by UCD in 1991 (Sheehy and Christiansen, 1991). It is estimated that in 1988, farmers contributed 61% towards the total cost of the Scheme and the Exchequer contribution was 39%. As illustrated through the details of the financing of the bTB Programme in 2017, it is now estimated that farmers contribute 38% towards the

cost of the Scheme, the State's contribution is 50% while EU funding makes up the remaining 12%. The Scheme is likely to face a financing challenge if EU funding continues to decline as expected.

A Value for Money evaluation of the bTB Eradication Programme (BTEP) was separately undertaken by the Department of Agriculture, Food and the Marine (DAFM) for the period 1996-2006 and was completed in July 2008 (DAFM, 2008).

The 2008 review concluded that *'the net impact of the Programme has been to facilitate the growth of the Irish cattle industry by creating and enhancing export opportunities and by improving the productivity of cattle rearing'*. That conclusion remains valid in 2018 and is consistent with the 2017 NFAHS *'the primary beneficiary from animal health programmes which seek to avoid or prevent disease is the owner/keeper of the animals'* (DAFM 2017). Without a bTB eradication programme, Ireland would have significantly reduced access to beef export markets which were estimated by the CSO to be €2.4 billion in 2017. The 2008 Review also highlighted that the major benefit of improved market access accrues to the farmer producer and to the processing sector while the benefits of improved animal productivity and public health accrue mainly to the farmer producer. This conclusion is consistent with published research (More, 2009; More and Good, 2015).

In examining the Irish bTB Programme, More (2009) noted that *'Industry is the main beneficiary of the bTB control efforts'* but public intervention is justified for three main reasons (i) uneven exposure of risk, (ii) designation of badgers as a protected wildlife species, and (iii) the public good derived from the collective action in eradicating an infectious disease.

According to the 2012 OECD report, Livestock Diseases: Prevention, Control and Compensation Schemes, *'Co-financing of animal health policy between private partners (farmers, food industry) and public authorities is needed to maintain the economic interest of the livestock sector in animal health policy'* (OECD, 2012).

While co-financing of animal health programmes is well-established and is supported by all stakeholders, agreement is more challenging in determining the appropriate share each stakeholder should provide.

### **3. International experience in the financing of bTB Programmes**

#### **a. Australia and New Zealand**

As a bTB free country, Australia's approach is worthy of particular attention. Their national eradication programme – the Brucellosis and Tuberculosis Eradication Campaign (BTEC) – commenced in 1970s and

originally was wholly funded by government. As it progressed, however, the cattle industry became more and more involved in both its administration and its funding:

*In 1984, a new BTEC Committee was created with direct representation of the cattle industry. Decisions about what costs should be borne by government and what responsibilities and costs the industry should shoulder involved considerable consultation and discussion. (Black, 2012, p. 702)*

Through this engagement an agreement was reached whereby from 1988 onwards industry contributed 50% of total programme costs. The BTEC was a success and disease-free status for Brucellosis and bTB was achieved in 1989 and 1997, respectively.

In their evaluation of this success, More, Radunz and Glanville (2015) identify some potential lessons from the Australian experience. Two are particularly noteworthy, (i) 'Genuine industry commitment' and (ii) 'Cost-sharing by government and industry' (pp. 229-30).

Peter Black's study of the Australian model (2012) observes that the fact disease-free status was achieved, '*...reflected the willingness of industry and governments to work together to plan and co-fund an eradication programme...*' (p. 702), but adds:

*The role that animal industries and government play with respect to animal disease control in the future will reflect changing social expectations. Good governance – as epitomised by predictable, open and enlightened policy-making – will demand no less. (p. 706)*

The case of New Zealand is an example of a country where significant stakeholder involvement in animal health programmes prevails. Here, the bTB eradication programme is run by 'bTBFree New Zealand', a non-government agency, now a part of OSPRI ('OSPRI is a partnership between primary industries and the government, and manages two national programmes – NAIT and bTBFree. NAIT provides the national animal identification and traceability system and bTBFree aims to eradicate bTB from New Zealand.' See <https://www.ospri.co.nz/about-ospri/our-company/>). It seeks to achieve eradication in cattle and deer by 2026, and total biological eradication by 2055.

As Livingstone, Hancox, Nugent, Mackereth, and Hutchings explain (2015, p. 99), similarly to Australia, in terms of the development of a national eradication programme there was also a shift towards 'stakeholder-led governance' in the late 1980s.

In 2010, the private sector contributed (via industry funding and levies) 57% of all programme costs (\$44.9m of \$79m). ("The cost-sharing model of the New Zealand programme is particularly interesting, noting that they have devised a common model across all areas of 'biosecurity'. It's based on identification of both the beneficiaries (who will benefit from the control/eradication efforts) and exacerbates (who is perpetuating the problem, essentially constraining eradication). The cost-sharing model focuses on programmes being funded by these two groups.") Of that budget, \$0.5m related to compensation (0.6% of total programme costs for the year). Furthermore, the amount of compensation payable is, in general, limited to 65% of fair market value and is subject to several other statutory criteria, including:

*the capacity of bTBFree New Zealand to pay compensation, determined based on the amount of money available for compensation and the expected number of compensation payments to be made in a financial year.* (New Zealand Parliamentary Counsel Office, 2018)

## **b. Northern Ireland and Britain**

Northern Ireland estimates the annual cost of its bTB to be £40m per annum – and of this, approximately £24 million relates to compensation (60% of total costs) ((Northern Ireland Department of Agriculture, Environment and Rural Affairs, 2016). At present in Northern Ireland, public funding covers all costs relating to the bTB programme and compensation.

In late 2017, Northern Ireland authorities sought stakeholder views on a wide range of recommendations and proposals related to their bTB programme (Northern Ireland Department of Agriculture, Environment and Rural Affairs, 2017). The Department of the Agriculture, Environment and Rural Affairs (DAERA) has indicated that at this time, they are proposing to keep under review whether a levy should be introduced to facilitate cost sharing of the Programme. Their view is that the objective of achieving a desired culture change and shared ownership of bTB may be best realised through adjustment in the existing compensation arrangements.

In light of this, DAERA has sought views on two of the recommendations from the 'bTB Strategic Partnership Group': the first, to cap compensation levels (up to £1,500 for bovines, £1,800 for pedigree bovines, and £3,500 for one pedigree stock bull), and the second, to reduce the percentage of

compensation paid (from 100% to 75% of market value). It is not suggested that each provision is introduced simultaneously, but rather over time.

In England, a public consultation has also recently been undertaken to inform a refined bTB Strategy. It is estimated that in 2014 eradication efforts cost £100 million to the taxpayer, and of this, *'Most of the Government's bTB budget is spent on bTB testing, breakdown management and compensation'* (United Kingdom Department of Environment, Food and Rural Affairs, 2014). Here, compensation is payable up to 100% of market value (according to statutory monthly table valuations which reflect the average sales prices over the last month for non-pedigree bovines or six months for pedigree bovines in fifty-one different categories).

It is also suggested that there is a focus on shifting towards 'farmer-led' approaches:

*Move towards an increasingly farmer-led control and eradication process, with farmers significantly contributing to the costs of implementing the practical decisions they are taking to eradicate the disease.*

Elsewhere in Britain, a Welsh Assembly Committee Report on the issue noted that, *'The programmes which have been more successful have the full involvement and support of the farming industry.'*, but stopped short of recommending farmer contributions (National Assembly for Wales, Climate Change, Environment and Rural Affairs Committee, 2017).

However, similar to the approach being proposed in Northern Ireland, the Welsh Government recently sought to focus on reforming its bTB compensation policy by linking compensation payments to farmer behaviour. Separately, a market valuation method (up to 100%) still operates, but a cap was set at a maximum of £5,000 per animal.

#### **4. Sustainability**

A sustainable funding model is a critical component of an effective disease eradication programme. As the control policies evolve in response to changing disease epidemiology, costs and benefits also change. In most eradication programmes, the final phase when disease is becoming rarer involves significantly stricter controls and proportionately greater outlay of expenditure per case of disease. The costs imposed on particular stakeholders subjected to such tighter controls also increase

considerably. In some cases this may be offset at sectoral level by lower levels of disease, but it may also be the case that such a reduction in overall sectoral costs may not become apparent until disease is at a very low level or fully eradicated.

A sustainable funding model for bTB eradication in Ireland must involve recognition of the likely increased cost to specific areas, which may not be offset by overall reduced costs until further along in the eradication process.

## 5. Conclusions

Cost sharing between industry and Government is well-established in the financing of Ireland's bTB Eradication Programme. However, it is clear that the relative share of the financing of the overall costs of the Programme have varied over time. In the context of the bTB Eradication Programme, the NFAHS states that *'The relationship between farmer contributions and the costs of the programme or indeed relating to compensation have been on an ad-hoc basis and are not aligned to any particular strategy or agreement'*(DAFM, 2017).

Further, the recommended strategic actions and outcome indicators in the NFAHS highlight that animal health programmes will be *'appropriately funded taking into account benefit/cost assessment'*.

While developments in compensation policy in other jurisdictions have been referenced, this paper does not outline any options for changes to the existing rates of compensation in Ireland. However, in the Policy Options paper, stakeholders are asked to consider linking the level of compensation payments to farmer behaviour in mitigating the risk of disease. This approach is consistent with international norms.

In that context, stakeholders are invited to consider:

- a. The costs and benefits of the bTB Eradication Programme and what stakeholders they accrue to; and
- b. The appropriate financing share of the Programme between stakeholders.

## 6. Appendix 1

<b>bTB Programme Financing and Expenditure 2017</b>					
<b>Financing (in net terms)</b>	<b>€000</b>		<b>Expenditure 2017</b>	<b>€000</b>	
<b>Exchequer</b>		42,278	<b>Staff &amp; Admin Costs</b>		
			DAFM staff costs & admin*	26,033	
<b>Farmers</b>			Supplies	4,759	
Round Test*	25,000		Wildlife Programme	3,465	34,257
Farmer Paid testing	7				
Bovine Disease Levies	6,938	31,945	<b>PVP Testing</b>		
			Farmer paid PVP testing*	25,000	
<b>EU co-financing</b>		9,700	DAFM paid PVP testing	8,401	33,401
			<b>Compensation Scheme</b>		
			On Farm Market Valuation	10,500	
			Compensation - Other	3,545	
			Valuer Fees	539	
			Arbitration	15	14,599
			<b>Research</b>		
			bTB Research	1,666	1,666
		<b>83,923</b>			<b>83,923</b>
*€25m estimate for both farmer-paid round test and DAFM bTB-related staff employment costs					

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