Towards Phytopia

A framework for reflection on phytosanitary policy

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A framework for reflection on phytosanitary policy

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Preface

What is the ideal phytosanitary policy? The Ministry of Economic Affairs, Agriculture & Innovation has asked LEI to develop a framework based on which the government can review its role in phytosanitary policy. The framework should contain a step by step plan which can be used with regard to new developments and for a range of phytosanitary problems. This report contains the theoretical framework that can be used for this purpose. The 'Towards Phytopia' framework has been tested several times with representatives from the Ministry of EL&I. The framework has already played a role in the dialogue about phytosanitary responsibilities which the government is conducting with industry and social parties.

The researchers would like to thank H. Smolders and H. Schollaart and the other members of staff from the Phytosanitary cluster for their enthusiastic input and cooperation.

Prof Dr R.B.M. Huirne
Managing Director LEI

Summary

S.1 Key results

It is possible to reform phytosanitary policy. Entrepreneurs could be given more responsibility for controlling those invasive plant pests and diseases which they are able and willing to control.

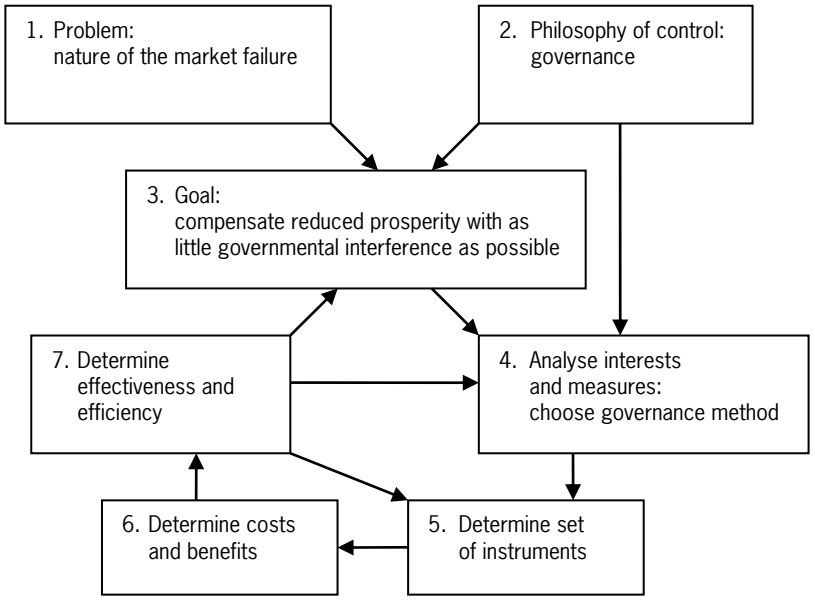
The infestation of plant products with invasive plant pests and diseases results in reduced prosperity due to market failure. Market failure occurs when the co-ordination of the free market mechanism is unable to bring about an optimum balance between supply and demand. Market failure is the result of external effects and asymmetry of information in the plant product market. (See Paragraph 2.2 and Paragraph 2.3)

The government corrects this market failure when public interests are at stake. The government can give entrepreneurs more responsibility if the following three questions can be answered positively: (See Chapter 4)

1. Are the entrepreneurs aware of the risks concomitant with the trade in plant products?
2. Is it in their interest to reduce the risk?
3. Are they capable of reducing the risk?

If these three questions can be answered positively, the government can give more responsibility to entrepreneurs.

Figure S.1 **Administrative framework for phytosanitary policy**



Source: LEI.

S.2 Complementary findings

Phytosanitary policy is more effective when costs are divided according to the principle 'the polluter pays'. Those responsible for contamination are given an economic incentive to reduce risks. This calls for a reversal of the burden of proof for imputability. More research is required into the practical feasibility of this. (See Paragraph 4.4)

Adjustments to phytosanitary policy can only occur if the international frameworks allow for this. The Netherlands is an important exporting country. However, many importing countries would not benefit by the liberalisation of phytosanitary policy, because this limits the scope for engaging in trade politics. For this reason, the international dissemination of these research results will have to be done diplomatically.

S.3 Methodology

The central research question posed by the Dutch Ministry of Economic Affairs, Agriculture and Innovation was: what would a more ideal phytosanitary policy look like? The study was carried out based on the assumption that there is no national or international phytosanitary policy and that third countries follow Dutch phytosanitary policy.

The policy framework was developed by combining economic theories with administrative science. Economics was used in the analysis of phytosanitary problems and in order to sketch out market failure; administrative science was used to develop a policy framework from which to address these problems. The fundamental principles were:

- Maximum deregulation: privately what can be done, publicly what must be done.
- Responsibility as decentralised as possible: individually what can be done, collectively what must be done.
- Policy will be given shape as effectively as possible with as little effort as possible.

Samenvatting

S.1 Belangrijkste uitkomsten

Het fytosanitair beleid kan hervormd worden door te toetsen of ondernemers invasieve plantenziekten en -plagen willen én kunnen beheersen.

Besmetting van plantaardige producten met invasieve plantenziekten leidt tot welvaartverlies door marktfalen. Marktfalen komt door het optreden van externe effecten en informatie-asymmetrie in de markt voor plantaardige producten.

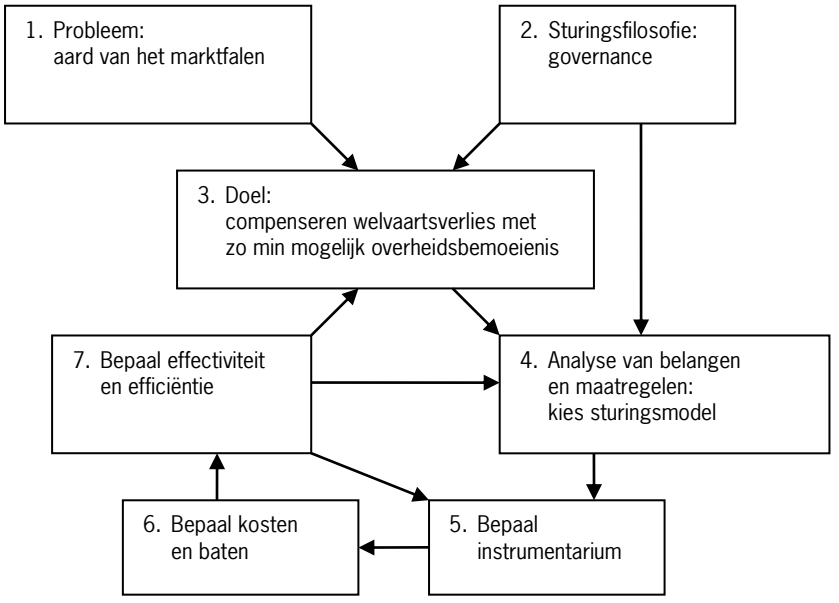
De overheid is verantwoordelijk voor het corrigeren van dit marktfalen als publieke belangen in het geding zijn. Zij kan daarbij meer dan nu gebeurt gebruik maken van ondernemers.

Of dit mogelijk is, hangt af van drie factoren die getoetst worden in een bestuurskundig kader:

1. Zijn de ondernemers op de hoogte van de risico's die gepaard gaan met de handel in plantaardige producten?
2. Hebben zij belang bij het verminderen van het risico?
3. Zijn zij in staat het risico te verminderen?

Wanneer deze drie vragen met ja beantwoord worden, kan de overheid meer verantwoordelijkheid bij het bedrijfsleven leggen.

Figuur S.1 **Bestuurskundig kader fytosanitair beleid**



Bron: LEI.

S.2 Overige uitkomsten

Het fytosanitair beleid wint aan effectiviteit, wanneer de lasten worden verdeeld volgens het principe 'de vervuiler betaalt'. Veroorzakers krijgen een economische prikkel om de risico's te verminderen. Dit vraagt om omkering van de bewijslast voor verwijtbaarheid. De praktische haalbaarheid hiervan zal verder onderzocht moeten worden.

Aanpassing van het fytosanitair beleid kan alleen plaatsvinden wanneer de internationale kaders daar ruimte voor geven. Nederland is een belangrijk exporterend land. Veel landen die importeren hebben geen belang bij liberalisering van het fytosanitair beleid. Het internationaal uitdragen van deze onderzoeksresultaten zal daarom diplomatiek moeten plaatsvinden.

S.3 Methode

De centrale onderzoeksvraag van het ministerie van EL&I was: hoe ziet het fytosanitair beleid er idealiter uit? Het onderzoek is uitgevoerd vanuit de aannamen dat er geen nationaal of internationaal fytosanitair beleid is en dat derde landen het Nederlandse fytosanitair beleid volgen.

Het beleidskader is ontwikkeld door theorieën uit de economie te combineren met de bestuurskunde. De economische discipline is gebruikt voor de analyse van fytosanitaire problemen en het in kaart brengen van het marktfalen; de bestuurskundige discipline voor ontwikkeling van een beleidskader om deze problemen aan te pakken. Uitgangspunten daarbij waren:

- maximale deregulering: privaat wat kan, publiek wat moet;
- verantwoordelijkheid zoveel mogelijk decentraal: individueel wat kan, collectief wat moet;
- beleid wordt zo effectief mogelijk vormgegeven met zo min mogelijk inspanning.

1 Introduction

1.1 Background

Phytosanitary policy focuses on combating and controlling invasive organisms which are harmful to plants and plant products. The phytosanitary policy field was created because importing countries wanted guarantees about plant health and exporting countries decided to give such guarantees to stimulate trade.

At present, the government has a difficult role with regard to phytosanitary policy, partly as a result of international phytosanitary agreements. In view of the developments (including increasing global trade, better detection methods and increasing numbers of quarantine organisms), one wonders whether the government is willing or able to continue to play this role and whether it would be possible to place more responsibility on private parties. The challenge facing phytosanitary policy is to place responsibility for controlling phytosanitary risks where it is possible in terms of social responsibility. Social responsibility means that the economy, landscape and nature, biodiversity, environment, food certainty and safety are optimally served.

In order to be able to define the government's role and thus the role of private parties, there is a need for a review framework for phytosanitary policy. Based on such a framework, policy choices can be made and justified.

1.2 Goal

The aim of this research is to develop a framework that can be used to reform phytosanitary policy. Based on the framework, the government can indicate which tasks it will assume itself and how policy instruments can be effectively and efficiently used. In outline, this framework provides the answer to the following questions:

- *What?*
  What are the goals and ambitions which the government sets itself in the phytosanitary policy? The answer to this question is a vision focused on the international, the European and the national context;

- *Who*?
  To whom can the phytosanitary responsibilities be allocated based on the subsidiarity principle? The subsidiarity principle states that public interested are best represented at the lowest level at which all the relevant external effects can be internalised. Two dimensions are important here:
  - *public - private*
    Privately where possible, publicly where necessary;
  - *collective - individual*
    Individually where possible, collectively where necessary.
- *How*?
  How can the Dutch government apply the appropriate policy instruments to achieve the phytosanitary goals?

1.3 Assumptions

The following assumptions are made in this report.

1. There is a phytosanitary problem, but no phytosanitary policy. This has the following implications:
   a. There is not yet an International Plant Protection Convention (IPPC). Consequently, there is no EU policy, such as the Phytosanitary Directive.
   b. Third countries from which the Netherlands imports products or to which the Netherlands used to export products have no phytosanitary policy either, but will be faced with phytosanitary problems at the same time as the Netherlands. The assumption is that third countries will follow the Netherlands and respond similarly to phytosanitary problems.

In the elaboration, Chapter 5 indicates the extent to which the phytosanitary policy's scope for manoeuvre will be restricted as a result of the IPPC, the Phytosanitary Directive and subsequently the implementation of phytosanitary policy by third countries.

2. Phytosanitary problems can have an impact on five social issues (Phytosanitary vision LNV, 2009):
   a. *Strong competitive power*: contamination by harmful organisms reduces the quality of products. To prevent this, phytosanitary barriers can be erected, but not trade barriers.

b. *Nice landscape and valuable nature*: harm to plants in nature and landscape affects the landscape and disrupts the ecological equilibrium, even when measures are taken to remove these plants.
c. *Preserve biodiversity*: the introduction of harmful organisms can threaten the survival of native species.
d. *Healthy environment*: preventing the introduction or tackling harmful organisms with chemicals can have a negative impact on the environment.
e. *Food certainty and safety*: damage caused to food crops by harmful organisms can lead to loss of production and in the long term may threaten food certainty or food safety.

3. Limiting conditions when forming the policy framework are:
   a. *Maximum deregulation in the case of the same results in phytosanitary terms*: the responsibility will be born privately where possible, publicly where necessary.
   b. *Support - subsidiarity*: the responsibility will be born individually where possible and collectively where necessary.
   c. *Effectiveness*: the phytosanitary system will be designed in such a way that goals are achieved.
   d. *Efficiency*: the goals are achieved with the least possible effort and resources.

1.4 Approach

The research was conducted in partnership with the members of the Phytosanitary cluster of the AKV department of the Ministry of EL&I. It started with the question regarding when government intervention is necessary or desirable. In order to answer this question, previous LEI research was used as the basis (Bunte, 2004; Janssens et al., 2006). The resulting analysis was discussed with the members of the Phytosanitary cluster and elaborated using practical questions. The policy framework was then developed based on recent policy insights, economic theory and practical information. This framework was also explained and applied in a workshop. Finally, the current regulations and functioning of the phytosanitary policy was compared with the vision of the Phytosanitary cluster of EL&I and with existing international policy frameworks.

1.5 Structure

The report is structured as follows. After this Introduction, Chapter 2 provides analyses why the government is concerned about phytosanitary policy. In Chapter 3, the vision concerning governance is described. Its application takes place in Chapter 4 in which the policy framework is developed. Chapter 5 compares it with existing international frameworks. In Chapter 6, the report concludes with a discussion, conclusions and recommendations.

2 Reasons for government intervention?

2.1 Introduction

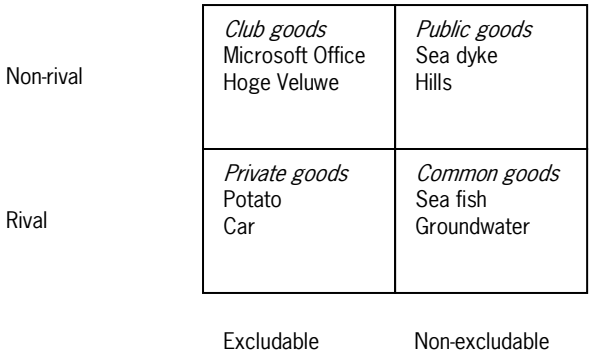
The first question that needs to be answered with regard to the formation of a vision on phytosanitary policy is the motivation of the government to become involved with phytosanitary policy. This question is discussed using economic theory. The government is striving to optimise national welfare. National welfare is the extent to which the needs of a country's inhabitants can be met by diverting scarce alternative appropriable resources. These may be the need for goods and services, but also the need for nature, open space, a clean environment, et cetera. These create demand and satisfying that demand puts pressure on scarce resources. In many cases, the market manages to achieve an optimal allocation of goods and services. The theory of welfare economy is based on the assumption that the market functions optimally and leads to maximum welfare. This is welfare distribution where no one can be made better off by making someone worse of: the Pareto-optimum. However, the welfare distribution that the market achieves for a given income distribution need not be the distribution desired by society. Furthermore, the market does not always function optimally. In that case, we refer to market failure. Economic theory attributes a role to the government in the allocation, when supply and demand are not in equilibrium (Stiglitz, 2000). Market failure may be the result of external effects (whereby under certain conditions there is an insufficient supply of certain goods), or information asymmetry either of market power of companies. For the phytosanitary policy, external effects and information asymmetry are the main important factors.

2.2 External effects

For the government, external effects constitute a reason to exercise control in satisfying needs for goods and services. By needs for goods and services, we also mean the need for fresh air, clean water, no noise pollution, et cetera. If production or consumption involves unintended effects on the satisfaction of needs (welfare) of another, we talk about external effects. Social debate shows which needs of the citizens (the citizen as a consumer, producer, employer, et cetera) is emphasised (Heertje, 2006).

In order to understand how market failure results from external effects, two generic properties of products are important: excludability and rivalry. Excludability refers to the possibility of excluding people from using it. Rivalry is about the degree to which consumption of the product by a person excludes consumption by another person. Based on the dimensions excludability and rivalry, four types of products can be identified:[1] common goods, public goods, club goods and private goods (Figure 2.1).

Figure 2.1 **Classification of goods**



In the case of purely private goods, we talk about excludability and rivalry. For purely public goods, there are also collective provisions; there is no excludability or rivalry. Private goods are also called individual goods: they can be divided into units which can be sole to individual people. The person who decides to purchase a product is often the one who pays for it and uses it. Public goods are purely collective goods, whereby there is often a distinction between decision, payment and use.

The other goods are mixed forms. For group goods, consumption is not excludable, but there is rivalry. Consumers cannot be excluded from consumption, but consumption by one person is at the expense of consumption by someone else. Without regulation, common goods will soon become depleted due to over consumption (tragedy of the commons).

For club goods, this is exactly the opposite: consumers may be excluded from use, but consumption by one is not at the expense of someone else.

[1] For a more extensive discussion, see Janssens et al. (2006).

It is only for private goods, whereby there are no external effects, that the market is able to produce them in the right quantities and at the right price. With regard to public goods, the inability to exclude consumers leads to the risk of free-riding. Once an individual has decided to supply the item in question, another person can consume the item without paying, due to its non-excludable nature. Consequently, the public good will probably be not produced, or in insufficient quantities. This means that production will have to be created in some other way than via the market system of supply and demand. The alternative is a political system via regulation or by open financing.

The phytosanitary policy focuses on the market for plant-based products. When the applicable theory about product classification is applied, plant-based products will generally be classified as private goods. However, this is only the case to a certain degree. We talk about purely private goods when all the properties of the product are valued in the price, or when there are no external effects. This is not the case. The production of and trade in plant-based products is linked with the risk of an infestation or disease of which sometimes the seller but certainly the buyer is ignorant. This risk is manifested as a negative external effect: it is unintended and has a generally negative effect on the satisfaction of the need of the buyer and third parties who are not involved in the production of and trading in contaminated plants or plant-based products, such as other growers and citizens. These needs have been described as the five social goals: need for competitive power, nice landscape and nature, biodiversity, healthy environment and food certainty and safety.

The negative external effects bear the character of a public good. 'Consumption' thereof is non-excludable and 'consumption' thereof is non-rival because the consequence for one are not 'at the expense' of the consequences for another. The conclusion is that in the pricing of plant-based products, no account is taken of the risk of importing an infestation or disease. This price is actually too low (Bunte, 2004).

The government has various options for the negative external effects: government levies to internalise the costs of the negative external effects in the price of direct standards. The costs of the negative external effects are actually the costs associated with producing another good, i.e. the creation of a protection against the risks of contamination of a plant with a harmful organism. The creation of protection against risks for the plant health will not occur naturally via the market because 'the production of this protection' is associated with positive external effects. These positive external effects are not expressed in the price, whereby there is no incentive in the market to organise these activities. There is no market where pricing brings equilibrium between the demand

for biodiversity, for example, and the supply of protection against risks for plant health. It can be stated that the good 'protection against risks for plant health' is a public good.

2.3 Information asymmetry

A second form of market failure which is important to the phytosanitary policy is the occurrence of information asymmetry: during the transaction, the seller and buyer do not have access to the same information. Usually, the seller knows more about a product than the buyer. He can exploit this advantage by using the ignorance of the buyer. After a while, the buyer will no longer accept this and will want to see guarantees incorporated in the contract. Because the seller cannot give this certainty, fewer transactions will be conducted than is optimal in terms of the welfare theory. In addition, the terms of the contract will not be optimal.

In theory, the problem of information asymmetry can be offset by means of insurance. The seller covers himself against the possible risks resulting from a transaction, if he is held liable. However, such insurance is not automatically created in the market for the following reasons:

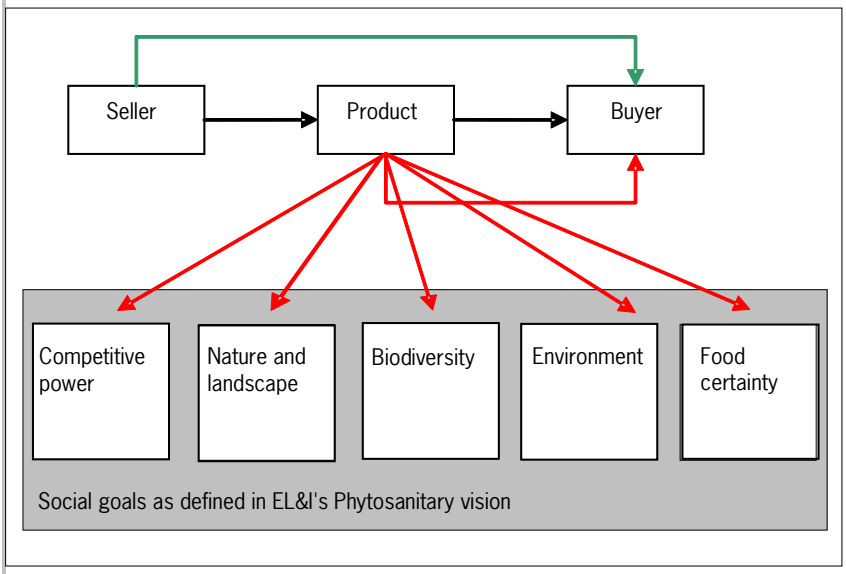
1. *contrary selection*
   Producers have information about their own risk profile. Companies with a high risk profile benefit from an insurance, while companies with a low profile do not, given the level of the premium. Because then only companies with a high risk profile opt for insurance, the premium will have to rise. The mechanism will repeat itself and ultimately no one will be prepared to get insurance.
2. *moral risk*
   Entrepreneurs can influence the risk. When this risk is insured, the incentive for the entrepreneur to reduce the risk will be lower. This results in higher social costs than desired.

The above reasons also apply on the market for insurance against phytosanitary risks. There is a huge variation in the risk profile and the risk can be influenced by the entrepreneur.

There is a paradox in the analyses about external effects and information asymmetry. Due to the existence of the external effects, there are too many transactions (price is too low), while information asymmetry leads to fewer transactions. The reason for this is that the analysis of the external effects con-

centrates on the effects of transactions for third parties, i.e. the consequences are transferred to others than the seller and the buyer. The analysis of the information asymmetry is focused on the consequences for the seller and buyer themselves. In the phytosanitary domain, the consequences for the buyers (contract parties) and third parties are at stake. Third parties are the other entrepreneurs from the plant sector and other actors in society.

Figure 2.2 **Impact of external effects and information asymmetry**



Red arrows: external effects.
Green arrow: information asymmetry.

2.4 Public debate

For the government, market failure is the reason why it is intervening in the market of plant-based products. Incidentally, no account has been taken of the fact that the risks in terms of time are not stable. The list of potential threats changes constantly. However, needs change too. The need for the public good 'biodiversity' or a healthy environment has grown in recent years, or has at least become a clear part of the public debate.

It is good to realise that government intervention may be linked with negative external effects (government failure) which in turn lead to government intervention with possible external effects, et cetera. However, market failure and government failure both occur and this is a constant subject of political debate about what the best allocation mechanism is for which goods and services.

3 Governance

3.1 Introduction

If it is clear that the government has a task, this begs the question how the government can best perform that task. Which governance philosophy will the government apply what responsibility will the government take and what is viewed as a task for the social actors? The options open to the government are determined by social opinions about the role of the government. These opinions are subject to change. On one side of the spectrum is a centralistic government which prescribes everything for its citizens and on the other side a government which does not intervene at all and lets the market get on with its work. Depending on the role that the government wants to play, it selects the functions it wishes to perform or those which it would rather leave to private parties. In the choices made by the government, different levels can be distinguished. These levels are briefly discussed in this chapter, distinguishing between policy preparation and implementation. This study primarily focuses on policy preparation.

3.2 Role and functions of government

At the highest level, the classic economic functions of government are distinguished. This concerns the allocation of the production factors over the application options, the redistribution of income and the stabilisation of the macroeconomic development. In this research, we limit ourselves to the allocation function. The argument for the government for exercising the allocation function was discussed in detail in Chapter 2. Government decision-making is a matter of weighing the interests of consumers, producers, employees and tradesmen, citizens in action groups and lobbies, et cetera. The interests of these groups are partially different and/or contrary. Merely applying the Paretian welfare theory, which exclusively considers the allocation in terms of the preferences of the consumers, is thus insufficient for the government. In this role play, the government has a coordinating task and influences the allocation of resources (Heertje, 2006).

In order to achieve its goals, the government formulates policy. The question is which policy approach leads to the desire results. Choices for governance methods and policy instruments play an important role here. Choosing a govern-

ance philosophy and the way in which the government wants to govern is the second level and the core of this chapter. In the framework of this research, several definitions are important (Selnes, 2000):

- *governance philosophy*
  A non-sector-bound vision of governance based on an idea of social processes and the related role and division of tasks between governments and social actors.
- *governance concept*
  A governance philosophy combined with ideas about the choice of instruments and with a clear reference to a policy sector (in this case the phytosanitary policy).
- *governance instrument*
  Resources allocated by policy implementers to affect certain governance results and effects.
- *governance style*
  The way in which the government (the Ministry of EL&I) approaches governance: the extent to which it is focused on reaching consensus with other parties and the extent to which it adopts an active of reactive approach.
- *governance model*
  Ideal integration of governance philosophy, governance concepts and governance instruments into a cohesive entity. This is studied in more depth in paragraph 3.3.

3.3 Governance philosophy and governance models

Under the influence of social processes and the increased influence of information technology, there is a shift in governance approaches: from 'government' to 'governance'. In its Bevrijdende Kaders [Liberating Frameworks] (2002), the RMO (Council for Social Developments) asserts that the Netherlands is in a transition period towards new governance concepts. The RMO indicates that two developments are ushering in a new governance concept: framework creation and horizontalisation. Framework creation means that the government retreats to essential frameworks and from there actively, but focused on generalities, becomes involved with society. The government governs with several core rules, which on the one hand offer more scope to institutions, professionals and citizens but which are strictly monitored on the other hand. Horizontalisation means that institutions which have retained more freedom start to focus more on justification towards citizens and to be more oriented towards each other

than the government. Horizontalisation takes place within the frameworks set by the government (Korsten, A.F.A., 2004). In the cabinet vision 'new government' (BZK, 2003), the desire was expressed that modern government:

- is more reserved in what it organises;
- offers more scope to citizens and their organisations;
- safeguards public interests and constitutional requirements;
- delivers high quality results, in cases where the representation of public tasks cannot be designated to the market of the civil society, but must be performed by the government.

'Government' and 'governance' imply contrasting governance philosophies. 'Government' refers here to the classic image of the government as the controlling governing party which aims to weigh up and take decisions about the many interests (sometimes combined to form the general interest), to which the interest of its own organisation is generally subordinate. 'Governance' gives the image of a government as a party focused on dialogue and cooperation, the government as an actor among the other actors focused on a limited number of sub interests. Table 3.1 shows the main features of both governance philosophies.

Table 3.1 Features of governance philosophies

In terms of	Government	Governance
Role of the state	Only legitimate policy maker, stands for general interest, acts with one voice, as an umpire placed above individual interests. Sovereignty and autonomy are important	Melting pot of interests within the wide force field of the state. The state is special, but it is heterogeneous and accommodates various interests. Sovereignty is an illusion
Role of other actors	In the optimal case, input is heard in advance May participate in implementation (if the government wants it)	Are embraced in participation beforehand Must participate in implementation (in order to ensure its fruition)
Governance	Top-down; powerful Accountability	Bottom-up; capacity, credibility

Source: Based on Selnes and Van der Wielen (2008).

Table 3.1	Features of governance philosophies (continued)	
In terms of	**Government**	**Governance**
Access to decision-making	Formal, ordered, hierarchy	Informal, unordered, heterarchy
Instruments	Unilaterally imposed instruments whereby force is a possibility Voluntary instruments as cover	Unilaterally imposed instruments only in extreme cases. Force is avoided Multilateral voluntary instruments are the essence
Power and influence	'Power'	'Empowerment'
Loyalty	To authority and established government policy	To relations and current social constructs
Trust	In democratic formula, politics, careful decision-making	In capacities in the field, well organised policy processes
Acceptance	Via democratically chosen authorities	Via conviction and persuasion as two-way traffic
Legitimacy processes	If they contribute to achieving government goals	Are deemed essential
Relationship goal and policy process	Clear and indisputable, the policy process adapts to this	Goals shift or disappear, process-based approach

Source: Based on Selnes and Van der Wielen (2008).

The above features do not always represent simple choices in which decision-makers are completely free. Moreover policy themes often contain elements of both governance perspectives. Within political literature, there is a debate about a supposed shift from government to governance. Governance is currently 'popular' but reality has shown that the tide can soon change: a government may 'let go' or 'govern at a distance', but at the very first crisis we call on the government. Private parties or independent services may predominate in practice, but it is often the Minister who is called to account in the Lower House. However, governments are under pressure to move towards governance rather than strong centralised control. To what extent the phytosanitary policy can be shaped according to the principles of governance depends, apart from the policy objective, the features of the organism and the environment, on the governance concept and the governance style. In theory, this results in several possible governance models, such as:

- self-governance;
- network governance;

- transaction governance;
- hierarchical governance.

In practice, those who wish to govern will choose from the different models (Selnes, 2001 and Baarsma, 2003) described below.

Self-governance

With self-governance, the government takes a reserved approach, but does set limiting conditions. Its role is more that of a stimulator, initiator, facilitator and guard. Free self-governance is common in the private sector, but can also be found in the following situation: with regard to the nature of the problem, government control is required, yet governance cannot be expected because the social problem is not regarded as public interest (the severity of the problem does not justify government control). In the case of free self-governance, parties control their own or each others' behaviour. A government may stimulate self-governance processes or support initiatives with subsidies or amended legislation. Self-governance will then generally be an extension of network governance.

With regard to public interests, there is much more often a case of conditioned self-governance: the government formulates the objective, while parties in the field try to achieve this objective through self-governance.

Table 3.2	**Self-governance**
Main features of self-governance	- Consensus oriented - Objectives of the self-governing actors are an extension of the government objectives - Actors from the network have their own sources of help to achieve goals and are to some extent responsible for resolving the problem - Government is still ultimately responsible for the public interest
Advantages	- The potential of businesses, organisations and citizens is called upon - More scope to act more effectively
Disadvantages	- Fundamental distinction between public and private sector can become more blurred - Providing the right form of monitoring is not always easy
Associated policy instruments	- Self-governing instruments: informative, behaviour-oriented, technology-oriented, contractual, dispute settlement

Source: Own editing of various research projects (B. Baarsma, M. Haijer, J.A.M. Hufen, J. Hinssen, A.F.A. Korsten, T.A. Selnes).

Network governance

With network governance, a government is an actor in interaction with other actors aimed at reaching consensus. A government actor which applies network governance assumes that more insight into alternatives and the consequences of alternatives will influence the behavioural choices of actors in the desired direction.

Table 3.3	**Network governance**
Main features of self-governance	- Mutual dependence between actors - Interactive processes between actors are characterised by a complexity and interwoven goals - Relationship patters between actors have a sustainable character
Advantages	- Parties are often dependent on each other and the network approach offers a possible solution for this - Joint solution enjoys support among the parties - Use of the innovative and creative capacity of the actors
Disadvantages	- The autonomous and relatively closed position of policy networks asks questions of the democratic substance of decisions taken - Government only has limited capacity to provide governance to policy networks - Progress must be facilitated, to prevent endless consensus discussions
Associated policy instruments	- Second and third generation of multi-sided policy instruments (see below for further explanation)

Source: Own editing of various research projects (B. Baarsma, M. Haijer, J.A.M. Hufen, J. Hinssen, A.F.A. Korsten, T.A. Selnes).

Transaction governance

With transaction governance, a government actor adopts an active approach in its interaction with the actors. A government actor which applies transaction governance assumes that actors are targeting their own interests and that the behavioural choices desired by the government actor are made more attractive through financial incentives and market-oriented contracts than the undesired alternatives, so actors therefore adapt their behaviour.

Table 3.4	Transaction governance
Main features of self-governance	- Some degree of solidarity between the parties - Dependencies between actors - Government stands above the parties, because it imposes
Advantages	- Parties in the field are listened to about the use of the policy instrument - Custom work is possible
Disadvantages	- The financial reward or levy for the behaviour is the incentive but not the inner conviction that it is right to act this way
Associated policy instruments	- Subsidies and levies

Source: Own editing of various research projects (B. Baarsma, M. Haijer, J.A.M. Hufen, J. Hinssen, A.F.A. Korsten, T.A. Selnes).

Hierarchical governance

With hierarchical governance, a government actor imposes its own ideas on other actors. A government actor which applies hierarchical governance assumes that actors will largely comply with rules and regulations from a sense of standards. Hierarchical governance is mainly useful in cases where the government is relatively powerful and where there is no consensus between the different parties about the goals to be met. Another important consideration is that the government can protect certain weak groups by 'imposing' governance. In other forms of governance (particularly self-governance and network governance), the government assumes that the actors are capable of asserting themselves fairly well.

Table 3.5	Hierarchical governance
Main features of self-governance	- Government is above the parties; top down approach - Governing party is independent - The final goal is clear and fixed
Advantages	- Democratic - Leading principles are legal certainty, justice and caution - Predictable
Disadvantages	- Possible information backlog of the government towards actors to be governed - Creative and innovative capacity of actors in the field is insufficiently exploited - In general, high enforcement burden
Associated policy instruments	- Legislation and regulations (whip) - Financial instruments (carrot) - Communicative instruments (sermon)

Source: Own editing of various research projects (B. Baarsma, M. Haijer, J.A.M. Hufen, J. Hinssen, A.F.A. Korsten, T.A. Selnes).

A similar approach to governance philosophies can be found in the work of Professor C.J.A.M. Termeer with the discussion of three generations of policy instruments (lecture entitled *Third Generation Governance*, during the Dies Natalis of Wageningen University, 2008). Clear parallels can be drawn between the contradictions 'government versus governance' and the first, second and third generation policy instruments. In general, the more dynamic the potentially changeable variables in the field, the more a higher generation of policy instruments will prove their effectiveness. There is no question of replacing one generation of policy instruments by another, whereby the third generation is the policy instrumentarium of the highest order. However, the increase in the attention for government failure has stimulated the need for a new generation of policy instruments. A brief discussion of the generations of policy instruments is included in Appendix 1.

3.4 Policy instruments

Policy instruments typically fit into a governance model. In this paragraph, we will briefly discuss the instruments relating to the different governance models from paragraph 3.3. This research assumes 5 types of instrument: Regulations

(behavioural rules and agreements) financial instruments, communicative instruments, organisational and physical provisions. In Appendix 2, these instruments are briefly explained. It is important that the same types of instruments fit with different governance models. However, the form or the way in which the instrument was created will vary. With regard to form or process, instruments can be unilateral or multilateral. With regard to the process, unilateral instruments are designed by one actor, while multilateral instruments are the result of a consultation and negotiation process (Heuvelhof, 1997). To clarify: a covenant is in the form of a multilateral instrument, but can be unilateral in the process if one party in the process has exercised his power. By contrast, a subsidy is unilateral in form, but can be extensively discussed with the target group in the creation process.

Self-governance

Many instruments which fit into network governance can also be used in self-governance. Regulation via codes of conduct, protocols, covenants or communicative and organisational instruments like quality marks, chain guarantee system, recognition regulations fit in well with self-governance. With regard to conditioned self-governance, there are instruments which make it possible for the government to monitor whether the self-governance will result in the goal being achieved. Indicators and justification systems, as well as monitoring, benchmarking and quality control are examples of this. The government can use financial incentives and legal support to stimulate and support the process leading to self-governance (Baarsma, 2003).

Network governance

Network governance involves the so-called 2nd and 3rd generation policy instruments. They can be described as multilateral instruments because they are the result of consultation and negotiation involving various parties.

Contracts and covenants, as long as they are not imposed, are examples of legal instruments. Subsidies, any form of knowledge development and information and instruments to promote transparency such as quality marks and certification are examples of financial and communicative instruments which fit into network governance. It is possible that the instrument is unilateral in its appearance, but that there have been extensive negotiations. Organisational instruments such as the appointment of a taskforce, visits and mediation are other options. Interactive policy development, for example through citizen platforms or business panels, and giving scope to experiments also resemble 3rd generation policy instruments.

Transaction governance
As described in paragraph 3.2, the financial incentive to control behaviour is key to this form of governance. Financial instruments, such as subsidies and vouchers, are the instruments which fit here. Although it is ultimately the government which uses or imposes the instrument, the instrument is created in a multilateral way. This means that the government joins the parties in the field to discuss the 'how' question and the instrument is created through negotiation. This is a great difference from the use of financial instruments under hierarchical governance, whereby the government is not dependent on others or the behaviour of others. Actors may choose to use a subsidy, but they cannot choose whether to pay tax or not.

Hierarchical governance
The classic or first generation of instruments reflect the characteristics of a hierarchical, vertical structure. With hierarchical governance, the instruments are unilateral, i.e. designed and used by one actor, in this case the government. As such, both the form of the instrument and the creation process of the instrument are determined by one party. Legislation and regulations (whip) and various financial instruments (carrot) and communicative instruments (sermon) are among the instruments which fit into hierarchical governance.

4 Contours of a framework

4.1 Introduction

In this chapter, the policy framework is developed. Based on this framework, the government can elaborate its phytosanitary role in order to fulfil its ambitions and goals. In the policy framework, the governance philosophy is applied as described in the limiting conditions in paragraph 1.3: privately where possible, publicly where necessary and individually where possible, collectively where necessary. In other words, a government which establishes a framework which leaves as much scope as possible for social parties.

The policy framework is shaped in such a way that, based on characteristics of organisms, market parties and their governance style, policy makers can determine which governance model is suitable for preventing market failure or to compensate the consequences of market failure. In this chapter, the policy framework will firstly be set in a theoretical context. In paragraph 4.3, the framework will be applied to the phytosanitary policy. Finally, attention will be devoted on the distribution of the costs between government and private parties. In order to gain a better sense of the motivation for government to intervene and the working of the policy framework, a case is elaborated in Appendix 3.

4.2 Theoretical context

Criterion

With a positive answer to the question whether government policy is necessary, a criterion is required as a basis to assess which government interventions are most desirable. A generally accepted criterion is the welfare criterion: the sum of the consumer surplus and the producer surplus. One of the great disadvantages of this method is that intangible needs are not involved in this method; besides consumers, people are also citizens, employees, et cetera. In Chapter 3, we stated that welfare involves all needs (tangible and intangible) which put pressure on scarce resources. Theoretically, the criterion could therefore be the maximisation of the difference between the increased welfare as a result of the government intervention (targeted effects and external effects) minus the costs of this intervention. Because this also involves intangible needs and

goods, it is not easy to quantify the increased welfare. For this reason, the increase and decline of welfare will be indicated in qualitative terms.

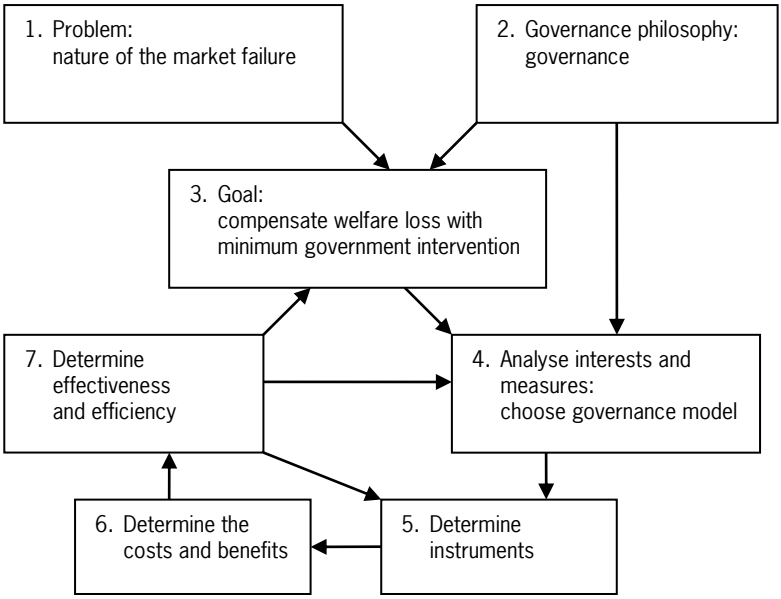
Iterative process

The phytosanitary policy framework means that the government defines phytosanitary goals and determines what role it wishes to play therein. Defining the phytosanitary goals is an iterative process. Starting points in the framework are the phytosanitary problem on the one hand and the governance philosophy on the other. On this basis, the government identifies goals, establishes instruments, evaluates the outcomes and reviews the goals, after which the policy is adjusted if necessary. The policy framework thus fits in with standard policy evaluation procedures.

The following steps are identified (see Figure 4.1):

1. Define the welfare loss that occurs as a result of the market failure in qualitative and if possible quantitative terms based on the social effects;
2. Determine the current governance philosophy that the government wishes to use to resolve the problem;
3. Formulate the goal. The goal comes from the problem to be resolved (reduction of the welfare loss as a result of market failure) and from the governance philosophy. This step focuses among others on the question whether the government wishes to accept the obligation to act or achieve results;
4. Make a further analysis of the problem based on the characteristics of the organism and actors, so that a governance model can be chosen;
5. Based on step 4, determine which instruments should logically be used;
6. Draw up the targeted benefits (increased welfare level) and the expected costs resulting from the government interventions in qualitative and if possible quantitative terms. Specify these benefits according to subgroup, for example producer, consumer, citizen/taxpayer, et cetera. The costs for the government and market parties are directly related to the intervention or are the result of government failure;
7. Evaluate the policy effectively and efficiently and adapt the instruments, governance model and/or ambitions if necessary.

Figure 4.1 Policy framework diagram



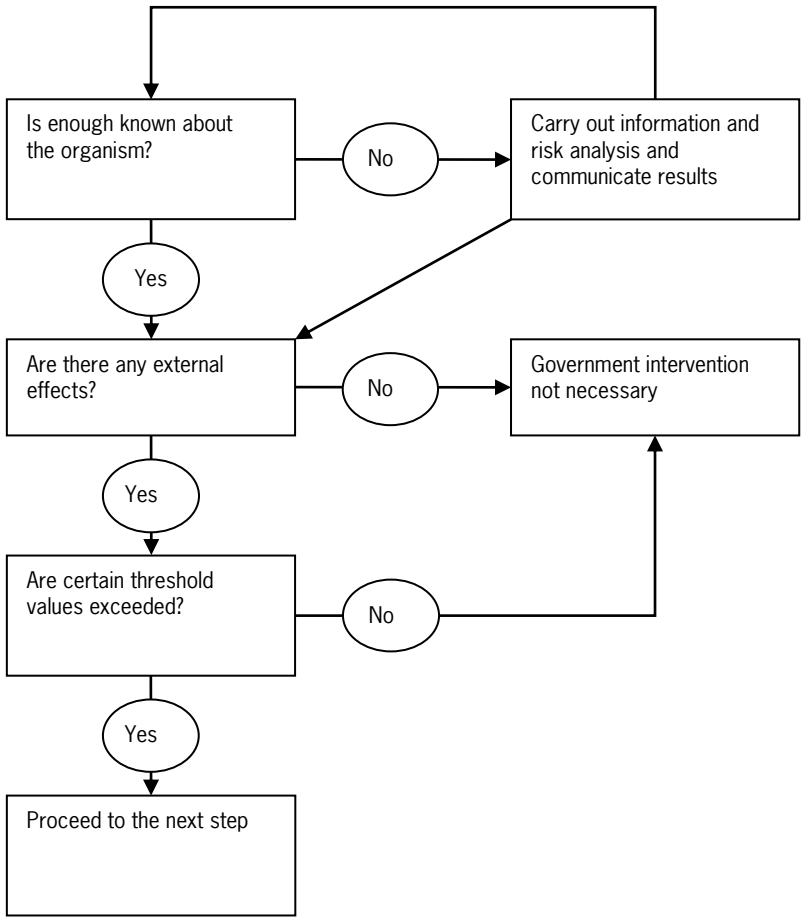
Through this framework, substance is given to the limiting conditions as described in paragraph 1.3. By starting from the governance approach, creation of support among stakeholders is inherent to the chosen strategy. Because the government wishes to be an actor among other social actors, regulation is less obvious. However, it is then the question whether the government is able to achieve the goals to be formulated: the effectiveness question. The decisive factor here is how the goals are formulated: the creation of limiting conditions corresponds with an obligation to act, to achieve an increase in welfare with an obligation to achieve results. When the second is the case, there is the risk that the governance approach is not effective enough. The government will then have to take more control. However, the risk of higher costs for the implementation and unintended side effects increases too, whereby the efficiency of the policy can decline. The government will be willing to incur costs as long as the 'yield' is higher than the costs and theoretically searches for a point where extra costs are the same the extra yield which is the result (where the marginal costs linked to government effort are the same as the marginal welfare profit which that produces).

4.3 Application of the policy framework

1. *Define problem*
   The problem definition starts once a new disease or infestation threatens or arrives in the country or has been present for some time and is now starting to become serious. If not enough is known about the organism, information will be collected and analysed in order to chart the risk of the organism.[1] The results are communicated to the business community. Communicating the risks helps prevent information asymmetry, but does not abolish it. The actual information asymmetry relates to the knowledge of the contract parties about the fact that the product is contaminated, not to the fact that there is a risk. Through communication, the chain parties are aware of the risks associated with plant-based material and take it into account in the contract. When sufficient information is available, it can be assessed whether negative external effects will occur. If that is not the case, government intervention will not be necessary as there is no question of market failure. If the external effects only occur within the sector and there are no unintended effects on the welfare of third parties, the government may decide not to intervene, but that is up to the sector to decide. When there are unacceptable external effects for third parties, government intervention is necessary. The social debate ultimately determines whether external effects are regarded as unacceptable or not. The problem analysis is shown in Figure 4.2.

[1] We have consciously chosen to avoid the term PRA (Pest Risk Analysis) in order to stay as close to the assumption as possible that there is no phyosanitary policy.

Figure 4.2 **Elaboration first step: establishing the problem**



Possible welfare losses as a result of information asymmetry or external effects are:

- *Reduction of competitive power*
  - *For the producer*
    the arrival of a new disease and infestation can damage food products, ornamental products or the raw material, resulting in reduction of the production and trade. Growers may be able to counter this by using pesticides, et cetera. This increases the production costs for the producer as well as leading to negative external effects in the form of harm to the environment. Other relevant negative external effects relate to the competitive power of the sector as a whole and even the Dutch economy.
  - *For the sector*[1]
    increased risk of spreading new diseases and infestations could lead to preventative spraying to prevent contamination, resulting in production cost increase and harm to the environment. Increased production costs and possibly declining interest of foreign buyers due to incorrect expectations of quality loss and/or damaged image leads to loss of the competitive power and export position of the sector.
  - *For the Netherlands*
    due to the importance of plant-based production and trade for the Dutch economy and employment, the result of the Dutch economy may be considerable. A good competitive position and sufficient employment are not only important for the plant sector but also for the Dutch government as the representative of Dutch general interests.
- *Food certainty and safety*
  A possible consequence of the diseases and infestations is reduction of food production in the Netherlands. This will not immediately constitute a danger for food certainty for the Netherlands (and the rest of the world). This will only be the case when such problems occur in a large number of third countries. A possible consequence of the extra use of pesticides, there is an increased risk of residue forming on the food. In principle, legislation for crop protection prevents this negative external effect.
- *Nature and landscape*
  the arrival of a plant disease or infestation can have major consequences for that attractiveness of the landscape and the immediate living environment,

[1] In the rest of this study, sector does not refer to the whole plant production but to sub sectors, such as arable farming, greenhouse horticulture and tree cultivation.

when certain species characteristic for the landscape disappear or the amount of green declines.

- *Biodiversity*
  biodiversity is threatened if species (as part of an ecosystem) disappear of which there is a vulnerable population in the Netherlands (red list species).
- *Environment*
  Tackling diseases and infestations with chemicals damages the environment through the emission of harmful substances to the soil, water, air. In principle, legislation for crop protection prevents this negative external effect.

Application of the policy framework as shown in Figures 4.1 and 4.2 means that the government intervention may be required as early as step 1 in order to define the problem. At the same time, government intervention does not need to mean that the government does the work itself. In the implementation, the government also has the freedom to decide what it does itself and what it has done by market parties (see paragraph 3.3).

2. *Determine current governance philosophy*
   As described in Chapter 3, in the government there is a visible shift in governance approach from government to governance. In this research too, on behalf of the client the governance approach is leading.

3. *Formulate the goal and governance concept*
   Government intervention is aimed at totally or partially resolving the problem. The aim can vary from minimising the welfare loss to creating limiting conditions within which market parties can reduce the welfare loss as elaborated in step 1. As with the governance philosophy, the governance concept for the phytosanitary policy field was also more or less provided by the client. It means that responsibility is taken as far as possible by the market parties themselves. The business community will arrange its institutional organisation from its own interest (economically healthy competitive sector) in such a way that it can bear its responsibility in order to tackle phytosanitary threats. As an actor among the other actors, the government (the Ministry of EL&I) will preferably want to contribute to the formation of these institutions and where necessary close essential holes in the system in order to fulfil its role as guardian/producer of the public goods and to continue to strive for maximisation of welfare. This demands choices, because phytosanitary ambitions can affect other policy areas and ambitions may be conflicting. The 'solution' depends on the result of the social and political

debate. Is a certain degree of environmental pollution accepted in order to maintain competitive power, for example? These ambitions are expressed in the cabinet's various policy documents.

4. *Analyse problem and determine governance model*
   It is important to remember that governance philosophy, governance concept and governance instruments apply for the entire policy field of plant health, but that within these frameworks different governance models (mix of governance philosophy, concept and instruments) can be used, depending on the characteristics of organisms and actors in the field. In order to compose the ideal model, the government needs answers to the following three questions:
   1. *know*
      Do the market parties have the relevant information to be able to make responsible choices?
   2. *want*
      Does minimising the phytosanitary risk serve the interests of responsible market parties?
   3. *can*
      Are market parties capable of taking measures to tackle the phytosanitary risk?

The first question focuses on preventing market failure as a result of information asymmetry. The second question involves preventing and compensating market failure as a result of negative external effects. The third question relates to the possibilities of private parties to intervene.

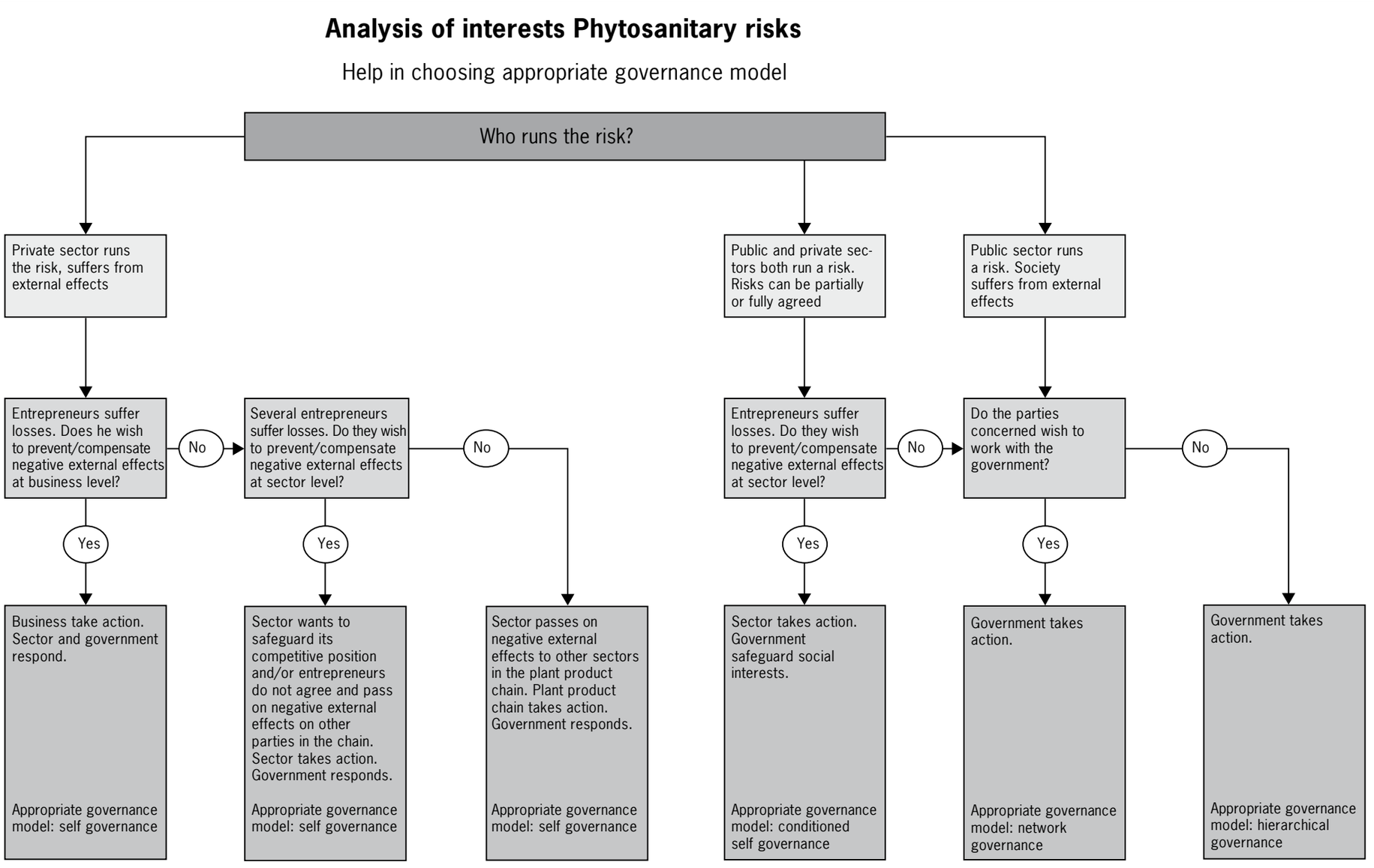
The question 'know' was answered in step 1, in which it was indicated that, due to lack of information, an information and risk analysis is carried out and the results must be communicated. This step relates to the questions 'want' and 'can'.

Want

In order to answer the question 'Does minimising the phytosanitary risk serve the interests of responsible market parties?' we need to consider what interests and positions social actors have. It must also be investigated whether and to what extent they experience incentives to prevent negative external effects. Figure 4.3 contributes to answering these questions by studying step by step to what degree private and public interests correspond and which economic incentives are experienced.

In this part of the policy framework, possibilities are sought to prevent or compensate negative external effects. This prevention or compensation can be done at business level, sector and sub-sector level or at the level of the plant sector and requires an economic incentive. Such an incentive is present if private interests are at stake. If the private interests partially or wholly correspond with public interests, the public interests are partially or wholly served through measures by the private parties which wish to prevent or compensate the negative external effects in their own interests. If there are no corresponding interests, then hierarchical governance is required by the government to safeguard the public interests. Figure 4.3 looks at this mechanism in more detail.

Figure 4.3 **Diagram to derive governance model**



Public and private interests (needs)

The external effects resulting from the production of and trade in plant-based products are described as potentially unintended negative effects on satisfying needs (welfare) of others: need for nature, nice landscape, biodiversity, clean environment, safe food and a healthy economy (sufficient competitive power). If the private interest does not correspond with the public interest, there is no economic mechanism to stimulate producers and traders to take their responsibility. That means (production of the 'goods') *minimising the phytosanitary risks* and *creating protection against the risks of contamination.* Because these 'goods' behave as public goods. Although lobby groups can manifest themselves like nature conservation organisations, without a role for the government they are unable to satisfactorily issue effective incentives. Government intervention is required to ensure that producers and traders bear their responsibility.

If the private interest corresponds with the public interest, then the public interest can be helped by the measures taken by the businesses in the sector to prevent contamination. In other words: there is an economic incentive for traders and producers to produce the previously public 'good' *creation of protection against the risks of contamination.* The government can then play a more low-key role. However, it is possible that the public interest benefits insufficiently from the private measures or that other public interests are involved (for example preventative spraying versus environmental harm). In such cases, the government will have to be more active and at least draw up limiting conditions for the sector.

Individual and collective interests (within the sector)

External effects can also occur within the plant-based sector. If an economic incentive is present, the individual entrepreneur will take the responsibility and create protection against the risks. This incentive is present when the individual entrepreneur is liable for the phytosanitary quality of the products he produces or in which he trades. That is the case when phytosanitary risks can be traced to his individual businesses and behaviour. If that is not the case, the sector will collectively arm itself and take measures to guarantee that clean products are delivered. Within the sector, these measures have the character of public good: everyone benefits from the effects (non-rival and non-excludable), with the risk of free-riding. However, this market failure does not need to be offset by the government. It can be left to the sector organisations, which have different resources at their disposal, such as certification, social pressure, selective incentives (focusing on their own interest) for participation in the collective goal. The fact that the government leaves resolving of the market failure to the sector

does not mean that it has no intention or will to intervene. A strongly competitive sector is also important to the government and furthermore there can sometimes be too many opposing interests within one sector (for example importers and producers), making it difficult for the sector to act as a collective. By playing a stimulating or facilitating role, whether or not at the request of the sector, the government can make a contribution.

Figure 4.3 shows that four governance models may be relevant to government intervention with regard to harmful organisms. Obviously, this is a simple sketch of the reality and serves as an aid. In reality, each model has its own composition of governance and instruments and this composition will constantly be subject to change. For example: depending on how the process proceeds, network governance can change into self-governance, but also into hierarchical governance.

Elaboration of the models

a. *Conditioned and free Self-governance*
   Organisms pose a threat at least to the interests of the chain parties. Businesses benefit themselves from fighting or eliminating the disease or infestation and have adequate possibilities to do so. In this case, the answers to the questions *know, want and can* are three times yes, thus fulfilling the conditions for self-governance. One example is Tuta absoluta (South American Tomato Leaf Miner) in the Netherlands. The interests outside the agro chain are served by the measures of the businesses and the sector. The government desires a guarantee from the sector and will set goals which the sector is accountable for. This is conditioned self-governance. The government continues to be responsible for the public interests.
b. *Network governance*
   Organisms pose a threat at least to public interests and could damage the interests of chain parties.
   - Only public interests: businesses and sectors in the agro chain are not encouraged to combat or tackle the problem. The government is willing to actively govern, but is dependent on the sector for achieving its goals and is faced with several actors in the field. These include weeds and water plants which are distributed through consumers of garden centres unintentionally in the free nature, but cause great damage there. An example of this is the floating pennywort infestation which caused havoc in the Netherlands.

- Corresponding private and public interests. Both government and industry have interests in tackling the problem and depend on each other for its effectiveness. An example of this is Phytophthora ramorum.

c. *Hierarchical governance*
This category includes organisms in which there are virtually only interests outside the agrochain at stake. The chain will want to keep its costs as low as possible and will not therefore be tempted to take measures. Hierarchical governance will get businesses and the sector to behave in a way that is in conflict with their individual interest (low costs). This may be the case with regard to weeds which are easy to combat on farms and agricultural holdings, but not in nature where they pose a threat to biodiversity. An example is Impatiens glandulifera. In view of the governance philosophy, before hierarchical governance is chosen, the possibility for network governance will first be explored.

d. Transaction governance
This form involves governance through financial instruments. Its application in the phytosanitary policy is not relevant, and we will not therefore consider it further.

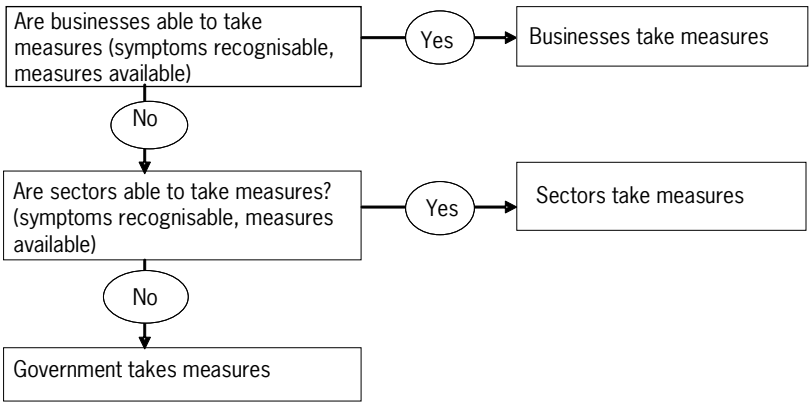
Ability

The phytosanitary system may be designed so that the private parties, whether individually or collectively, are stimulated to minimise the phytosanitary risk in their own interest, but they are not technically capable of doing it. In that case it is about 'ability'. If this condition is not met, the negative external effects occur and a government role is still relevant. This becomes clear in Figure 4.4. In order to answer the question whether market parties are able to take measures with which the phytosanitary risk can be combated, the following aspects are important:

- recognisability of the organism and symptoms;
- availability of detection methods to demonstrate the presence of the organism;
- availability of effective measures.

Efforts are being made to develop methods which reveal and combat risks for plant health on farms. If that is not possible, methods at sector level will have to be developed for that purpose. If that too proves impossible, the government will have to assume the task. That is the case for pathogens whose symptoms cannot be recognised on the treated products and/or cannot be combated. Examples are PSTVd and Meloidogyne chitwoodi.

Figure 4.4 **Diagram to determine who takes measures**



5. *Determine instruments*
   Step 4 goes into more detail about the 'routes' which could be followed to choose the most appropriate governance model. Chapter 3 indicated which policy instruments fit the various governance models. It was also indicated that policy instruments can be used in several governance models. In this step, we look at which instruments can be used for which phytosanitary problem. Here, the governance model does not so much determine the choice of instruments, but the route to choosing them. The questions determine the nature of the problem to be solved and thus give direction to the instrument.

   a. *Self-governance*
      If only private interests are at stake, then the government will be more reserved and may only facilitate in the legal or financial atmosphere. For example, if the sector chooses standard regulations, the government must approve such a regulation. If the sector chooses informative instruments such as quality mark and certification, the government can stimulate this with a financial contribution.

      If besides private interests, public interests are at stake, the government will have to play a more active role and in addition to limiting conditions also provide the sector with accountable goals. The government will then have to use monitoring and other instruments and justification methods to check whether the goals are being achieved.

b. *Network governance*

It is possible that for certain harmful organisms, there is insufficient knowledge about the recognisability of the symptoms. Or there may not be a good detection method available to trace the organism at farm level. In order to reduce the risks of contamination and possibly to prevent free rider behaviour, other measures are necessary. In that case, the sector can request the government to offer the sector scope (for example through the commodity boards or semi-public bodies) to impose urgent measures on the entrepreneurs and to monitor compliance. The sector can also create a quality mark or certificate to stimulate businesses to take measures and thus reduce the risk. Finally, by setting up a damage fund or insurance, compensation for any damage can be made if the residual risk does manifest itself. Within insurance, premium differentiation linked to participation in a certification system can act as a positive incentive to improve an entrepreneur's behaviour. In the case of a damage fund, this incentive can be built in at collective level; only certified businesses can apply for compensation from the damage fund. If businesses and the sector have taken their measures, but the risk remains, import inspections may be imposed as a measure. The government will then need to set legal frameworks. Also in the case that the organism does establish itself, legal frameworks may be necessary to enable its elimination.

Sometimes the interests of government and business may partially agree and partially conflict with each other. These are often complex policy issues with several actors such as the representatives of the sector and various representatives in the field of nature, environment, food safety. The government will have the tendency to deploy multilateral instruments aimed at reaching a consensus. In such cases, the government may agree a covenant with the sector, for example, in which the measures and goals can be aligned. Organisational instruments such as the Executive Council of Taskforce can be used.

The government can decide to offer research and information exchange as a collective provision, although in theory research can be provided privately. However, private research often involves excessive transaction costs, while delivery by the government stimulates the positive external effects of research. Examples of such research are risk analysis in the case of new diseases and infestations, and research into detection methods to reveal invisible contamination. Also for the role of lobbyist in an international context, the government chooses to fulfil this role. On the one hand due to public interests (although

these may be the same as the private interests), but on the other hand also because it is often more efficient and more effective to operate internationally as a member state than as an individual business or sector.

c. Hierarchical *governance*
   Drawing up legislation and regulations, imposing levies or granting subsidies without extensive input from the actors in the field are obvious instruments. The possible disadvantage of this form of governance is compliance (or lack of compliance) with the rules, whereby the costs of enforcing them can be considerable. A possible advantage is that, due to lack of consensus between the actors in the field, the government decides and fulfils its role as representative of the general interest or protector of the weaker parties.

6. *Determine the costs and benefits resulting from government intervention*
   In this phase, the 'benefits' of the government interventions are investigated. These benefits involve the degree in which the welfare loss resulting from the market failure is reduced and any positive external effects of the government intervention. The costs consist of all the government's efforts in terms of time and money to reduce the welfare loss and any negative external effects of the government interventions (government failure).

7. *Determine effectiveness and efficiency*
   In this last step, the degree to which reducing welfare loss causes by the use of instruments is assessed. The effectiveness reflects the extent to which individual instruments contribute to the result. The efficiency indicates the effect of the relationship of the costs and benefits of using the instruments. It is assessed whether the ambitions are achieved, whether this occurs efficiently and whether adjustment of the policy is required. When considering amendments, it is first checked whether amendment in the instruments is possible, then in the governance model and once the possibilities here have been exhausted too, a review of the ambitions is essential.

4.4 Distributing the costs

With regard to the choice of instruments, no decision has been taken about the distribution of the costs resulting from implementing the policy. In this paragraph, we explore the options.

The report *Markt toegang* [Market access] (Breukers and Bunte, 2007) describes an assessment framework for prioritising and distributing the costs of phytosanitary calamities in the export of Dutch products. For the cost distribution which the government can use to promote market access, three criteria are developed:

1. *government interest*
   The interest of the government (as an organisation, not to be confused with public interest) can lie in political desirability, the wish to gather phytosanitary information or to invest in phytosanitary relations.
2. *public character*
   Market access is a public good: characteristics are non-exclusive and non-rival. However, it is not a pure public good, because only exporters of plants and plant-based products use this good. The extent of its public character depends on:
   a. number of interested parties;
   b. ability to identify interested parties;
   c. possibility to create exclusivity.
3. *profit - cost relationship*
   Interested parties can contribute to the costs according to the extent of the profit they enjoy: the theory of profit. The principle of equality also applies here: for each profit enjoyed from the service offered, each individual must pay the same price.

These criteria cannot be applied in this way in the policy framework. The starting point that there is no phytosanitary policy is not compatible with claiming government interest as an argument. However, the public character and the profit - cost relationship are compatible. Furthermore, the extent to which the benefits serve the previously mentioned five social goals could be examined.

Another approach not described in the report referred to above, but which is relevant to this study, is the principle 'the polluter pays'. Here one should not look at the consequences but the causes. Because phytosanitary risks are largely caused by international trade, when applying this principle, it would seem obvious to place the costs of measures and responsibility for damage with the

producers and/or traders (who then incorporated this in the price of the products to the buying party, which then et cetera …). This means that the perpetrator is held responsible for the damage he causes. Liability can only be implemented when:

1. Contamination with an organism can be demonstrably traced to the perpetrator;
2. The perpetrator has demonstratively failed to act appropriately. In practice, this is an impossible path to take.

Although new detection methods are increasing the options to trace harmful organisms, it is difficult and time-consuming to prove blameworthy behaviour. Reversing the burden of proof regarding imputability could boost the incentive to reduce phytosanitary risks. This will benefit the effectiveness of the policy to reduce risks.

In the United Kingdom, a study was recently conducted into the relationship between responsibility and possibilities for cost sharing between government and industry (Waage et al., 2007). This report recommends sharing the costs between government and industry based on the public and private relationship of effects. Ex ante evaluations into the possibilities for risk reduction (effectiveness and efficiency) can be used to set priorities. For this purpose, agreements between government and industry are entered into about:

- the sources and nature of the risks for plant health;
- the planned approach to assess, reduce and manage the risk;
- the cost sharing between government and private parties;
- the method of cooperation and taking responsibility;
- compliance terms.

The study refers to a similar system now operating in Australia, where various covenants between government and agricultural sectors exist. These covenants contain agreements about the approach to risks for plant health and cost distribution. Interestingly, the profit principle is applied here rather than 'the polluter pays'.

5 Back to reality

5.1 Introduction

The policy framework as developed in Chapter 4 assumes the absence of phytosanitary policy. In order to be able to use this framework, it will have to be consistent with international phytosanitary frameworks. Where it is not consistent, the government may consider trying to create scope in international regulations. In this chapter, the developed framework is compared with the International Plant Protection Convention and the European Phytosanitary Directive (detailed description of the convention and the directive in Appendix 4).

5.2 International Plant Protection Convention and EU Phytosanitary Directive

The International Plant Protection Convention (IPPC) was created under the responsibility of the FAO. It establishes frameworks for all actions to be performed by the member states to keep the plant-based production systems and the natural environment free from invasive plant diseases and infestations. The IPPC formulates guidelines for the administration, certification and requirements for imports, which must not contradict WTO policy. In Europe, these guidelines are elaborated in the Phytosanitary Directive 2000/29/EC.

5.3 Comparison

In principle, the policy framework does not conflict with the IPPC or the Phytosanitary Directive. It can be regarded as a supplement to existing legal instruments. The policy framework provides opportunities to adapt other legal instruments too.

The measures established in the IPPC and the Phytosanitary Directive assume a government which acts unilaterally and imposes measures. The Phytosanitary Directive is an example of legislation and regulations and that fits into hierarchical governance. Placing organisms under the regime of the Phytosanitary Directive implies allocation of the quarantine status. Member states are then obliged to adapt a number of measures. From the application of

Figure 4.3, for certain organisms it can be derived from the framework that hierarchical governance is the most appropriate with assignment of the q-status. However, other outcomes are also possible. The Phytosanitary Directive does not address the possibility of using the motivation of interested parties for reducing phytosanitary risks (economic incentive). Consequently there is the risk that too many organisms are given q-status. The policy framework differentiates according to characteristics of organisms and interests of stakeholders and through the introduction of governance models offers a richer pallet of possibilities for managing phytosanitary risks. This requires member states to be given more freedom to use the policy framework besides the usual pest risk analysis when determining their position regarding the q rating of a plant disease or infestation. The framework gains in strength when it is internationally accepted as a legitimate assessment framework. The additional application of the policy framework can hinder the automatic assignment of the q-status and give cause to review the existing q-status of a number of organisms on the A1 and A2 list.

6 Discussion, conclusions and recommendations

6.1 Introduction

This chapter starts with a description of Phytopia, i.e. the desired future picture of phytosanitary policy. This is followed by some thoughts regarding the study. The conclusions are described in paragraph 6.3. The chapter finishes with recommendations about how to achieve the outlined future picture.

6.2 Discussion

Future of Phytopia

The framework described in this report needs to be translated in a coherent picture about the ideal way to shape plant health policy:

1. The traditional distinction between quality diseases and quarantine diseases disappears in the sense that more intermediate forms emerge. The unconditional quarantine status is restricted to diseases and infestations whereby it is impossible to stimulate the responsible social actors to take effective measures (and hierarchical governance is then necessary) or that taking effective measures is technically impossible. Where public interests are at stake and effective measures against the organisms are possible by private parties, the organism could be given a conditional non-quarantine status. The condition is then that the parties actually take the effective measures. If this does not happen, the organism will be given a quarantine status. More variants are possible here. Abandoning the traditional distinction generates more focus on the really risky organisms.
2. In order to stimulate private parties to take their responsibility, the principle 'the polluter pays' must be applied. At the same time, the liability will have to be arranged in such a way that the proof of imputability is placed with the party responsible for the risk. A 'tracking and tracing' system for products would be useful here.
3. Private parties organise the phytosanitary system in such a way that the phytosanitary quality is optimally safeguarded and transparent. This can be achieved through certification.

4. The remaining phytosanitary risks can be covered by means of a fund or insurance, whereby certification can influence participation in the fund or level of the premium.

International framework

The Netherlands has a strong agricultural export position and is thus one of a limited number of countries with a strong agricultural export position. There are many more countries which are a net importer. The interests of both groups vary. The current development of abolishing tariff barriers creates the risk that importing countries will start to use non-tariff barriers to falsely protect their own production. Phytosanitary requirements can be abused in this respect. Importing countries will be therefore not quick to liberalise phytosanitary policy. The international dissemination of the research results therefore requires a careful strategy and the necessary diplomacy in order not to disrupt trade relations.

Sustainability

The starting point in the development of a policy framework that there is no phytosanitary policy also implies the lack of distinction between invasive and endemic plant diseases and infestations. The consequence is that the framework also extends to endemic plant diseases and infestation. This is the policy domain of crop protection. It is important to distinguish between these policy domains. The phytosanitary policy focuses on the consequences of the diseases and infestations themselves. The crop protection policy is primarily involved with the consequences of the measures taken against plant diseases and infestations. Logically, the objectives of policy domains are an extension of each other. However, the current phytosanitary policy and crop protection policy do no resemble each other in the long term. The crop protection policy is aimed at an integrated approach to plant diseases and infestations with minimum impact on the environment. In practice, this means that the level of disease and infestation is brought back to an acceptable level. The phytosanitary policy is based on zero tolerances for diseases and infestations which much be targeted from a fixed framework. The lack of sufficient resources and measures to keep invasive disease and infestation at an acceptable level undoubtedly plays a major role. In the proposed framework, this comes together in the assessment of social actors who are capable of taking measures. The crop protection policy ensures that only those resources are used whose negative external effects of their use are socially acceptable. In the proposed framework, the availability of pesticides is a given.

Ideally, the admission framework would be part of the policy framework, so that the external effects of the invasive diseases and the external effects of possible accepted and not accepted pesticides could be assessed at the same time. For this research, integration in one policy framework is too complex. In practice, policy makers of both policy domains can carry out this joint assessment.

6.3 Conclusions

Based on this study, the following conclusions can be drawn:

- The justification for the government to be actively involved in phytosanitary matters lies in the failure of the market mechanism in the market of plant-based products. The market failure is the result of information asymmetry and external effects.
- The degree of government involvement depends on:
  a. The availability of information about damage by a plant disease or infestation, or the risk of this;
  b. The responsible economic actors who are stimulated to prevent and manage risks;
  c. The technical possibility of achieving effective measures.

  If entrepreneurs *know, are willing and able,* the role of the government can be limited and it can give industry more responsibility.
- The incentives for actors who are responsible for phytosanitary risks can be boosted by applying the principle 'the polluter pays' and reversing the burden of proof so that the causer of the risk must prove that he has not acted importunely.

6.4 Recommendations

Based on this study, the following recommendations are made.

- Apply the framework when determining an attitude towards the quarantine rating of new organisms.
- Use diplomatic channels and discussions in international channels and discussion in international forums for acceptance of the framework developed in this study. Use it to review international regulations and treaties.

- Apply the framework when determining an attitude towards the roles of the government and industry.
- Work together with industry and other social actors on the further development of the instruments. Take into account knowledge development, a system to track and trace products, certification, et cetera.
- Look for examples of where the incentive for industry is already present for taking measures and learn from it. Example: in the sector for seed and plant material, entrepreneurs are optimally motivated to deliver disease and infestation-free products. This motivation is not the result of existing legislation and regulations, but is generated out of self-interest. Contaminations can be traced, thus risking the generally close relationship with the customer. If the contamination becomes more widely known, the reputation of the business is at stake, irrevocably leading to market loss. This is something growers will always want to avoid.
- Apply the principle 'the polluter pays' when claiming for the financial consequences in the manifestation of risks for plant health.
- Place responsibility for proving non-imputability with the responsible actors.
- Develop a criterion for evaluating the consequences of applying the framework described in this report on effectiveness and efficiency.

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Appendix 1

Generations of policy instruments

In the report, various approaches to governance are described. We addressed the relationship between desired governance and the corresponding instruments. In this paragraph, the difference between the various generations of policy instruments is explained. In general, the more dynamic the potentially changeable variables in the field, the better a higher generation of policy instruments will prove to be. The three generations of policy instruments as described below are derived from the work of Professor C.J.A.M. Termeer (lecture entitled *Third Generation Governance*, during the Dies Natalis of Wageningen University, 2008).

First generation policy instruments
The principle assumption regarding the first generation policy instruments is that the government steers social developments through the use of policy instruments. Social problems can only be resolved if people change their behaviour, whether by the whip (legal instruments), the carrot (financial instruments) of the sermon (information instruments) (according to P. Winsemius).

Second generation policy instruments
Similarly, the principle assumption regarding the second generation policy instruments is also that the government steers social developments.

However, the instruments of the second generation:

- Leave more scope for negotiation;
- Provide more options to respond to a situation than policy instruments from the first generation;
- Are usually part of a mix of policy instruments or are part of a political arrangement;
- Can also indirectly be focused on achieving the goal;
- Can contain a threat of legislation if society does not tackle a certain theme itself;
- May contain a policy strategy that is focused on changing the institutional context of the mutual dependencies in a network.

Third generation policy instruments

Third generation policy instruments result from a more modest picture of government control. The starting point is a government which does not prescribe what behaviour is required of its citizens. It is also a government which does not believe that it can control behaviour by using smart instruments. The third generation policy instruments involve a more situational form of governance which fit into the current change processes in social and natural systems.

Third generation policy instruments demand that government actors have insight into a situation and are willing to use suitable policy instruments. This will mainly be the case in complex dynamic situations, as long as there is a willingness and an opportunity for the actors in the field to adapt to the desired direction of the policy. Furthermore, the actors must be given room to experiment, develop and learn. If this is not possible, then application of the first or second generation policy instruments is inevitable. For less complicated situations, the first or second generation policy instruments are sufficient.

Appendix 2

Policy instruments divided into category and according to applicability per control approach

This research is based on five types of instruments: legal instruments, financial instruments, communicative instruments, organisational and physical facilities. Instruments which place activity at a distance (from government) and instruments which can support self-governance are a separate category.

Type instrument/control	**Hierarchical control**	**Network control**	**Transaction control**	**Self-governance**
Legal instruments (regulations and agreements)				
Regulations:				
- Act	*			
- General Board measure	*			
- Policy rule	*			
Permit system	*			
Planning (code, protocol)				*
Contract (including standard regulation)		*		*
Covenant		*		*
Financial instruments				
Subsidies	*	*	*	*
Tax measures	*		*	
Financial incentives apart from tax measures (own contributions to insurance and funds, financial levies)				
Vouchers	*		*	
Credit facilities/guarantees	*		*	
Budget control				
Performance control				*

Type instrument/control	Hierarchical control	Network control	Transaction control	Self-governance
Communicattion instruments				
Information (generic and specific)	*	*		
Knowledge and research	*	*		*
Quality mark		*		*
Certification				*
Recognition regulation		*		*
Benchmark				*
Reward instruments (naming and faming)		*		
Interactive policy development		*		
Organisational instruments				
Taskforce		*		
Experiment		*		
Visits		*		*
Ombudsman function				*
Mediation				*
Monitoring authorities				*
Quality guarantee system		*		*
Physical facilities				
Instruments which remotely place an activity				
Invitation to tender				
Self sufficiency (semi public body)				
Privatisation				
Instruments to support self-governance				
Indicators and justification systems				*
Monitoring and benchmarking				*
Quality control				*

Further information about policy instruments

Legal instruments

- *Regulations*
  Through legislation, the national government directly obliges citizens/companies to policy-compliant behaviour and prohibits undesired behaviour. In principle, legislation is associated with enforcement.
- *Permit system*
  Legislation and regulations can be planned in such a way that certain behaviour is forbidden unless permission has been expressly granted, usually in the form of a permit system. Permission can be granted by the government and mandated to other authorities.
- *Agreements*
  Businesses and social organisations can reach agreements with each other, for example in the form of certification systems or codes of conduct. Such agreement systems can take the form of government regulation (for which legislation is required) or self-regulation.
- *Contract*
  Here we refer to binding agreements as contracts. The government enters into delivery contracts with one or more citizens or businesses in which the enforcement of rights and obligations is described.
- *Covenant*
  Here we refer to limited binding agreements as covenants. To some extent, covenants often have an intentional character and can be relatively easily terminated.

Financial instruments

- *Subsidies*
  Through subsidies to citizens, institutions and businesses, the government wants to contribute to the financing of facilities or activities which are desired in terms of policy. The subsidy instrument requires monitoring of the resources, whereby the intensity of the monitoring also depends on the nature of the subsidy rules.
- *Tax measures*
  Through tax measures, the government stimulates citizens, institutions and businesses to comply with policy or discourages them from undesired behaviour.
- *Financial incentives other than tax measures*
  Through financial incentives, the government stimulates citizens, institutions

and businesses to comply with policy or discourages them from undesired behaviour.

- *Vouchers*
  Through a voucher, citizens or organisations are given the right to use a product or service at a reduced rate. The aim is that this introduction results in the desired change of behaviour.
- *Credit facilities and guarantees*
  Credit facilities can be granted to businesses and institutions - either through the banks or not - if the financing is a problem for organising the desired facilities or implementing the desired activities (for example research).
- *Performance governance*
  Performance governance is directed at the desired outcomes by means of an agreement between the principal and contractor. Through performance governance, policy goals can be achieved. The principal has a great influence on performance because he can link sanctions to not achieving performance agreements. It is an instrument which supports self-governance (see also the category instruments supporting self-governance).

Communication??? instruments

- *Information (generic or specific)*
  Information is provided about subjects relevant to the policy and the target group. It may relate to the policy itself and/or behavioural issues (stimulating desired behaviour). Although the effectiveness of information activities is difficult to measure objectively, information is an inextricable part of policy and of influencing behaviour.
- *Knowledge and research*
  Behaviour or attitudes in society can partly be steered by knowledge. For this reason, knowledge is gathered. Obviously 'knowledge' is followed up by information: the spreading of knowledge.
- *Quality mark*
  Quality marks are used to communicate about product quality: for consumers and businesses, a quality mark acts as guarantee that a product fulfils certain quality standards. For businesses and organisations, a quality mark is part of the marketing.
- *Certification*
  Certification is the process with which a product, service, process or person is assessed by an independent party on certain specific requirements determined in advance. The certificate is the document which confirms this fact. Certification can also be a system whereby a private institution is qualified

by the government to carry out certain tasks which are considered to be the responsibility of the government.

- *Legal recognition*
  Regulations whereby the activities of companies are assessed according to a number of qualitative criteria. If the company meets the requirements, it may call itself 'recognised' and publicise the fact that it is recognised to the public (see also quality mark).
- *Benchmark*
  The benchmark instrument is used to compare products and services of similar organisations. This stimulates suppliers to improve their quality and consumers can make informed choices between products and services being offered.
- *Interactive policy development*
  Policy development in consultation with the target group, for example via platforms or panels can contribute to the support for new policy and thus have a positive effect on its implementation.

Organisational instruments

- *Taskforce*
  The taskforce is a temporary cooperation between public and private organisations to achieve a certain goal. The taskforce's assignment may vary, such as policy development, social agenda and/or knowledge development.
- *Experiment*
  An experiment investigates in practice whether a certain working method, regulation, et cetera is satisfactory and can be improved. Often, abolition of current regulations is required for an experiment.
- *Comparison*
  Similar organisations can compare each other's results/performance. The comparison can be organised within the branch and by external people and aims at stimulating improvement in performance. It can be organised without government intervention.
- *Quality guarantee system*
  This concerns mutual regulations within private sectors whereby quality is guaranteed for customers. This could relate to norms and procedures for admission to sector organisations or to chain guarantee systems.

Physical provisions
The government can provide physical provisions to enable/stimulate policy-related behaviour.

Instruments which place an activity at a distance
- *Tender*
  In a tender procedure, the principal selects an organisation from several candidates to do certain work, provide a service or delivery.
- *Independent bodies*
  In this case, it concerns a government organisation becoming independent or being transformed into a private company. The work or tasks of privatised government bodies are still the responsibility of the Minister. Privatisation should take place according to the guidelines recorded in the Framework Act for Independent Government Bodies.
- *Privatisation*
  Privatisation is the process whereby public assets are transferred to private hands, when the execution of a public task is outsourced to one or more private parties (market parties) or if part or all of the government organisation which is responsible for a public task is converted into a private organisation. It might also be that the government no longer considers striving to fulfil a certain interest to be a public task, whereas privatisation generates funds for the treasury.

Instruments to support self-governance (Baarsma, 2003)
- *Indicators and justification systems*
  - Performance indicators are related to delivered end products;
  - Use indicators are related to consumers of services;
  - Process indicators are related to the work performed or to intermediate products;
  - Input indicators are related to the resources used.

  For self-governance, performance indicators are the main indicators used.
- *Monitoring and benchmarking*
  Monitoring is about comparing results of an organisation at different moments. Monitoring results are used to evaluate regulations of agreements and if possible to adjust them.
  Benchmarking is the systematic comparing of organisations based on indicators determined in advance whereby best practice can be established which serves the improvement of the organisation.

- *Quality control*
  Self-governance becomes easier the greater the reliability and responsiveness of the organisation to be governed. Quality instruments can contribute to optimal adjustment by the government. Examples of quality instruments are customer surveys, quality monitor, complaint registration, customer councils.

Appendix 3

Elaboration of a framework based on a case

In order to gain more insight into the motivation for government intervention and how the policy framework works, a case is elaborated to demonstrate the application of the theory.

In summary, the case involves the following:

- Trader P from Portugal exports wooden products and residual products (bark) to the Netherlands. Tree nurseryman B grows Pine and sells the bark for his crop protection. Parasite X is in the bark and parasite X is harmful for the Pine. The damage increases as the climatological conditions start to resemble those of Portugal. One side of tree nurseryman B's business borders tree nurseryman C's business, while on the other side there is a strip of public green space adjacent to a woodland area owned by nature management of organisation S. Tree nurseryman B sells his Pines to customer N in Norway.

Boxes B.1 to B.4 demonstrate the effects of the introduction of X into the Netherlands and why the market fails to correct it. For Boxes B.2 and B.4, the steps of the framework are followed to see how the government can interpret the control philosophy and which instruments it can use to do so.

Box B3.1	Introduction of harmful organism into the Netherlands (exporter P sells his bark to importer and grower B)

In this case, we only look at the relationship between exporter P and tree nurseryman B. There are no effects for third parties. What goes wrong?

Information asymmetry

The following situations could occur:

- *Situation 1:* Exporter P does not know that his products are infested with parasite X and a) could not reasonably have known or b) should have known.
- *Situation 2:* Exporter P is aware of the infestation, but does not tell grower B.

Reason for government intervention?

There is a welfare loss as a result of information asymmetry and external effects. The welfare loss consists in the first instance of damage tree nurseryman B who suffers production loss because some of his Pines die. In the long term, this leads to a reduction in the volume of transactions and possibly reduced competitive position for the grower. In this case, there is a one-to-one relationship between exporter and grower, whereby in situation 1b and situation 2 an economic incentive is present for both the exporter and the grower to prevent welfare loss. In this situation, there is no reason for the government to intervene and it can leave it to the exporter and grower to minimise the welfare loss. For example, the grower may request a certificate from the producer whereby the producer declares that his products are 'clean'. In situation 1a, the government can take the attitude that like visible or proven harmful infestations, non-visible infestations are part of the risk for the exporter and grower and leave any measures to the sector. They can work together on knowledge development and a test method; the exporter can try to insure himself against liability resulting from the sale of infested products. On the other hand, such measures are difficult to implement because the development of knowledge and test techniques are expensive and time consuming and the benefits are not only felt by one individual but the entire sector and even society (positive external effects with free rider behaviour). Through reverse selection and moral risk, the insurance referred to is also difficult to implement in the market.

Method of government intervention

In the case of situation 1a, there is insufficient knowledge of the organism. The organism can also affect public interests. The government should therefore ensure that there is sufficient information about the risks.

Box B3.2a	Distribution within the sector (harmful organism spreads from grower B to grower C)

External effects

Due to the introduction of parasite X in the Netherlands via grower B, there is a risk that the animal spreads to other neighbouring businesses, for example to grower C. This could cause production loss and or increases in production costs for grower C, thus threatening his competitive position. The transaction of Pines between exporter P and tree nurseryman B thus also has consequences for the neighbour. Here there is an external effect.

Reason for government intervention?

Grower C benefits from grower B minimising the risk of introducing infested products, but will not be immediately prepared to pay compensation to grower B as 'measures to reduce the risk' have the character of a public good with positive external effects. As soon as grower C knows that parasite X has been found at the business of grower B, there is reason for grower C to protect himself against contamination, for example by using preventative pesticides. If parasite X is also found at the business of grower C, he may incur significant damage which he will want to claim from grower B. However, if grower C can also find himself in the situation of grower B, he has other interests and would be more prepared to 'pay' for measures to reduce the risk of contamination. In other words: if grower C also runs the risk of introducing a harmful organism through his business (importing plant products or residual products), he will be more prepared to facilitate good 'measures to reduce the risk'.

Method of government intervention

The above shows the situation whereby the introduction of a private good (bark) is linked with negative external effects (risk of infestation and actual contamination). There is a subsequent need to introduce 'measures to limit the risk' aimed at restricting the negative effects which is linked with positive external effects. In view of the emergence of external effects, the market mechanism will fail. However, dealing with the market failure is not necessarily a task for the government, because it has occurred within a sector (growers) and they have the greatest interest in correcting this failure, assuming they have the possibilities. The sector acts instead of the government as collective promoter of interests and a system can emerge via self-regulation, whereby all interest are satisfactorily taken into account. The government can stimulate the process of self-regulation and provide support by means of subsidies, knowledge development or possibly by adjusting regulations and declare measures to be generally binding.

Box B3.2a	Distribution within the sector (harmful organism spreads from grower B to grower C) (continued)

Imagine grower B and grower C together form the entire sector, then it is in the interest of the government that together they reach a good solution, otherwise the competitive power of the entire sector will be in danger. According to Figure 4.3, it may be expected that the sector benefits from a solution. When B is proved to have been negligent, he can be held liable for the damage, particularly when the need to provide evidence of imputability lies with grower B. In that case, there is sufficient incentive for grower B to prevent this in the future and further government intervention is not required. This appeals for the government to choose self-governance and leave determining the aim to the chain parties and sector. A consideration for the government to wish to play a certain role relates to the environment objectives a). Private and public interests do not totally correspond if measures to prevent contamination create negative external effects for the environment and thus welfare loss for citizens.

Imagine that one of the criteria for determining whether the sector is able to take collective measures is not complied with, for example there are no instruments available to reveal the presence of the harmful organism in the product, then free self-governance will not be applied without due consideration. The government must then decide whether, and if so, what role it wishes to play with regard to the knowledge development for such an instrument; only financing/co-financing or also producing. Network governance is the more obvious solution, until all the conditions for self-governance are fulfilled.

a) In the case of lack of marketing activity, the economic and environmental goals are drawn up by the government and these form the outcome of a social/political debate during which all the interests of the citizens are weighed up by the government. This also applies to the government goals regarding nature & landscape and biodiversity in Box B.3.

Box B3.2b	Distribution between sectors (harmful organism spreads from one sector (sector A) to another sector (sector B))

External effects

Once parasite X is widespread in sector B, it is possible that other sectors will also be infested, such as sector B. In this case, sector B will suffer loss of production and possibly additional costs as a result of harmful organism caused by trade between the exporter and grower B; a negative external effect.

Reason for government intervention?

The reasoning followed in Box B.2a is the same as the reasoning which can be followed for 2b, the difference being that two different sectors are involved rather than growers. Here too, the government will absorb the market failure and the sectors will look together for possibilities to correct the failure as they both have an interest herein. Economic and environmental interests may be a reason for the government to ultimately intervene.

Box B3.3 Distribution to the green space

External effects

If parasite X spreads to the green space, it can damage trees which consequently become diseased or die. This may have negative consequences for the landscape (dying pine forests lead to gaps in the landscape), nature (for example birds and insects which depend on these trees) and sometimes even the biodiversity as threatened species become endangered.

Reason for government intervention?

As described in Chapter 3, nature & landscape and biodiversity are public goods and will not be created by themselves or, in this case, be preserved. Growers B and C have no economic incentive to protect the green space against parasite X, unless the government intervenes. It is generally accepted in society that the government is responsible for protecting nature and landscape and biodiversity to meet the needs of its citizens for nature, landscape and biodiversity.

Method of government intervention

Application of Figure 4.3 means that there is both private and public interest, but that these do not correspond with each other. Network governance is only effective if both the government and the sector and the nature and landscape parties in the field are focused on consensus and both wish to resolve the problem. Another condition is that there is sufficient time for consultation. If the organism is introduced and spreads within a short space of time, it may be opportune for the government to choose hierarchical governance and to impose measures. In the case of parasite X, the risk of damage to nature increases in proportion to how the climate conditions begin to resemble those in Portugal, so there seems to be enough time to consult with the parties involved.

It is also important whether there are opportunities to intervene. It is very possible that effective measures at business level cannot be applied in the green area. In that case, the government will then have to take responsibility for effective counter measures.

Box B3.4	Export (grower B exports to buyers in Norway)

External effects

Contamination of products with parasite X or even the suspicion of contamination can result in buyers refusing to buy any product from the alleged contaminated area. Even once the parasite has been eliminated, turnover can decline as a result of loss of image. Other growers as well as grower B may then suffer the negative effects of the contamination.

If the potential buyers collectively decide not to buy any products from Dutch growers, this can lead to a massive loss of competitive power in the whole sector which can then impact on the Dutch economy.

Reason for government intervention?

The welfare loss initially affects grower B and grower B will be motivated to take measures to prevent it. There is no role for the government here. However, the negative consequences may extend beyond grower B and affect the whole sector and thus directly affect the economic objectives of the Dutch government (employment opportunities, good competitive position, et cetera). Analogous to the reasoning in Box B.2, there may be a reason for the government to actively promote the economic interests of its citizens.

Method of government intervention

In this case too, the sector will be motivated to prevent loss of its competitive position, and therefore deploy instruments to stimulate entrepreneurs to take the right measures, which can be achieved through self-governance.

Conclusion

As long as the costs and the benefits involved in taking phytosanitary measures are in proportion for the sector (whether individual or collective market parties), in other words there is an economic incentive, then in principle there is no for the government to assume an active role in correcting market failure and it can leave this role to the sector. However, assuming that society also benefits from preventing contamination by parasite X due to the negative external effects, the government will want to intervene in some way. The more public interests or public goods are involved, the more active the role of the government. The dependence of other parties to achieve its goal will also determine whether the government chooses hierarchical governance or rather a form of governance which corresponds with its approach.

Appendix 4

Description of International Plant Protection Convention and EU Phytosanitary Directive

International Plant Protection Convention

The International Plant Protection Convention (IPPC) is an international plant health agreement, established by the FAO in 1952 that aims to protect cultivated and wild plants by preventing the introduction and spread of pests. The contracting parties (163 countries in 2007) undertake to appoint a national plant protection organisation which is responsible for various tasks, setting up a phytosanitary certification system, cooperating in international consortia, participating in the relevant regional organisation for plant protection and complying with the international standards for phytosanitary measures (ISPM) drawn up by the Committee for Phytosanitary Measures (CPM). For Europe, the regional organisation is the European and Mediterranean Plant Protection Organisation (EPPO). EPPO promotes the exchange and acquisition of knowledge and facilitates national plant protection organisations by providing technical support for phytosanitary measures, research into sustainable and effective plant protection measures and harmonisation of scientific methods and procedures.

European regulation; Directive 2000/29/EC on protective measures against the introduction into the Community of organisms harmful to plants or plant products and their spread within the Community

The community regulation relating to phytosanitary measures aims to prevent the introduction or spread of organisms harmful to plants or plant products within the Community. In order to achieve the above goal, the member states have both the right and the duty to regulate traffic on their national territory and the introduction from third countries in the Community of plants and plant products. There are also obligations for third countries which wish to export plants or plant products to the Community. The regulation is recorded in Council Directive 2000/29/EC. The general principles are based on provisions established in the International Convention for the Protection of Plants (IPPC) of the Food and Agriculture Organisation of the United Nations (FAO) and in the WTO agreement regarding sanitary and phytosanitary measures (European Commission, http://ec.europa.eu/policies/agriculture_fisheries_food_nl.htm).

The Directive is aimed at prevention as well as tackling harmful organisms.

Contents of the Directive

Prevention

Trade within the Member States

Council Directive 2000/29/EC regulates trade within the Member States of certain plants, plant products and other materials which could potentially be the carrier of harmful organisms which generate risks for the whole of the Community (incorporated in part A of Appendix V). These plants, plant products and other materials are generally of great economic importance. They are subjected to specific conditions regarding monitoring of the production: more inspections are carried out on the production site at the most suitable moment, i.e. during the growing season and immediately after harvesting. All producers of the material in part A of Appendix V must therefore be included in an official register. The plants, plant products and other materials must also be accompanied by a plant passport during transport. That document proves that the materials have passed the Community inspections and replaces the phytosanitary certificate used for trade between the member states before the internal market was created.

Trade between countries outside the Community (third countries) and the Member States of the Community

Council Directive 2000/29/EC contains provisions concerning the compulsory phytosanitary inspections of certain plants and plant products *(included in part B of Appendix V)* from third countries. This concerns checks of the documents, identity and phytosanitary inspections which guarantee compliance with the general and specific community conditions for import.

- During checks of the documents, the certificates and documents accompanying the shipment and in particular the phytosanitary certificate are verified. This must have been issued by the competent authority in the country of origin or re-export and correspond with the International Plant Protection Convention. These documents must confirm that the product complies with the specific conditions imposed by the Community.
- Identity controls check that the plants or plant products in the shipment correspond with those listed in the certificate.
- Based on an inspection of part or all of the shipment, the phytosanitary checks confirm that the shipment is free of harmful organisms.

Phytosanitary checks can be limited if this is deemed responsible according to the Commission's decision schedule.

Directive 2000/29/EC determines that the Member States arrange the collection of phytosanitary charges to cover the costs of extensive checks of the documents and the identity and the phytosanitary inspections. In principle, the charges due correspond with the inspectors' salaries, the costs of the tests and the administrative charges. The charges are paid by the importer or his Customs representative.

Measures in the case of non-compliance of import:

- Refusal to allow the import of the whole or part of the shipment into the Community;
- Transfer under official supervision, according to the appropriate Customs procedure during transfer within the Community, to a destination outside the Community;
- Refusal of contaminated/affected products from the shipment;
- Destruction;
- Imposition of quarantine until the results of official tests are available.

Import into the EU of packaging material made from wood and for dunnage

The Community measures are aligned with the international norms of the FAO for phytosanitary measures regarding the Guidelines for regulating wood packaging material in international trade. According to this norm, wood packaging material must be treated and provided with a quality mark. It also states that countries can require that the material is made from debarked wood, as long as there is a technical reason.

Measures

Tackling harmful organisms in the Community is an important part of the Community's phytosanitary regulations. Specific measures related to:

- harmful organisms found in the Community for the first time;
- harmful organisms found in Member States which were unaware of their existence until then;
- other harmful organisms whose existence was not yet known in the Community, which are not specifically mentioned in Directive 2000/29/EC, but which could have an economic impact.

The member states must notify the Community and other member states about the presence of these harmful organisms in their country and take measures to eradicate the relevant organism or, if this is impossible, to prevent its

spread. When a member state feels that there is a danger that a harmful organism might be introduced or spread, it must inform the Commission and the other member states about the measures it wishes taken and can also take temporary additional measures. When the danger is related to shipments of plants, plant products or other materials from third countries, the Member State must immediately take measures to protect the Community against that danger and inform the Commission and the other member states thereof. In these cases, the Community can take temporary emergency measures. The Commission must investigate the situation as quickly as possible and community counter measures can be approved.

Protected areas

Protected areas are Community areas which, at the request of the relevant member state(s), can be given special protection against the introduction of one or more harmful organisms referred to in Directive 2000/29/EC. These areas are protected because the relevant harmful organism does not occur there, although the environmental factors in the protected area are favourable for its development. In certain cases, the harmful organism is present in the protected zone, but it is eradicated. A protected area might comprise an entire member state, or just part of one. Each area is individually assessed for each specific harmful organism. By applying the appropriate community measures and conducting annual investigations, the Member States concerned can ensure that the protected areas remain free from the relevant harmful organism(s).

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