

**UNDP/GEF Danube Regional Project**

**Policies for the Control of Agricultural Point  
and Non-point Sources of Pollution  
&  
Pilot Projects on Agricultural Pollution Reduction  
(Project Outputs 1.2 and 1.3)**

**Recommendations for Policy Reforms for the  
Introduction of Best Agricultural Practice (BAP) in  
Central and Lower Danube River Basin Countries**

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Final Report



**GFA Terra Systems  
in co-operation with Avalon**





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**Danube Regional Project - Project RER/01/G32**

"Policies for the control of agricultural point and non-point sources of pollution"  
and "Pilot project on agricultural pollution reduction"  
(Project Outputs 1.2 and 1.3)

**Recommendations for Policy Reforms and for the Introduction of Best Agricultural  
Practice (BAP) in the Central and Lower Danube River Basin Countries**

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## Preface

The UNDP/GEF Danube Regional Project supports through this Project Component the development of policies for the control of agricultural point and non-point sources of pollution and the development and implementation of pilot projects on agricultural pollution reduction in line with the requirements of the EU Water Framework Directive.

The Overall Objective of the Danube Regional Project is to complement the activities of the ICPDR required to strengthen a regional approach for solving transboundary problems in water management and pollution reduction. This includes the development of policies and legal and institutional instruments for the agricultural sector to ensure reduction of nutrients and harmful substances with particular attention to the use of fertilizers and pesticides.

According to the mandate of the Project Document:

**Objective 1** stipulates the “Creation of Sustainable Ecological Conditions for Land Use and Water Management” and under

**Output 1.2** is the “Reduction of nutrients and other harmful substances from agricultural point and non-point sources of pollution through agricultural policy changes”.

One of the main aims of Output 1.2 is to support the integration of measures for pollution control into the day-to-day management of crops, animals and land by farmers through the promotion of “best agricultural practice” (BAP).

The first phase of Output 1.2 is preparatory and is being undertaken by GFA Terra Systems (Germany) in co-operation with Avalon (Netherlands). The GFA Terra Systems/Avalon consultancy team consists of 6 international consultants and a network of 35 national experts in the 11 central and lower DRB countries eligible for UNDP/GEF assistance – a key focus of their work has been the development of policy recommendations for the introduction of BAP in the central and lower DRB countries.

The present document introduces the concept of BAP and the opportunities for promoting it through agricultural policy changes. The recommendations in the report are founded upon the review and analysis presented in four other key documents produced within the framework of Output 1.2:

- *Inventory of Agricultural Pesticide Use in the Danube River Basin Countries*
- *Inventory of Fertiliser and Manure Use (with reference to Land Management Practices) in the Danube River Basin Countries*
- *Inventory of Policies for Control of Water Pollution by Agriculture in the Danube River Basin Countries*
- *Draft Concept for Best Agricultural Practice for the Danube River Basin Countries*

Finally, the report sets the framework for agricultural policy reforms and for the practical introduction of BAP in selected demonstration pilot projects in central and lower Danube countries to be implemented in Phase 2 of the UNDP/GEF Danube Regional Project.

The findings and analysis in the present report have been prepared by Dr Mark Redman, supported by Lars Neumeister and Jaroslav Prazan.

The report also draws upon the conclusions from an international workshop held in Zagreb in October 2003 that brought together a comprehensive cross-section of policy-makers in agriculture and water resource management from all eleven central and lower DRB countries to participate in discussion of the problems and potential practical solutions associated with agriculture and water pollution in the region.



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## Acronyms and Abbreviations

<b>BAP</b>	Best Agricultural Practice
<b>BAT</b>	Best Available Techniques
<b>CAP</b>	Common Agricultural Policy
<b>DRB</b>	Danube River Basin
<b>DRP</b>	Danube Regional Project
<b>EC</b>	European Commission
<b>EU</b>	European Union
<b>GEF</b>	Global Environmental Facility
<b>GFP</b>	Good Farming Practice
<b>ICM</b>	Integrated Crop Management
<b>ICPDR</b>	International Commission for the Protection of the Danube River
<b>IPM</b>	Integrated Pest Management
<b>UNDP</b>	United Nations Development Programme
<b>WFD</b>	Water Framework Directive



# 1 The Concept of Best Agricultural Practice (BAP)

## 1.1 Introduction

Good/best practices for agriculture have been under development for many years and in many different countries in response to the concerns of a wide-range of stakeholders about many different issues, including food production methods, food safety and quality, and the environmental impact of agriculture.

Stakeholders involved in the development of good/best practices typically include governmental and non-governmental organisations, farmers, consumers, food processors and retailers etc. – all of who seek to meet a variety of objectives for food quality, production efficiency, rural livelihoods and environmental benefits. The definition of good/best practices offers a means for these different stakeholders to promote their objectives within a clear framework that communicates the best available knowledge on a particular issue or issues. For example, a growing number food processors and retailers increasingly require farmers to follow Codes of Practice for the production of fresh fruit and vegetables, cereal crops and livestock in order to achieve their required standards for quality assurance, consumer satisfaction and profit.

The general concept of good/best practice is also an increasingly important part of introducing and maintaining minimum environmental standards as the basis of promoting more sustainable agricultural systems.

Environmental standards are becoming a key part of the European model of agriculture due to international trade agreements, public environmental concerns and market forces, and are likely to play a significant role in future agriculture policy. Such standards are necessary to ensure minimum environmental protection on farmland and comparable production conditions (preventing uneven competition) across Europe.

Different countries implement such minimum environmental standards in various ways using a variety of different policy measures and instruments, but conceptually there are three main levels of environmental performance in agriculture that relate to good/best practice:

<b>“Red Zone”</b>	These are the practices by farmers that are considered unacceptable and therefore commonly prohibited by law to protect natural resources, human health etc.
<b>“Blue Zone”</b>	This includes the minimum level of environmental management that it is considered “reasonable” to expect a farmer to undertake as part of “usual” farm management and without expecting any form of compensation/financial assistance. There are significant variations in the way that “good practice” is defined in different countries, but it is likely to include respect for environmental legislation (i.e. avoidance of the “red zone”), following advice from extension services, taking into account scientific and technical progress etc.
<b>“Green Zone”</b>	This involves a higher level of environmental management practice that delivers greater environmental benefit, but usually at greater “cost” to the farmer which may require some form of compensatory payment

### Best Agricultural Practice in the DRB Context

A significant proportion of the nutrients (nitrogen and phosphorus) that are discharged in the ground and surface waters of the Danube river catchment come from agriculture. Additionally, the majority of pesticides detected in water resources in the DRB catchment also come from agricultural non-point sources.

The objective of developing a concept of “best agricultural practice” (BAP) under Output 1.2 is to support the design of new agricultural pollution control policies for the central and lower DRB countries – as well as encouraging compliance with existing and emerging national legislation (including that driven in many countries by the process of EU accession) – that will promote the greater integration of pollution control considerations into the day-to-day management of crops, animals and agricultural land by farmers in the central and lower DRB.

For the purposes of this project, the term “best agricultural practice” (BAP) is used only to describe farm management practices that reduce the risk of pollution occurring from **agricultural non-point sources** in the DRB – this includes:

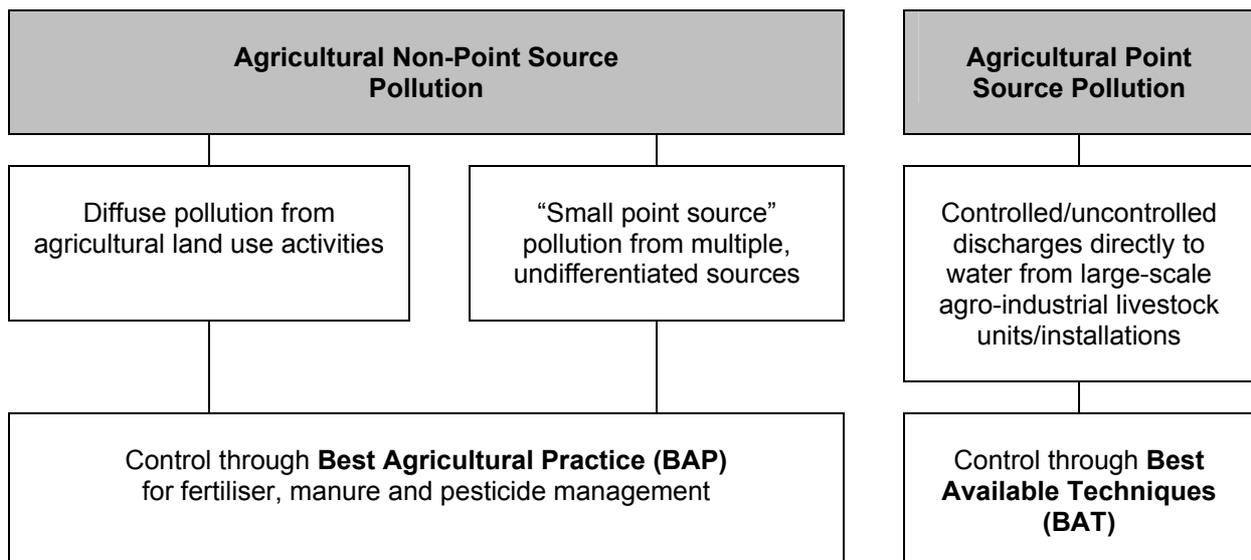
1. **diffuse pollution** occurring as a result of agricultural land-use activities (e.g. application of mineral fertilisers, manure and pesticides) that are dispersed across a catchment or sub-catchment with no single discrete source
2. **“small point source” pollution** arising from multiple, small-scale (and often accidental) discharges that occur from the many different farming activities that are also dispersed across a catchment or sub-catchment (e.g. effluent leakage from small-scale livestock farming, poor disposal of pesticides, run-off of manure from sloping land etc.)

**Agricultural point source pollution** on the other hand arises from single, discrete sources which are commonly associated with large-scale animal production units/installations that are regulated by discharge consent or control.

Because of the industrial nature of these larger livestock units - plus the argument about whether they should actually be classified as "industrial" emissions – it seems appropriate to refer to these farms as "agro-industrial units" (defined according to criteria based on number of animals) and therefore to also refer to **agro-industrial point source pollution**.

The management practices used to control pollution from such units/installations are commonly referred to as “best available techniques” (BAT) rather than “best agricultural practice” (BAP). These differences are summarised in Figure 1 below.

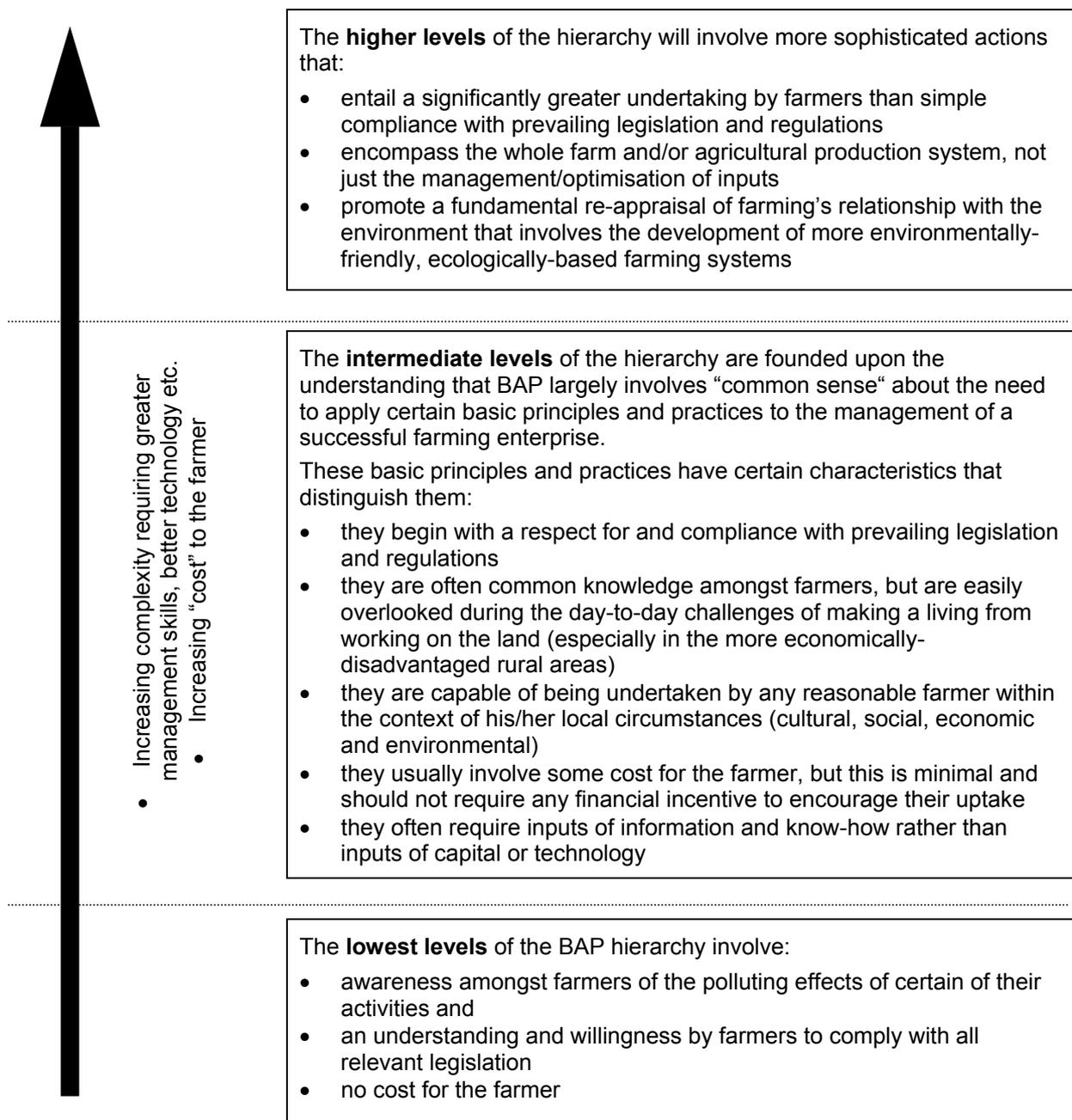
**Figure 1:** The difference between BAP and BAT



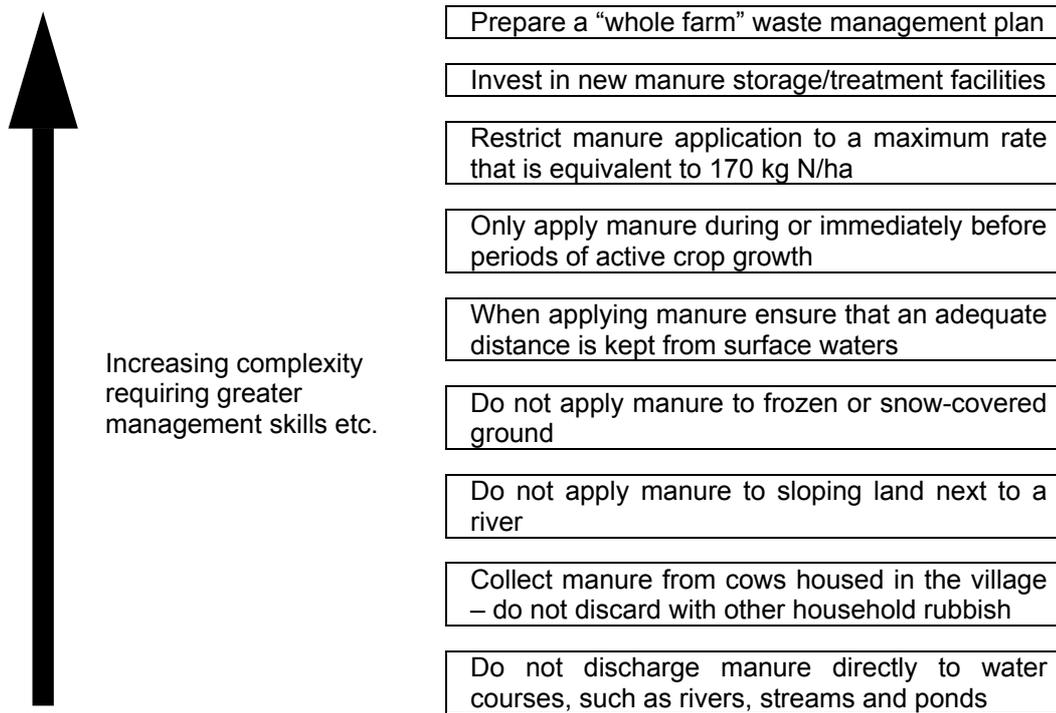
## 1.2 Developing the BAP Concept

There are no concrete and universal definitions available for what is or is not best agricultural practice – indeed, there is a risk that it is a potentially confusing term because it is so prone to being interpreted by different people in many different ways. For example, in the context of the DRB it is important to clearly distinguish between the concept of BAP and the existing EU concepts of *Codes of Good Agricultural Practice* (under the EC Nitrate Directive) and verifiable standards of *Good Farming Practice* (under the EC Rural Development Regulation, 1257/1999).

A strict or prescriptive definition of BAP for Output 1.2 has therefore been avoided in this project – instead we have proceeded with the understanding that BAP actually encompasses a broad spectrum or **hierarchy of activities** that must be interpreted according to local agronomic, environmental, social and economic context. It is this hierarchy of activities that forms a clear and common concept for BAP throughout the DRB countries as shown below:



For example, the following simple hierarchy relating to BAP for the collection, storage and application of manure can be developed:



Obviously not all elements of this hierarchy are relevant in all countries of the central and lower DRB – there has to be some interpretation according to local context. To be effective, any BAP must not only be technically and economically feasible, it must also be socially acceptable to the farming community. For example, the social and economic circumstances of many rural communities in Moldova are very difficult and this will inevitably limit the ability of farmers to adopt the full BAP hierarchy above – indeed, even basic action such as ensuring that manure is collected and returned to the land rather than discarded in the village rubbish dump with other household waste can be difficult to encourage when local farmers cannot afford the cost of transporting manure to their fields.

On the other hand, in the Czech Republic we might expect the more commercially-orientated farmers there to have the willingness and ability to prepare a “whole farm waste management plan” and make the necessary calculations for restricting manure application to specified, matching fertiliser use to soil N supply etc. When viewed like this, the proposed concept of Best Agricultural Practice is quite straightforward and easy to define as:

**“...the highest level of pollution control practice that any farmer can reasonably be expected to adopt when working within their own national, regional and/or local context in the Danube River Basin”**

As such, BAP can be applied as a uniform concept across the whole DRB, but the level of environmental management/performance that can be expected from farmers in different regions/countries will vary significantly according to:

- a) the agronomic, environmental and socio-economic context in which they are operating
- b) the availability of appropriate policy instruments for encouraging farmers to “move up” the hierarchy and adopt more demanding pollution control practices
- c) the availability of appropriate knowledge and other technical resources for supporting farmers to “move up” the hierarchy and adopt more demanding pollution control practices

## 2 Policy Instruments and Measures for Promoting BAP

The ultimate aim of policy-making for agricultural pollution control is to reduce the risk of pollution by influencing the behaviour of farmers and to improve the management practices they choose to adopt on a day-to-day basis.

As implied above, the objective of policy strategies for agricultural pollution control in the different DRB countries should therefore be to encourage farmers to “move up” the BAP hierarchy as far as possible in the context in which they operate and deliver the highest level of pollution control that it is feasible for them to do.

The function of available policy instruments and measures for achieving this “shift” can be summarised as follows:

- a) **Disincentives** for dropping below the minimum level of environmental management practice that is acceptable – in other words, to avoid as many farmers as possible from staying in or entering the “red zone” of environmental performance
- b) **Appropriate interventions** for promoting and sustaining the minimum level of environmental management practice (the “blue zone”) on as many farms as possible, and
- c) **Incentives** to go beyond the minimum level of environmental management practice and deliver a higher level of environmental performance – in other words, to encourage farmers improve their management practices still further and enter the “green zone”

Since it is unlikely that a single policy instrument will achieve the necessary “shift” in farmer behaviour, strategies for agricultural pollution control commonly use a combination of policy instruments – the so-called “policy mix”. The different elements of the “policy mix” need to work together to solve the specific pollution problems that exist with some elements of the “mix” having an effect in the long-term and others in the short-term. A number of additional factors will also influence the selection of instruments for the “policy mix”, including environmental effectiveness, economic efficiency, equity and accessibility to farmers, administrative feasibility and cost, and political acceptability. It is also important to note that the composition of the “policy mix” may need to change over time.

**Figure 1** gives a hypothetical example for the “mix” of policy instruments that might be used for promoting different elements of BAP associated with the collection, storage and management of manure. These policy instruments include:

1. **Regulatory Instruments** - these involve the traditional “command and control”-type policy mechanisms, such as statutory prohibitions and legal sanctions, which form the basis of state intervention and control in most developed and developing countries. The principal roles of regulation in agricultural pollution control are to:
  - a) prohibit those practices with a high risk of causing unacceptable levels of harmful and polluting substances to be released into the natural environment
  - b) establish maximum ceilings or standards for acceptable levels of pollution e.g. drinking water standards for nitrates and pesticides.
2. **Advisory/Informative Instruments** - these are based upon “communication”, including the provision of information and advice as well as the opportunity for discussion and negotiation between farmers, policy-makers and other stakeholder groups. Advisory/Informative instruments are particularly important for controlling agricultural pollution because of the need for farmers to use information, management ability and ecological understanding to replace or rationalise the use of agro-chemical inputs and/or other management practices – indeed, sustainable agriculture is often described as “*information intensive, rather than chemical intensive*”.
3. **Economic Instruments** - these involve the use of financial *incentives* and *disincentives* to encourage or discourage the adoption or continuation of specific agricultural practices.

### ***Financial Incentives***

Financial incentives are potentially very powerful instruments for modifying the behaviour of farmers - they are flexible, easily-targeted and can be linked to the implementation of both regulatory and communicative policy instruments to help achieve specific objectives. Furthermore they are unlikely to require any re-orientation of farmers' attitudes.

Examples of financial incentives include compensatory payments, capital grants, credit or low-interest loans, as well as the market advantage and/or premium prices obtained for certified and labelled products from environmentally-friendly farming systems.

Obviously, the success of the financial incentives outlined above at modifying the behaviour of farmers depends very much upon the ability and willingness of national governments to pay for the environmental benefits that are accrued. Other incentives can be pursued directly from the general public as consumers. Environmentally-friendly practices can be encouraged through the adoption of production methods according to prescribed environmental standards or codes of practice which have a strong 'market-linkage'. Accredited products with recognisable labels often have a market advantage and in some cases (e.g. organic food) may attract premium prices which significant numbers of consumers are willing to pay.

### ***Financial Disincentives***

Financial disincentives, such as penalties and fines for non-compliance with legislation, are commonly designed "*...to confront the user (or polluter) of the environment with the full economic consequences of his/her actions*"<sup>1</sup>. This approach is derived from the so-called 'Polluter-Pays Principle' whereby those responsible for causing the negative externalities generated by the harmful effects of economic activity upon the environment (mainly, but not exclusively, by pollution) are forced to bear the cost of this damage and/or the costs incurred in controlling the damage.

The "Polluter-Pays Principle" may be applied in agriculture via the government imposition of taxes on fertilisers and pesticides. In theory this means that the external costs of using these agro-chemicals (e.g. cost of water treatment by water supply companies) are 'internalised' to become part of the normal business costs incurred by farmers, thereby encouraging the adoption of less polluting practices/technologies.

As an example, **Table 1** summarises the "mix" of policy instruments (2002) used in the United Kingdom changing farm management practices and controlling diffuse pollution from agriculture.

Additionally there is the **implementation structure** to consider - this is the organisational arrangement within which policy strategies are implemented. The 'actors' within this structure may include farmers and their representative organisations (e.g. farmers' unions), governmental agencies, sector authorities, private interest groups and even the general public, while their success at implementing policy will depend upon the way in which they organise themselves to solve problems of policy implementation, their degree of power and authority, and the level of resources they are allocated.

<sup>1</sup> Scheele, M. (1997). The Decomposition Approach: Spatially Differentiated Analysis and Implementation of Environmental Strategies. In: *Controlling Mineral Emissions in European Agriculture* (Eds. Romstad, E., Simonsen, J. and Vatn, A.), 41-58. CAB International, Wallingford.

The implementation structure will obviously vary depending upon the policy strategies and instruments adopted. For example, regulatory instruments tend to be associated with centralised decision-making and 'top-down' policy implementation. Advisory/informative instruments on the other hand are much more flexible and offer the potential to encourage decentralised decision-making and 'bottom-up' policy implementation by:

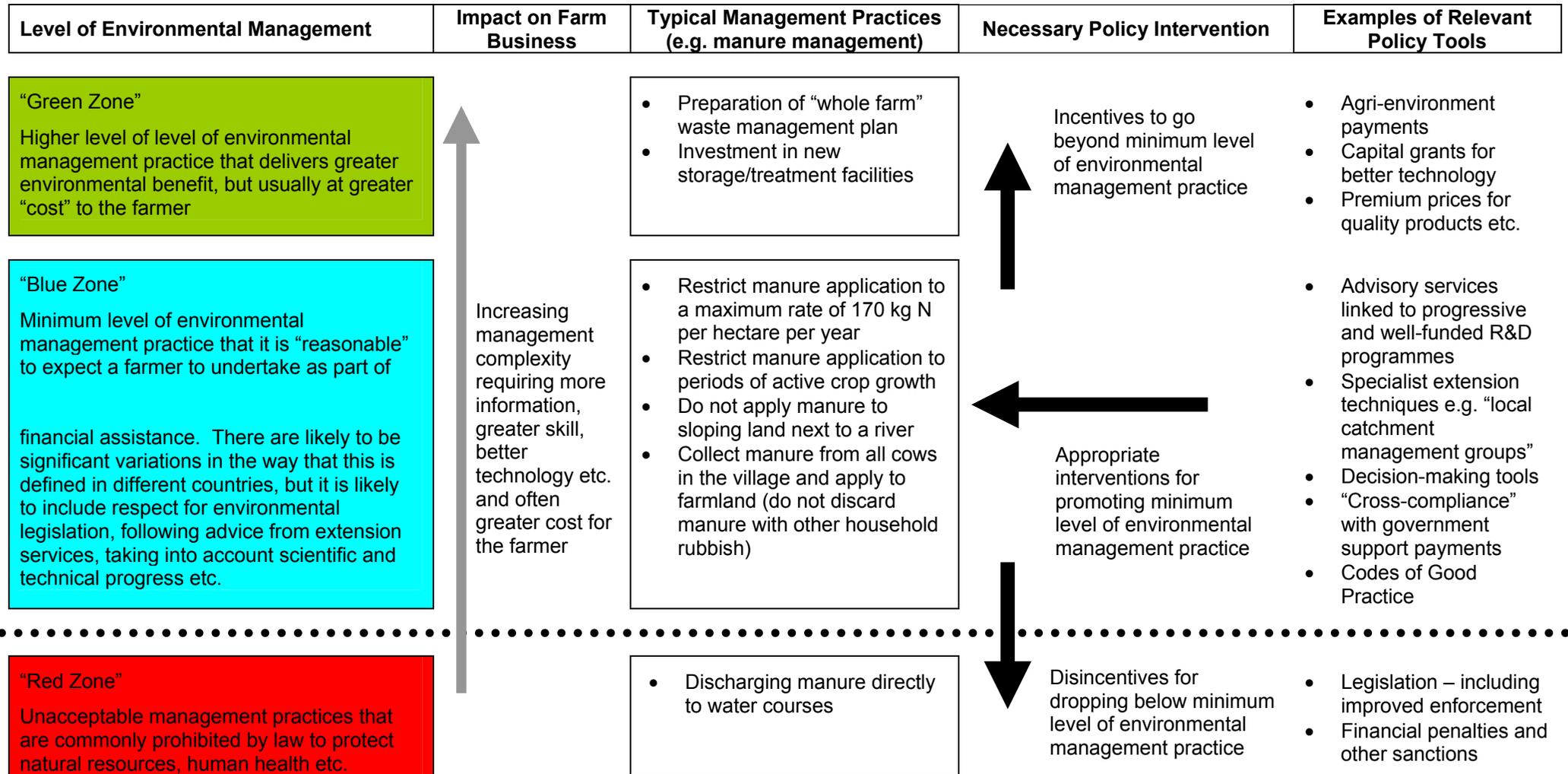
- a) developing common knowledge and understanding between the policy makers, farmers and/or their representative organisations, and;
- b) leaving the final decisions on specific management practices and actions to individual farmers or groups of farmers.

Many EU Member States increasingly emphasise the need for a “partnership approach” with farmers and attempt to facilitate changes in the management practices of farmers using more innovative and participatory advisory tools<sup>2</sup>.

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<sup>2</sup> See Annex 2 (LANDCARE Pilot Project) of Project Output 1.3 Report on *Developing Pilot Projects for the Promotion of Best Agricultural Practice in the Danube River Basin* (held in Bucharest, 19-20 January 2004)

**Figure 2:** Hypothetical Example of the “Mix” of Policy Tools used to Promote Best Agricultural Practice for the Management of Manure



**Table 1:** Summary of the “Mix” of Policy Instruments used in the UK in 2002 for Controlling Diffuse Pollution from Agriculture

<b>Disincentives for Dropping Below Minimum Level of Environmental Management</b>	
<b>Advisory Instruments</b>	<ul style="list-style-type: none"> <li>• <b>On-farm Advice</b> - Environment Agency provides advisory support to farmers in high risk areas to promote awareness of pollution control legislation and the likely cost of non-compliance</li> </ul>
<b>Economic Instruments</b>	<ul style="list-style-type: none"> <li>• <b>Enforcement Fines</b> - Environment Agency imposes fines (up to 30,000 EURO) on farmers prosecuted for causing water pollution</li> </ul>
<b>Regulatory Instruments</b>	<ul style="list-style-type: none"> <li>• <b>Regulatory Controls</b> – numerous national legislation regulating agricultural emissions, activities, technologies and substances in relation to water pollution. Key items of EU legislation transposed into national legislation include: <i>Nitrates Directive</i>, <i>IPPC Directive</i>, <i>Groundwater Directive</i>, <i>Environmental Impact Assessment Directive</i>, <i>Sewage Sludge Directive</i> and preparations for the <i>Water Framework Directive</i></li> </ul>
<b>Interventions to Promote Minimum Level of Environmental Management</b>	
<b>Advisory Instruments</b>	<ul style="list-style-type: none"> <li>• <b>On-farm Advice</b> – a variety of on-farm advice is currently provided free of charge, including advice on farm waste management plans within selected river catchments and advice on nutrient planning to farms going through organic conversion</li> <li>• <b>Codes of Good Agricultural Practice</b> – these are aimed at the protection of soil, water and air. They are designed to help farmers avoid causing pollution from different agricultural sources and include a range of advice and information that is specifically relevant to the control of diffuse pollution from agriculture</li> <li>• <b>Other Written Advice</b> - various advice booklets on the subject of nutrient and waste management, including regularly updated fertilizer recommendations for all crops</li> <li>• <b>Training</b> - a vocational training scheme for land managers offering part-funding for courses provided by approved trainers, exchange visits, etc.</li> <li>• <b>Decision tools</b> - a number of decision tools have been developed to help farmers with different aspects of nutrient management (e.g. fertiliser application rates, N availability in manures, etc.).</li> <li>• <b>Promote/facilitate information exchange between farmers</b> – the Government facilitates exchange of information through demonstration farms (e.g. there are four that are used to promote better manure management) and sponsorship of local workshops etc.</li> <li>• <b>Local diffuse pollution initiatives</b> - a number of local advisory and awareness-raising initiatives have operated in areas where diffuse pollution is a problem. These initiatives adopt a participatory/partnership approach, focus on local issues, and integrate a range of advisory approaches (awareness-raising, information exchange, demonstrating best practice, offering on-farm advice)</li> <li>• <b>Research &amp; Development</b> – the Government sponsors scientific research into diffuse pollution and nutrient management as policy and information needs arise</li> </ul>
<b>Economic Instruments</b>	<ul style="list-style-type: none"> <li>• <b>Grant Scheme</b> - farmers within Nitrate Vulnerable Zones are eligible for a “farm waste capital grant” to meet the costs of complying with regulatory requirements</li> <li>• <b>Cross Compliance</b> – farmers receiving agri-environment and LFA payments must follow verifiable standards of Good Farming Practice on their whole farm – these which include some reference to manure management</li> <li>• <b>Product labelling/environmental branding</b> - a number of quality assurance schemes exist for different types of farming. These include some environmental requirements and give farmers some market advantage, particularly with the large multiple retailers</li> </ul>
<b>Incentives to go Above Minimum Level of Environmental Management</b>	
<b>Economic Instruments</b>	<ol style="list-style-type: none"> <li>1. <b>Agri-environment Payments</b> – some agri-environment schemes promote landscape and biodiversity features (e.g. conversion of arable land to permanent pasture) that have benefits for reducing diffuse pollution</li> </ol>

### 3 Current Status of Policies for Agricultural Pollution Control in DRB Countries

In order to be effective at improving the management practices of farmers, policies for reducing agricultural pollution should include three effective components - a *policy strategy* (or number of strategies), *policy instruments* and an *implementation structure*. A review<sup>3</sup> was undertaken to develop understanding of the existing policy context regarding agricultural pollution control in the 11 central and lower DRB countries – the main findings were:

**Strategies** - all national experts reported some goals for water protection in their countries, although there is a general lack of clear and targeted strategies for water protection that integrate different policy measures and show the necessary path to the achievement of indicated goals. Most progress towards the development of comprehensive water protection strategies is made in those countries preparing for EU accession from May 2004.

**Regulatory Instruments** – many of the main agricultural pollution issues are addressed by existing regulatory instruments in the DRB countries, with the most extensive coverage of issues in those countries preparing for EU accession in 2004. In most other countries, existing regulatory instruments tend to be rather general with relatively few specific regulatory instruments in place. Consequently there is much potential to prepare more targeted instruments to prevent water pollution through the control of specific farming practices – also to improve compliance and enforcement.

**Economic Instruments** - economic instruments may be incentives or disincentives and can be an important tool for modifying the management practices of farmers and reducing agricultural pollution. However, effective measures (or packages of measures) need to be well-designed and balanced – as well as successfully implemented. Not surprisingly, the economic instruments used in the DRB countries are mainly disincentives due to the lack of financial resources to introduce incentive schemes. Where economic instruments are in place they do not currently address all pollution issues in all countries. The number of incentive measures in the four acceding countries (Czech Republic, Slovakia, Slovenia and Hungary) is expected to increase in 2004 with EU accession and the availability of EU co-financing for rural development measures, such as agri-environment programmes.

**Advisory/Information Instruments** - the transfer of knowledge and information to farmers via advisory/informative instruments can play a key role in changing the management practices of farmers and reducing agricultural pollution. However, the most frequent limitation upon this type of instrument for controlling agricultural pollution in the DRB is that the actions taken are too small with insufficient staff and financial resources. There is large potential to further develop advisory/information instruments in all countries.

Based upon the results of the policy review, the following general recommendations were made for all central and lower DRB countries:

- to design more targeted and integrated strategies for the control of agricultural pollution
- to improve the control and enforcement of regulatory instruments for agricultural pollution control
- to put more emphasis upon the design and implementation of advice/information measures for agricultural pollution control
- to develop within available resources financial incentives as appropriate economic instruments for promoting agricultural pollution control

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<sup>3</sup> Report from Project Output 1.2: *Inventory of Policies for Control of Water Pollution by Agriculture in the Danube River Basin Countries*

- to promote organic farming and integrated crop management techniques as viable alternatives to the use of agrochemicals
- to design and implement national codes of good agricultural practice for fertilizer, manure and pesticide use
- to increase farmer and advisor awareness of the importance of agricultural pollution control
- to support capacity building amongst relevant stakeholders for the implementation of agricultural pollution control policies

## 4 Opportunities for Policy Reform in Relation to EU Enlargement

This project work is undertaken during a period of great change in the countries of the central and lower Danube River Basin (DRB) with Hungary, Czech Republic, Slovakia and Slovenia in the final stages of preparation for accession to the EU in May 2004, followed by Bulgaria and Romania and possibly Croatia preparing for EU accession in 2007 or later<sup>4</sup>. The policy-making context for agricultural pollution control in these DRB countries is therefore undergoing significant change and preparation for joining the EU is currently a major driving force for the reform of agricultural pollution control policies in the 6 countries mentioned. This includes the requirement to:

- harmonise national legislation with EU regulatory instruments
- prepare to implement the Common Agricultural Policy (CAP), including rural development measures
- develop the principle of “environmental cross compliance” – in other words, to set certain environmental standards that farmers must meet in order to be eligible for CAP support

### 4.1 Harmonisation of National Legislation with EU Regulatory Instruments

The DRB countries preparing to join the EU have the huge task of harmonising their national legislation with the complex range of EU regulatory instruments.

Table 2 presents a summary of the legislation relevant to reducing the risk and impact of agricultural pollution. It should be noted that some of this legislation has so-far had relatively little impact upon reducing agricultural pollution – for example, the EU Nitrates Directive (No. 91/676) has consistently failed to meet its environmental objectives because of both considerable resistance by the EU agricultural community and poor implementation by many Member States<sup>5</sup>.

It is now hoped that the rules of the **Water Framework Directive (No. 2000/60)**<sup>6</sup> will provide a more comprehensive framework for agricultural pollution control, as well as assisting the implementation of existing “single issue” legislation such as the Nitrate Directive. The Water Framework Directive (WFD) was adopted in December 2000 and arises out of a long debate concerning the limitations of existing EU water legislation. The Directive requires that all surface waters (rivers, lakes and coastal waters) and ground waters are managed in order to meet ‘good ecological status’. This should be through the use of River Basin Management Plans<sup>7</sup> which will integrate existing EU measures into a programme of basin-specific measures which are appropriate to protecting the local water environment from the human pressures upon it.

<sup>4</sup> Croatia is also preparing its preliminary application for EU membership

<sup>5</sup> European Commission (2002). Implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources: Synthesis from year 2000 Member States reports. Report No. COM(2002) 407 final, Brussels, 17.07.2002

<sup>6</sup> EC Directive No. 2000/60/EC establishing a framework for Community action in the field of water policy, OJ L327 (22.12.2000)

<sup>7</sup> Bloch, H. (2000). EU policy on nutrients emissions: legislation and implementation. In: *Wastewater and EU-Nutrient Guidelines*, pp 52-59. International Water Association, London.

There is debate within many Member States on what the implications of the WFD will mean for agriculture - in particular, how the Member States (including the new Member States from the DRB) will use appropriate policy instruments to tackle the significant pressures upon water resources that arise from agriculture, including the risk of pollution. Currently there is much interest in using the policy tools available in the Common Agricultural Policy (CAP) to support and implement the WFD<sup>8</sup> – including agri-environment payments and “environmental cross-compliance” (see below).

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<sup>8</sup> DG Environment (2003) - Working Document on *The Water Framework Directive (WFD) and tools within the Common Agricultural Policy (CAP) to support its implementation*

**Table 2:** Summary of EU Legislation Relevant to Agricultural Pollution Control

Title of Legislation	Obligations	Pollution Issue
<i>Directive 76/464/EEC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community</i>	The Directive sets a framework for the elimination of reduction of pollution of inland, coastal and territorial waters by particularly dangerous substances. It identifies 129 dangerous substances and requires Member States to eliminate or reduce pollution by these substances, including a large number of active ingredients used in agricultural pesticides.	<b>Pesticides</b>
<i>Directive 79/117/EEC prohibiting the placing on the market and use of plant protection products containing certain active ingredients</i>	Directive 79/117 - the 'Prohibition Directive' - bans or restricts the use of pesticides containing certain active ingredients and to ensure that those that are marketed are of a specified quality and appropriately classified, packaged and labelled.	<b>Pesticides</b>
<i>Directive 80/68/EEC on the protection of groundwater against pollution caused by certain dangerous substances (the Groundwater Directive)</i>	The Groundwater Directive establishes a framework for the protection of EU groundwater by prohibiting discharge to ground water of the most detrimental substances. It places mandatory obligations on farmers relating to the disposal of pesticide and other farm wastes.	<b>Pesticides</b> <b>Point Source Pollution</b>
<i>Directive 80/778/EEC on the quality of water intended for human consumption (the Drinking Water Directive) – to be replaced by Directive 98/83/EC from 2003</i>	The Drinking Water Directive (80/778) lays down standards for the quality of water intended for drinking or for use in food and drink manufacture in order to protect human health. It does not impact upon farmers directly, but sets maximum admissible pesticide residue levels and maximum admissible concentrations of nitrate in drinking water that water suppliers must comply with.	<b>Pesticides</b> <b>Nutrients (including fertilisers and manures)</b>
<i>Directive 91/414/EEC concerning the placing of plant protection products on the market</i>	Directive 91/414 - the 'Authorisation Directive' - introduces a Community system to harmonise the authorisation and placing on the market of plant protection products, i.e. pesticides, to protect human health and the environment. It places no mandatory obligations on farmers. The obligation is on the regulatory system to only approve products that pose an acceptable risk to human health and the environment. Detailed criteria and protocols have been devised.	<b>Pesticides</b>
<i>Directive 2000/60/EC establishing a framework for Community action in the field of water policy (the Water Framework Directive)</i>	The Water Framework Directive (WFD) has the overall environmental objective of achieving 'good water status' throughout the EU by 2010 and for it to be maintained thereafter. It sets out to establish a Community framework for the protection of surface and ground waters across the EU through a common approach, objectives, principles and basic measures based upon the river basin as the primary administrative unit for the purposes of water management. The Directive will have widespread and significant impacts and although it places no direct obligation on farmers, they will have to meet certain new standards.	<b>Pesticides</b> <b>Nutrients (including fertilisers and manures)</b> <b>Point Source Pollution</b>
<i>Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources</i>	The objectives of the Directive are to ensure that the nitrate concentration in freshwater and groundwater supplies does not exceed the limit of 50 mg NO <sub>3</sub> <sup>-</sup> per litre as imposed by the EU Drinking Water Directive (above) and to control the incidence of eutrophication. The Directive requires individual Member States to develop a Code of Good Agricultural Practice; designate zones vulnerable to pollution by nitrates, and establish and implement Action Programmes within these zones to prevent further nitrate pollution.	<b>Nutrients (including fertilisers and manures)</b>
<i>Directive 96/61/EC on Integrated Pollution Prevention and Control (IPCC Directive)</i>	This Directive aims to reduce air and water pollution by applying stronger controls to the regulation of emissions from a broad range of industrial activities, including pig and poultry producers. All new or substantially altered pig and poultry units housing more than 750 sows, 2,000 finishers over 30 kg or 40,000 birds will require an operating permit that will detail those practices on the unit that may give to polluting emissions, their environmental impact and the 'Best Available Techniques' required to control emissions.	<b>Point Source Pollution</b>

## 4.2 Implementation and Reform of the Common Agricultural Policy (CAP)

The main policy instrument for supporting farmers in the EU is the Common Agricultural Policy (CAP). This is a very important policy instrument that continues to undergo a series of radical reforms that will impact upon all farmers in the EU, including those in the new Member States of the DRB.

The first major reform of the CAP was the so-called ‘Agenda 2000’ proposals which took effect for the period of 2000 – 2006. The Agenda 2000 proposals established a range of rural development measures to the CAP for the first time – the so-called “second pillar” of the CAP as defined by the Rural Development Regulation No. 1257/1999<sup>9</sup>. Amongst other things, this makes provision for Member States to encourage more environmentally-friendly farming methods, including practices that reduce the risk of agricultural pollution, by:

- a) offering farmers grant-aided investment (up to 50%) in equipment and facilities that helps to “...preserve and improve the natural environment” – for example, by:
  - purchasing up-to-date equipment to spread manure and apply fertilisers or pesticides in a more environmentally-friendly way
  - improving manure storage facilities (e.g. to meet the requirements of the Nitrate Directive)
- b) training farmers for the “...application of production practices compatible with the maintenance and enhancement of the landscape and the protection of the environment” – this includes:
  - training for organic farming or integrated crop management practices
  - training for farming management practices with a specific environmental protection objective
- c) funding national/regional agri-environment schemes that offer payments to farmers to adopt “...agricultural production methods designed to protect the environment and to maintain the countryside” – this is a very important tool for introducing environmentally-friendly farming methods and includes support for a range of actions contributing to the control of agricultural pollution, including conversion to organic farming.

EU Member States began implementing the first agri-environment programmes in the 1980s and 1990s, and today such programmes cover over 20% of all agricultural land in the EU. Agri-environment payments are not a subsidy - they are effectively promoting a form of “alternative economic activity” with farmers paid as “environmental managers” in addition to their usual role as food producers.

The potential for agri-environment schemes to contribute to a wide range of rural development objectives, including agricultural pollution control, is recognised by the fact that they are now the **only** compulsory measures for EU Member States to introduce under Regulation 1257/1999. It will therefore be obligatory upon accession for all new Member States to introduce an EU co-financed agri-environment scheme that offers payments per hectare to farmers (for a minimum of 5 years) who voluntarily change their methods of farming in ways to benefit the environment.

Of all the tools of the CAP, agri-environment measures seem the most useful for supporting implementation of the WFD – however, EC rules currently prevent agri-environment payments being made to farmers for complying with the requirements of EC legislation. This is a key issue that needs to be resolved since the resources available for agri-environment measures, including those with a role in controlling diffuse pollution from agriculture, are proposed to increase following the recent “mid-term review” of the CAP<sup>10</sup>.

<sup>9</sup> Council Regulation (EC) No 1257/1999 of 17 May 1999 on support for rural development from the framework, taking account of experience gained using European Agricultural Guidance and Guarantee Fund (EAGGF) and its implementing regulation Commission Regulation (EC) No 445/2002 of 26 February 2002 laying down detailed rules for the application of Council Regulation (EC) No 1257/1999 on support for rural development from the European Agricultural Guidance and Guarantee Fund (EAGGF)

<sup>10</sup> In June 2003, EU agriculture ministers agreed a further package of fundamental reforms following the “Mid-term Review” of the CAP that it is claimed will completely change the way that the EU supports its farm sector. The key elements of the new, reformed CAP that will enter into force during 2004 and 2005 are: i) a single farm payment for EU farmers that is independent from production and linked (“cross-compliance”) with defined environmental, food safety and animal welfare standards, as well as the requirement to keep all farmland in good agricultural and environmental condition; ii) a strengthened rural development policy with more EU money and

Additionally, the “mid-term review” of the CAP introduces a new “meeting standards” measure that will aim to help farmers adapt to the introduction of EU standards concerning the environment, public, animal and plant health, animal welfare and occupational safety. This may also be useful for promoting pollution control by farmers in the new Member States of the DRB.

While the 4 DRB countries (Czech Republic, Slovakia, Hungary and Slovenia) joining the EU in 2004 will shortly be implementing national agri-environment programmes, 2 DRB countries (Romania and Bulgaria) are unlikely to join the EU until at least 2007. In these latter countries, financial assistance is also available for developing and implementing “pilot” agri-environment measures with SAPARD co-funding – the Special Pre-accession Programme for Agriculture and Rural Development.

### 4.3 Developing the Concept of “Environmental Cross Compliance”

The concept of “environmental cross-compliance” in agriculture (setting conditions which farmers have to meet in order to be eligible for direct government support) has been growing in importance since the 1970s, but was not introduced in the EU until the “Agenda 2000” reforms. This included:

- a) allowing Member States, if they chose, to attach environmental conditions to direct payments made to farmers under the ‘first pillar’ (market support measures) of the CAP
- b) requiring Member States to define “verifiable standards of Good Farming Practice (GFP)”<sup>11</sup> that all farmers receiving agri-environment and less-favoured payments under the Rural Development Regulation must follow across the whole of their farm. GFP is a relatively new concept to emerge within the EU<sup>12</sup> and its practical implementation is still being tested in many Member States with the interpretation of what constitutes a “reasonable” standard of farming varying from country to country.

There is currently little information available on the implementation of voluntary cross-compliance by Member States, but following the “mid-term review” of the CAP all Member States will in future be **required** to issue farmers with a list of “minimum environmental requirements” that must be followed if they want to receive direct support payments under the Single Area Payment Scheme (SAPS) proposed from 2004.

This will be a potentially useful tool for reducing certain pollution risks – although inevitably the true extent of its influence upon reducing pollution will depend upon Member State’s commitment and willingness to fully and effectively implement this new policy instrument.

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measures to promote environmentally-friendly farming methods, as well as a new measure specifically intended to help farmers to meet EU production standards, and; iii) a reduction in direct payments (“modulation”) for bigger farms to finance the new rural development policy

<sup>11</sup> Under Section 9 of EC Regulation No. 1750/1999, which sets out the rules for several measures including agri-environment, it is stated that: “Usual good farming practice is the standard of farming which a reasonable farmer would follow in the region concerned....Member states shall set out verifiable standards in their rural development plans. In any case, these standards shall entail compliance with general mandatory environmental requirements.”

<sup>12</sup> It should be noted that GFP is **not** equivalent to the Code of Good Agricultural Practice (CoGAP) that Member States must introduce in accordance with the requirements of the EU Nitrates Directive 676/91.

## 5 DRB-wide Strategic Aims, Objectives and Measures for Policy Reform

The following strategic aims, policy objectives and measures for policy reform and the introduction of best agricultural practice (BAP) in the central and lower DRB countries are formulated on a basin-wide context and should be adopted and adapted according to national/regional level context.

There are six Strategic Aims proposed:

1. To reduce pollution from mineral fertilisers and manure
2. To reduce pollution from pesticides
3. To improve compliance and enforcement of regulatory instruments for agricultural pollution control
4. To develop appropriate economic instruments for agricultural pollution control
5. To develop the capacities of agricultural extension services for agricultural pollution control
6. To promote organic farming and other low input farming systems

Policy Objectives are listed under each Strategic Aim. There are a total of eleven Policy Objectives proposed for national governments to adopt:

1. Develop greater understanding at a national/regional level of the relationship between agricultural practice (fertiliser, manure and land management) and the risk of diffuse nutrient pollution
2. Develop appropriate policy instruments and institutional arrangements for promoting better management of fertilisers and manures
3. Reduce the levels of harmful active substances used for crop protection by prohibiting and/or substituting the most dangerous priority pesticides with safer (including non-chemical) alternatives
4. Improve controls on the use and distribution of pesticides
5. Encourage the proper use of pesticides by farmers and other operators
6. Improve the use of regulatory instruments to prevent water pollution through the control of specific farming practices
7. Develop and introduce appropriate economic instruments to encourage implementation of BAP
8. Review and adapt the mandate and structure of agricultural extension and advisory services
9. Develop the capacity of agricultural extension and advisory services for the promotion of BAP
10. Develop and support pilot projects for the promotion of BAP by agricultural extension and advisory services
11. Promote certified organic farming and other low input farming systems as viable alternatives to the conventional use of mineral fertilisers and pesticides

Appropriate measures for policy reform and the introduction of best agricultural practice (BAP) are listed under each of the Policy Objectives and the overall “policy mix” arising from these measures is summarised in Table 3.

## 6 Aim 1: To Reduce Pollution from Mineral Fertilisers and Manure

Despite the relatively low levels (compared to many EU Member States) of mineral fertiliser and manure currently applied to agricultural land in the central and lower DRB region, national governments should take seriously the risk of diffuse pollution arising from fertiliser and manure application – particularly as the economic conditions of agriculture in the region improve.

The following objectives relating to fertiliser and manure application are recommended for all national strategies aiming to control nutrient pollution from agriculture. Comments are also included on policy instruments that should be adopted **where appropriate to national context**<sup>13</sup>:

<b>Objective 1: Develop greater understanding at a national/regional level of the relationship between agricultural practice (fertiliser, manure and land management) and the risk of diffuse nutrient pollution</b>
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1.1 **Establish Progressive and Well-funded Research Programmes** – whilst scientific understanding of nutrient losses from agricultural land and the related transport processes to ground and surface waters has increased in recent years this cannot be applied uniformly across the DRB for the development of good/best practice. Country/regional specific guidance for farmers must be based upon an understanding of the behaviour of nutrients in the specific agronomic, environmental and socio-economic context of each country. For example:

- the nutrient content of animal manures need to be quantified to aid more precise application
- the nutrient losses from different components of the farm system to be measured and the causes of these losses established
- the underlying soil processes affecting nutrient availability (e.g. soil mineralisation) need to be better understood

<b>Objective 2: Develop appropriate policy instruments and institutional arrangements for promoting better management of fertilisers and manures</b>
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2.1 **Raise Farmer Awareness of Good Practice for Fertiliser and Manures** - simple and easy to understand information materials, combined with well-targeted publicity campaigns, can be very effective at raising farmers' awareness of the importance of improving the management of fertilisers and manures – a key message to communicate is that better nutrient management increases productivity, saves money and improves profitability.

2.2 **Develop and Promote National Codes of Good Practice for Fertiliser and Manure Use** – national authorities should agree upon clear and simple codes of voluntary good practice for fertiliser and manure management. This should be specific to national context and ideally linked to/derived from progressive and well-funded research programme (see 1.1 above)

<sup>13</sup> Not all policy instruments are appropriate to all countries

## 7 Aim 2: To Reduce Pollution from Pesticides

The national governments of all central and lower DRB countries should aim to effectively control pesticide pollution in order to minimise the risks presented to human health, the quality of environmental resources and the integrity of natural ecosystems in the region.

The following objectives are recommended for all national strategies aiming to control pesticide pollution from agriculture, together with comments on policy instruments that should be adopted **where appropriate to national context** (not all policy instruments are appropriate to all countries):

**Objective 3: Reduce the levels of harmful active substances used for crop protection by prohibiting and/or substituting the most dangerous priority pesticides with safer (including non-chemical) alternatives**

- 3.1 **Pesticide Ban** - the use of Atrazine, Lindane, Diuron and Endosulfan need to be banned immediately. Atrazine is the pesticide most often detected in the Danube basin, Lindane, Diuron and Endosulfan are toxic and persistent pesticides
- 3.2 **Pesticide Phase-out** - the use of all other priority pesticides, which are authorised should be reduced to a minimum, and their use should be phased out if possible and substituted by less-dangerous pesticides, including non-chemical alternatives. Considering the current low levels of pesticide use and a lower dependency of farmers upon these chemicals in the DRB regions, the targets for further pesticide reduction can be ambitious
- 3.3 **Pesticide Cut-off Criteria** - in order to prevent the replacement of the priority pesticides which are going to be banned or phased out with other hazardous pesticides, cut-off criteria for the approval of other pesticides need to be defined. Pesticides with distribution coefficients ( $K_{oc}$ ) below 300g/l (low absorption to soil, prone to leaching and run-off) and a half life greater than 20 days need to be regulated (prohibition, taxes and transferable permits are possible policy tools). Persistent pesticides should not receive authorisation.

**Objective 4: Improve controls on the use and distribution of pesticides**

- 4.1 **Monitor Pesticide Trade** - retailers, importers and distributor should be required to supply information on the amounts of all pesticide sold. Retail sellers need to keep records of their sales of pesticide products and to submit annual reports to national authorities
- 4.2 **Control Pesticide Trade** - all central and lower DRB countries must work towards stopping the uncontrolled and illegal trade of pesticides. The authorities on the borders should receive training on the issue of illegal pesticide trade. National legislation should enable authorities to effectively prosecute those selling illegal pesticides and to penalise them with high fines
- 4.3 **Monitor Pesticide Use** – effective monitoring of pesticide use at a farm level is an essential tool for improving the control of pesticide use and distribution, as well as assessing environmental risks, developing non-chemical alternatives etc. Uniform record keeping by farming is essential for a functioning pesticide monitoring system. National regulation must require that pesticide use records are a) **kept** by all pesticide applicators (as in the Czech Republic and Slovakia) according to certain minimum standards and b) **reported** to the relevant authorities
- 4.4 **Elimination of Obsolete Pesticides** – all effort must be made to immediately secure and remove stockpiles of obsolete pesticides

**Objective 5: Encourage the proper use of pesticides by farmers and other operators**

- 5.1 **Raise Awareness about Pesticide Misuse** – simple and easy to understand information materials, combined with well-targeted publicity campaigns, can be very effective at raising farmers’ awareness of the dangers of improper pesticide use and the importance of key issues such as the safe storage, handling and disposal of pesticide products. Retail stores, extension services and other organisation working with farmers can serve as effective distributors of information material.
- 5.2 **Develop National Codes of Good Practice for Pesticide Use** – national authorities should agree upon clear and simple codes of good crop protection practice when using pesticides. There are numerous frameworks for such codes, but as a minimum they should provide guidance to farmers on:
- Basic elements of crop protection
  - Choice of available chemicals for crop protection, including obsolete/illegal pesticides
  - Integrated crop management and non-chemical alternatives for weed, pest and disease control
  - Quantity and types of pesticide product to use
  - Pesticide storage
  - Use of spray equipment, including cleaning equipment
  - Disposal of surplus pesticides and spray mixture (diluted pesticide)
  - Disposal of empty pesticide containers
  - Records of application
  - Protective clothing and emergency procedures
- 5.3 **Mandatory Farmer Training on Pesticide Use** - comprehensive training is the most important instrument to prevent pesticide pollution at a farm level. All farmers and other operators (e.g. contract workers) who wish to purchase and apply pesticides should be required to have a license confirming that they have participated in an approved training programme. As a minimum, training should highlight the possible adverse effects of pesticides and promote the National Code of Good Practice for the storage of pesticides, safe handling and application of pesticides, correct use of spraying equipment, disposal of unused pesticide and containers, and record keeping (see above)

## 8 Aim 3: To Improve Regulatory Instruments for Agricultural Pollution Control

Many of the main agricultural pollution problems in the DRB countries are addressed by existing regulatory instruments, with the most extensive coverage of issues in those countries preparing for EU accession in 2004. In many countries there is therefore much potential to prepare more targeted instruments to prevent water pollution through the control of specific farming practices. Additionally, a major problem reported in all countries is the low level of compliance by farmers and the limited enforcement of legislation by statutory agencies.

The following objective is recommended for all national strategies aiming to reduce agricultural pollution **and should be adapted to national context**:

**Objective 6: Improve the use of regulatory instruments to prevent water pollution through the control of specific farming practices**

- 6.1 **Develop More Targeted Regulatory Instruments for Agricultural Pollution Control** – instead of addressing the causes of agricultural pollution through general environmental or water protection legislation, more targeted regulatory instruments should be developed to prevent water pollution through the control of specific farming practices. The introduction of new regulations for the control of agricultural pollution often requires the re-orientation of traditional attitudes within the farming community in order to accept the new "*moral authority*" (sanctions and controls) being imposed upon their businesses. All new regulations should therefore be introduced in combination with appropriate information and advice
- 6.2 **Promote Greater Compliance with Agricultural Pollution Control Legislation** – farmers must be made more aware via information campaigns and publications, extension and advisory services etc. of the prevailing pollution control legislation in their countries, including the reasons for the existence of this legislation and the consequences of non-compliance
- 6.3 **Improve Enforcement of Agricultural Pollution Control Legislation** – even where well-developed regulatory instruments exist, their impact upon agricultural pollution control commonly remains limited by the poor level of enforcement by statutory agencies. Consequently many farmers choose to ignore the restrictions upon certain practices because the risk of conviction is very low, whereas the cost of compliance and appropriate alternative action is often relatively high. National governments must allocate adequate resources to the statutory agencies responsible for the enforcement of pollution control legislation, this is a particular priority in those regions where water resources are at greatest risk of pollution from agriculture

## 9 Aim 4: To Develop Appropriate Economic Instruments for Agricultural Pollution Control

Economic instruments (financial incentives and disincentives) are potentially powerful tools for modifying the behaviour of farmers and promoting the adoption of more environmentally-friendly farming methods – although the use of financial incentives inevitably remains limited by the ability and willingness of national governments to pay for the incentives provided.

The following objectives are recommended for all national strategies aiming to reduce agricultural pollution **and should be adapted to national context** (particularly with regard to EU accession and the availability of resources for the introduction of financial incentives):

<b>Objective 7: Develop and introduce appropriate economic instruments to encourage implementation of BAP</b>
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- 7.1 **Use Capital Grant Schemes to Promote Good Practice** – an important obstacle to improving the management of fertiliser, manures and pesticides in the central and lower DRB countries is the outdated farm machinery and poor manure storage facilities found on many farms. Capital grants normally involve one-off payments for investment in specific tasks or facilities (e.g. waste handling and storage) that have environmental benefits – for example, the purchase of more modern farm machinery and better manure storage and handling facilities that improve the ability of farmers to a) comply with regulatory obligations and b) adopt better management practices. However, unless grant rates are 100% (i.e. none of the cost is shared by the farmers) their uptake can be limited by the reluctance of farmers to meet the additional costs that are not covered by the grant – under these circumstances it is also important to identify the economic benefits to the farmer
- 7.2 **Use “Cross Compliance” to Promote Good Practice** – where government schemes are providing support to farmers then the principle of “environmental cross-compliance” can be applied. This is most relevant in those countries joining the EU in May 2004 and involves the establishment of certain conditions/standards that farmers have to meet in order to be eligible to receive government support. This approach can easily be adapted to the promotion of good practice for fertiliser and manure management.
- 7.3 **Use Compensatory Payments to Promote Good Practice** – where resources are available, regional/national schemes should be developed to compensate farmers for the income lost and additional costs accrued arising from the adoption of more environmentally-friendly farming practices – including improvements in fertiliser, manure and pesticide use and management. This is particularly relevant in those countries joining the EU in May 2004 since these countries will be obliged under EU to implement such schemes under the so-called EU Rural Development Regulation
- 7.4 **Use Economic Instruments to Promote Organic Farming and ICM** – farmers converting to organic farming and ICM techniques can incur certain significant additional costs associated with reductions in input, establishment of new crop rotations, adoption of new technologies etc. These costs can be a significant obstacle to farmers deciding making the transition from a conventional farming system. Where funds are available, national governments should encourage farmers to convert to organic farming and ICM by offering appropriate levels of compensatory payment. Since organic farmers often have problems to sell or export their products, the marketing of organically-grown products should also be supported by governmental campaigns and action.
- 7.5 **Apply Appropriate Financial Disincentives** – including penalties and fines for non-compliance with legislation

## 10 Aim 5: To Develop the Capacity of Agricultural Extension Services for Agricultural Pollution Control

The national governments of all central and lower DRB countries should review the mandate and structure of agricultural extension service to respond to the new requirements of best agricultural practices to assure rational application of mineral fertiliser and manure and to effectively control pesticide use. Extension services should be aware of new legislation, be able to advise farmers on economic incentives (but also on fines in case of non-compliance) and – where appropriate – promote organic farming.

The following objectives are recommended for all national strategies aiming at reinforcing the capacity of agricultural extension services to support the promotion of best agricultural practice and **should be adapted to national context:**

<p><b>Objective 8: Review and adapt the mandate and structure of agricultural extension and advisory services</b></p>
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- 8.1 **Re-orientate Agricultural Extension and Advisory Services Towards the Promotion of BAP** - agricultural extension services play a key role in raising awareness and improving the technical skills of farmers and therefore have the potential as key actors in the promotion of good practice for fertiliser and manure management, pesticide use and land management. However, most agricultural extension services and advisors are orientated towards the encouragement of increased farm output and enhanced business profitability rather than environmental protection and sustainable resource management. Governments need to re-orientate national agricultural extension services and advisers towards the promotion of more environmentally-friendly management practices, including those that reduce the risk of water pollution.

<p><b>Objective 9: Develop the capacity of agricultural extension and advisory services for the promotion of BAP</b></p>
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- 9.1 **Increase Financial Support for Agricultural Extension and Advisory Services** – under-funding is one of the key limitations upon the capacity of most agricultural extension and advisory services in the central and lower DRB countries
- 9.2 **Develop Appropriate Institutional Frameworks for the Promotion of BAP** - including the link to progressive and well-funded research programmes (see 1.1 above)
- 9.3 **Training for Extension Workers/Advisers** – national funding should be provided for the training of advisers in good agricultural practice, as well as modern extension techniques
- 9.4 **Develop Appropriate Advisory Messages for the Promotion of BAP** – the implementation of pollution control measures at the farm level will only be successful and sustainable if the farmer can determine that it is in his/her economic interest to undertake such measures. For example, farmers should be advised that the use of an alternative practice is not only better for the environment, but can also save on agrochemical inputs and therefore improve the profitability of their farm businesses. These economic benefits must be clearly identified. However, note that large amounts of money can be wasted on poorly designed information campaigns for agricultural pollution control – information materials must be well-written and attractively presented with clear and simple advisory messages
- 9.5 **Develop Alternative/Innovative Approaches to Working with Farmers** – there is potential in all countries of the central and lower DRB for the development of more innovative approaches to working with farmers in order to more effectively communicate messages about the need for reducing agricultural pollution. One low-cost approach to implementing environmental policy is the government funding of voluntary and community assistance programmes to build the 'capacity' of local people to address local environmental problems with locally-developed solutions e.g. catchment-based “partnership groups” etc.

**Objective 10: Develop and support pilot projects for the promotion of BAP by agricultural extension and advisory services**

10.1 **Develop and Implement BAP Pilot Projects** – as already noted, most agricultural extension and advisory services are traditionally concerned with providing agronomic advice and can be difficult to re-orientate towards providing information and advice to farmers on the environmental impact of their farming activities and the adoption of alternative, more environmentally-friendly farming practices. Pilot projects are useful tools to support a) the re-orientation of extension/advisory services, b) the training of advisers and extension workers, c) the development of appropriate advisory messages for BAP and d) the development of more innovative approaches to working with farmers to promote BAP, particularly in high risk areas

## 11 Aim 6: To Promote Organic Farming and other Low Input Farming Systems

Organic farming is the most well-developed of all alternative farming systems and has good potential to reduce nutrient losses through the avoidance of the most soluble forms of mineral fertiliser, more rational use of manures and use of more diverse crop rotations (e.g. increased winter crop cover) - whilst also contributing to the reduction of pesticide pollution etc. There are also a number of market opportunities available to organic farmers in the DRB countries.

The following objectives are recommended for all national strategies aiming at reinforcing organic farming **and should be adapted to national context**:

**OBJECTIVE 11: Promote certified organic farming and other low input farming systems as viable alternatives to the conventional use of mineral fertilisers and pesticides**

- 11.1 **Raise Farmer Awareness of Organic Farming** – viable alternatives to conventional pesticide and fertiliser use, such as organic farming and ICM, should be actively promoted to farmers through the preparation of simple and easy to understand information materials, combined with well-targeted publicity campaigns. Organic farming has high potential for the reduction of the use of toxic pesticides (especially since the former intense use of copper compounds in organic vegetable and fruit has been controlled)
- 11.2 **Develop Relevant Legislation for Organic Farming** – national legislation for the certification and inspection of organic farming systems in compliance with internationally recognised standards (particularly those in accordance with EC legislation) should be developed and implemented as a high priority in order to promote the development of domestic markets and international trade
- 11.3 **Develop Appropriate Extension Capacity for Promoting and Supporting Organic Farming** – agricultural extension services and farm advisers play a fundamental role in the re-orientation of farmers towards alternative production systems, particularly those such as organic farming, which require higher levels of technical knowledge and management. National funding should be provided for the development of appropriate extension capacity as Objectives 8 and 9 above
- 11.4 **Use Economic Instruments to Promote Organic Farming and ICM** – farmers converting to organic farming techniques can incur certain additional costs associated with reductions in input, establishment of new crop rotations, adoption of new technologies etc. These costs can be a significant obstacle to farmers making the transition from a conventional farming system. Where funds are available, national authorities should encourage farmers to convert to organic farming by offering appropriate levels of compensatory payment. Since organic farmers often have problems to sell or export their products, the marketing of organically-grown products should also be supported by governmental campaigns and action.
- 11.5 **Develop On-farm “Quality Assurance Schemes”** - in addition to their growing interest in organic food and farming, the food processing and retail sectors of many European countries are developing additional “on-farm quality assurance schemes” that offer promote integrated crop management and the sale of food products that have been grown with reduced or minimal pesticide inputs. National authorities in the DRB should support the development of such “market-led” initiatives since they offer both a potential market opportunity for DRB farmers and will contribute to reducing the risk pesticide pollution now and in the future

## 12 Summary of Policy Recommendations

The following Table 3 summarises the consultant's recommendations for the "Policy Mix" of measures for promoting BAP in the Central and Lower DRB Countries.

The Summary Table is structured in accordance with the three main areas of policy intervention that were identified previously in Figure 2, namely:

- a) disincentives for dropping below the minimum level of acceptable environmental management practice
- b) appropriate interventions for promoting the minimum level of acceptable environmental management
- c) incentives to go beyond the minimum level of acceptable environmental management practice

Other priority policy interventions, including improvements in implementation structure, are also listed.

**Table 3:** Summary of the “Policy Mix” of Measures Proposed for Promoting BAP in the Central and Lower DRB Countries

<b>Disincentives for Dropping Below Minimum Level of Environmental Management</b>	
<b>Economic Measures</b>	<ul style="list-style-type: none"> <li>• Apply Appropriate Financial Disincentives</li> </ul>
<b>Regulatory Measures</b>	<ul style="list-style-type: none"> <li>• Develop More Targeted Regulatory Instruments for Agricultural Pollution Control</li> </ul>
<b>Interventions to Promote Minimum Level of Environmental Management</b>	
<b>Advisory Measures</b>	<ul style="list-style-type: none"> <li>• Raise Farmer Awareness of Good Practice for Fertiliser and Manures</li> <li>• Develop and Promote National Codes of Good Practice for Fertiliser and Manure Use</li> <li>• Raise Awareness about Pesticide Misuse</li> <li>• Develop National Codes of Good Practice for Pesticide Use</li> <li>• Mandatory Farmer Training on Pesticide Use</li> <li>• Promote Greater Compliance with Agricultural Pollution Control Legislation</li> <li>• Develop Appropriate Advisory Messages for the Promotion of BAP</li> <li>• Develop and Implement BAP Pilot Projects</li> </ul>
<b>Economic Measures</b>	<ul style="list-style-type: none"> <li>• Use Capital Grant Schemes to Promote Good Practice</li> <li>• Use “Cross Compliance” to Promote Good Practice</li> </ul>
<b>Regulatory Measures</b>	<ul style="list-style-type: none"> <li>• Pesticide Ban</li> <li>• Pesticide Phase-out</li> <li>• Pesticide Cut-off Criteria</li> <li>• Control Pesticide Trade</li> </ul>
<b>Incentives to go Above Minimum Level of Environmental Management</b>	
<b>Advisory Measures</b>	<ul style="list-style-type: none"> <li>• Raise Farmer Awareness of Organic Farming</li> </ul>
<b>Economic Measures</b>	<ul style="list-style-type: none"> <li>• Use Compensatory Payments to Promote Good Practice</li> <li>• Use Economic Instruments to Promote Organic Farming and ICM</li> <li>• Develop On-farm “Quality Assurance Schemes”</li> </ul>
<b>Regulatory Measures</b>	<ul style="list-style-type: none"> <li>• Develop Relevant Legislation for Organic Farming</li> </ul>
<b>Other Measures – including Improvements in Implementation Structure</b>	
	<ul style="list-style-type: none"> <li>• Establish Progressive and Well-funded Research Programmes</li> <li>• Monitor Pesticide Trade</li> <li>• Monitor Pesticide Use</li> <li>• Elimination of Obsolete Pesticides</li> <li>• Improve Enforcement of Agricultural Pollution Control Legislation</li> <li>• Re-orientate Agricultural Extension and Advisory Services Towards the Promotion of BAP</li> <li>• Increase Financial Support for Agricultural Extension and Advisory Services</li> <li>• Develop Appropriate Institutional Frameworks for the Promotion of BAP</li> <li>• Training for Extension Workers/Advisers</li> <li>• Develop Alternative/Innovative Approaches to Working with Farmers</li> <li>• Develop and Implement BAP Pilot Projects</li> <li>• Develop Appropriate Extension Capacity for Promoting and Supporting Organic Farming</li> </ul>

## 13 Adapting Policy Aims, Objectives and Measures to National/Regional Context

### 13.1 Introduction

The preceding section concludes with a summary (Table 3) of the overall “policy mix” of measures appropriate for promoting Best Agricultural Practice (BAP) in the Central and Lower DRB countries<sup>14</sup>. However, when considering this “policy” mix it is important to remember that it cannot be applied uniformly across the whole of the DRB since – as already noted - the level of environmental management/performance that we can expect from farmers in different regions/countries will vary significantly according to:

- a) the agronomic, environmental and socio-economic context in which they are operating and
- b) the feasibility of introducing the necessary appropriate policy instruments/measures for encouraging farmers to “move up” the BAP hierarchy and adopt more demanding pollution control practices.

Two key factors influencing the feasibility of introducing appropriate policy instruments/measures are the availability of:

- necessary financial resources for introducing economic incentives to encourage farmers to go above the minimum level of environmental management
- appropriate knowledge and other technical resources for supporting farmers to “move up” the BAP hierarchy and adopt more demanding pollution control practices

Although the huge diversity of the 11 central and lower DRB countries must be taken into account when making recommendations for the necessary agricultural policy changes to promote BAP in a national/regional context, it is not possible to make recommendations on a country-by-country basis. Instead, since a key driving forces for policy reform in the area of agricultural pollution control is preparation for joining the EU, the recommendations for policy reform are made according to the following different status of DRB countries regarding EU accession:

- **EU Acceding Countries – entering in May 2004:** Czech Republic, Hungary, Slovakia and Slovenia.
- **EU Candidate Countries – entering after May 2004:** Bulgaria and Romania and possibly Croatia (preparing application to join EU).
- **Non-EU Accession Countries:** Bosnia-Herzegovina, Serbia-Montenegro, Moldova and Ukraine.

### 13.2 Key Issues for Selection of Priority Policy Recommendations

The policy recommendations for Phase 2 of the DRP are formulated in Tables 4, 5 and 6 as a summary of the “mix” of policy measures considered a priority for each of the three country groups. Each Summary Table is structured in accordance with the three main areas of policy intervention that were identified previously in Figure 2 and used in Table 3.

The following key issues were considered when selecting the priority recommendations for each country group:

1. Representatives and experts from all lower and central DRB countries stressed that:
  - there is a significant lack of information at national, regional and local level on the causes of agricultural pollution and the practical measures available to farmers for reducing the risk of pollution from their farming activities
  - an urgent need exists for awareness-raising and information to be targeted at all stakeholders levels from farmers to policy-makers

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<sup>14</sup> Where BAP for the central and lower DRB countries is defined as “...the highest level of pollution control practice that any farmer can reasonably be expected to adopt when working within their own national, regional and/or local context in the Danube River Basin”

- since farmers are economically-motivated it is important to link the promotion of more environmentally-friendly farming methods to economic benefits such as improvements in yield and savings in the cost of agrochemical inputs. The development of appropriate agricultural advisory messages is therefore essential, including well-written and appropriate advisory materials, demonstration plots/farms, training for advisors and other capacity building of agricultural extension services
2. The late 1990s saw the introduction of many new environmental laws (or revisions to existing regulations) in those countries preparing for accession to the EU in May 2004 – and to a lesser extent in Bulgaria and Romania. These developments were stimulated largely by the need to adopt the *acquis communautaire* rather than domestic pressures. Unfortunately, while legal harmonisation has progressed rapidly, the ability to enforce and monitor the resulting new regulations has often lagged behind
  3. At the same time, preparation for implementation of the EU Common Agricultural Policy (CAP), including the Rural Development Regulation that currently forms the so-called “second pillar” of the CAP, represents a great opportunity for policy reforms to promote BAP (also the SAPARD programme in Bulgaria and Romania). This includes the availability of EU co-financing for economic incentives to promote more environmentally-friendly farming practices, as well as the concept of “environmental cross-compliance” on agricultural support payments. It is unrealistic to expect similar financial resources to be available in those countries not joining, or preparing to join, the EU
  4. During the 1990s, land privatisation and restitution policies were implemented in the majority of central and lower DRB countries leading to a large increase in the number of agricultural holdings that are in private ownership. This now represents a major challenge to the promotion of BAP - both in terms of the enforcement of agricultural pollution control legislation (as mentioned above) and the dissemination of appropriate advisory messages regarding BAP to an agricultural community that consists of an extremely diverse set of actors with contrasting farm sizes, degrees of specialisation and levels of education. The capacity-building of local, regional and national agricultural and extension services therefore remains a major challenge, especially in those countries dominated by small farms where the managerial skills of the farmers are at present still relatively poor. This challenge is accentuated by the further observation that in many countries:
    - the level of usage of agricultural extension and advisory services is still very low
    - the advisory services are mainly focused upon technical issues and are less-oriented towards economic and environmental advice, and
    - existing extension services do not yet have the capabilities and capacities to provide the expected quality of advice.
  5. It must also be taken into account that the levels of fertilizer and pesticide use in the central and lower DRB countries are still relatively low, although there are indications of increasing use again in those countries where the economic circumstances of agriculture are improving most rapidly – notably in those countries joining the EU in 2004. The priorities for improvements in the management of agro-chemical inputs (fertilizers and pesticide) therefore vary across the DRB region
  6. It is also widely acknowledged that there should be more emphasis upon a “farming systems” approach to agricultural pollution control rather than simply an “input reduction” approach – in other words, it is necessary to promote not only the reduced use of agrochemicals inputs etc., but also the re-design of farming systems to make them more environmentally sustainable. A good example of this approach is the promotion of organic farming which involves much more than prohibiting the use of pesticides and mineral fertilisers to include changes in crop rotation, soil manure, the storage and management of manure etc.

7. In the lower DRB countries especially it is important to consider the pre-conditions or “framework factors” for the successful promotion of BAP – in particular how to overcome the obstacles to BAP that arise from the fragmentation of land ownership, lack of financial resources, lack of institutional capacity, lack of basic business skills amongst farmers (e.g. keeping records), poor standards of education and training etc.

### 13.3 Developing the “Policy Mix”

As already discussed, it is unrealistic to expect a single policy instrument to do the whole job of tackling water pollution from agricultural non-point sources. Equally it is unrealistic to attempt to implement all of the policy recommendations contained in the following tables at the same time or in the same place. It will be necessary to use certain policy instruments to encourage and facilitate short-term changes in farmer behaviour, whilst using other instruments to incentivise even greater changes in the longer-term

Policy reform is therefore a set-wise and iterative process that takes time and often involves on-going modification of the original “policy mix” selected. To assist this process it is advisable to:

- a) set quantitative targets for pollution control which provide a clear focus for the planning, implementation, monitoring and evaluation of the policy reforms introduced
- b) allow farmers some time to modify and adapt their farming activities to take account of the changing regulatory pressures upon them, available advice and information, and potential fiscal opportunities (e.g. cost saving).

The result of policy reforms should then be a progressive improvement in the environmental performance of agriculture.

**Table 4:** “Policy Mix” for EU Accession Countries: Czech Republic, Slovakia, Hungary and Slovenia

<b>Disincentives for Dropping Below Minimum Level of Environmental Management</b>	
<b>Economic Measures</b>	c) Apply Appropriate Financial Disincentives
<b>Interventions to Promote Minimum Level of Environmental Management</b>	
<b>Advisory Measures</b>	<ul style="list-style-type: none"> <li>• Raise Farmer Awareness of Good Practice for Fertiliser and Manures</li> <li>• Raise Awareness about Pesticide Misuse</li> <li>• Develop National Codes of Good Practice for Pesticide Use</li> <li>• Mandatory Farmer Training on Pesticide Use</li> <li>• Promote Greater Compliance with Agricultural Pollution Control Legislation</li> <li>• Develop Appropriate Advisory Messages for the Promotion of BAP</li> </ul>
<b>Economic Measures</b>	<ul style="list-style-type: none"> <li>• Use Capital Grant Schemes to Promote Good Practice</li> <li>• Use “Cross Compliance” to Promote Good Practice</li> </ul>
<b>Regulatory Measures</b>	<ul style="list-style-type: none"> <li>• Pesticide Ban</li> <li>• Pesticide Phase-out</li> <li>• Pesticide Cut-off Criteria</li> <li>• Control Pesticide Trade</li> </ul>
<b>Incentives to go Above Minimum Level of Environmental Management</b>	
<b>Advisory Measures</b>	<ul style="list-style-type: none"> <li>• Raise Farmer Awareness of Organic Farming</li> </ul>
<b>Economic Measures</b>	<ul style="list-style-type: none"> <li>• Use Compensatory Payments to Promote Good Practice</li> <li>• Use Economic Instruments to Promote Organic Farming and ICM</li> <li>• Develop On-farm “Quality Assurance Schemes”</li> </ul>
<b>Other Measures – including Improvements in Implementation Structure</b>	
<ul style="list-style-type: none"> <li>• Establish Progressive and Well-funded Research Programmes</li> <li>• Monitor Pesticide Trade</li> <li>• Monitor Pesticide Use</li> <li>• Elimination of Obsolete Pesticides</li> <li>• Improve Enforcement of Agricultural Pollution Control Legislation</li> <li>• Re-orientate Agricultural Extension and Advisory Services Towards the Promotion of BAP</li> <li>• Increase Financial Support for Agricultural Extension and Advisory Services</li> <li>• Develop Appropriate Institutional Frameworks for the Promotion of BAP</li> <li>• Training for Extension Workers/Advisers</li> <li>• Develop Alternative/Innovative Approaches to Working with Farmers</li> <li>• Develop Appropriate Extension Capacity for Promoting and Supporting Organic Farming</li> </ul>	

**Table 5:** “Policy Mix” for EU Pre-accession Countries: Romania, Bulgaria and Croatia

<b>Disincentives for Dropping Below Minimum Level of Environmental Management</b>	
<b>Economic Measures</b>	d) Apply Appropriate Financial Disincentives
<b>Regulatory Measures</b>	e) Develop More Targeted Regulatory Instruments for Agricultural Pollution Control

<b>Interventions to Promote Minimum Level of Environmental Management</b>	
<b>Advisory Measures</b>	<ul style="list-style-type: none"> <li>• Raise Farmer Awareness of Good Practice for Fertiliser and Manures</li> </ul> Develop and Promote National Codes of Good Practice for Fertiliser and Manure Use <ul style="list-style-type: none"> <li>• Raise Awareness about Pesticide Misuse</li> <li>• Promote Greater Compliance with Agricultural Pollution Control Legislation</li> <li>• Develop Appropriate Advisory Messages for the Promotion of BAP</li> <li>• Develop and Implement BAP Pilot Projects</li> </ul>
<b>Economic Measures</b>	<ul style="list-style-type: none"> <li>• Use Capital Grant Schemes to Promote Good Practice</li> </ul>
<b>Regulatory Measures</b>	<ul style="list-style-type: none"> <li>• Pesticide Ban</li> <li>• Pesticide Phase-out</li> <li>• Pesticide Cut-off Criteria</li> <li>• Control Pesticide Trade</li> </ul>

<b>Incentives to go Above Minimum Level of Environmental Management</b>	
<b>Advisory Measures</b>	<ul style="list-style-type: none"> <li>• Raise Farmer Awareness of Organic Farming</li> </ul>
<b>Economic Measures</b>	<ul style="list-style-type: none"> <li>• Use Compensatory Payments to Promote Good Practice</li> <li>• Use Economic Instruments to Promote Organic Farming and ICM</li> </ul>
<b>Regulatory Measures</b>	<ul style="list-style-type: none"> <li>• Develop Relevant Legislation for Organic Farming</li> </ul>

<b>Other Measures – including Improvements in Implementation Structure</b>	
	<ul style="list-style-type: none"> <li>• Establish Progressive and Well-funded Research Programmes</li> <li>• Monitor Pesticide Trade</li> <li>• Monitor Pesticide Use</li> <li>• Elimination of Obsolete Pesticides</li> <li>• Improve Enforcement of Agricultural Pollution Control Legislation</li> <li>• Re-orientate Agricultural Extension and Advisory Services Towards the Promotion of BAP</li> <li>• Increase Financial Support for Agricultural Extension and Advisory Services</li> <li>• Develop Appropriate Institutional Frameworks for the Promotion of BAP</li> <li>• Training for Extension Workers/Advisers</li> <li>• Develop Alternative/Innovative Approaches to Working with Farmers</li> <li>• Develop and Implement BAP Pilot Projects</li> <li>• Develop Appropriate Extension Capacity for Promoting and Supporting Organic Farming</li> </ul>

**Table 6:** EU Non-accession Countries: Bosnia-Herzegovina, Serbia-Montenegro, Moldova and Ukraine

<b>Disincentives for Dropping Below Minimum Level of Environmental Management</b>	
<b>Economic Measures</b>	f) Apply Appropriate Financial Disincentives
<b>Regulatory Measures</b>	g) Develop More Targeted Regulatory Instruments for Agricultural Pollution Control
<b>Interventions to Promote Minimum Level of Environmental Management</b>	
<b>Advisory Measures</b>	<ul style="list-style-type: none"> <li>• Raise Farmer Awareness of Good Practice for Fertiliser and Manures</li> <li>Develop and Promote National Codes of Good Practice for Fertiliser and Manure Use</li> <li>• Raise Awareness about Pesticide Misuse</li> <li>• Promote Greater Compliance with Agricultural Pollution Control Legislation</li> <li>• Develop Appropriate Advisory Messages for the Promotion of BAP</li> <li>• Develop and Implement BAP Pilot Projects</li> </ul>
<b>Regulatory Measures</b>	<ul style="list-style-type: none"> <li>• Pesticide Ban</li> <li>• Pesticide Phase-out</li> <li>• Pesticide Cut-off Criteria</li> <li>• Control Pesticide Trade</li> </ul>
<b>Incentives to go Above Minimum Level of Environmental Management</b>	
<b>Advisory Measures</b>	<ul style="list-style-type: none"> <li>• Raise Farmer Awareness of Organic Farming</li> </ul>
<b>Regulatory Measures</b>	<ul style="list-style-type: none"> <li>• Develop Relevant Legislation for Organic Farming</li> </ul>
<b>Other Measures – including Improvements in Implementation Structure</b>	
<ul style="list-style-type: none"> <li>• Establish Progressive and Well-funded Research Programmes</li> <li>• Elimination of Obsolete Pesticides</li> <li>• Improve Enforcement of Agricultural Pollution Control Legislation</li> <li>• Re-orientate Agricultural Extension and Advisory Services Towards the Promotion of BAP</li> <li>• Increase Financial Support for Agricultural Extension and Advisory Services</li> <li>• Develop Appropriate Institutional Frameworks for the Promotion of BAP</li> <li>• Training for Extension Workers/Advisers</li> <li>• Develop Alternative/Innovative Approaches to Working with Farmers</li> <li>• Develop and Implement BAP Pilot Projects</li> <li>• Develop Appropriate Extension Capacity for Promoting and Supporting Organic Farming</li> </ul>	

## 14 Conclusions and Proposals for Implementation of Recommendations for Policy Reform

### 14. Conclusions

The policy recommendations contained within this report:

- a) are based on the results of in-depth analyses of the present use of pesticides, fertilizers and manure in the central and lower DRB countries;
- b) involve the introduction of new legal and institutional instruments for the reduction and control of water pollution from non-point sources of agricultural activities, and;
- c) are intended to support the practical introduction of BAP and the greater integration of pollution control considerations into the day-to-day management of crops, animals and agricultural land by farmers.

The objective of Phase 2 of Output 1.3 of the Danube Regional Project should be to promote the necessary agricultural policy reforms to implement these recommendations and to support the design of the new agricultural pollution control policies that are necessary to promote BAP. This support should be provided on the basis of the three country groups identified: EU Acceding Countries (entering in May 2004), EU Candidate Countries (entering after May 2004), and the Non-EU Accession Countries.

The agricultural policy changes, to be introduced in Phase 2 of the UNDP/GEF Danube Regional Project will be to encourage farmers to “move up” the BAP hierarchy and adopt more demanding pollution control practices. The specific environmental benefits arising directly from this will depend upon national/regional context, but across the DRB region as a whole will be a general reduction in the risk of water pollution caused by fertilisers, manures and pesticides. This will be due to:

- the avoidance of bad practice on farms regarding the storage and application of fertilisers, manures and pesticides
- more efficient management of fertilisers and manures by farmers, including improvements in the collection and storage of manure, timing and rate of fertiliser/manure application, avoidance of run-off from sloping land, better planning of nutrient management etc.
- a reduction in the amount of harmful substances used as pesticides for crop protection due to the prohibition and phasing-out of the most dangerous priority pesticides, as well as improved controls on the use and distribution of pesticides
- more environmentally-friendly and efficient management of pesticides by farmers, including the appropriate selection of available chemicals, improved spraying equipment and techniques, careful disposal of waste pesticides and use of integrated control methods
- an increased uptake of alternative, low input farming methods – such as organic farming

The necessary steps for implementation of the proposed policy reforms and for the introduction of measures for BAP at the national level in Phase 2 of the UNDP/GEF Danube Regional Project are described in the final sections of this report.

## 15 Proposals for Further Actions

### 15.1 Further Development and Introduction of Policy Instruments Adapted to National Conditions

In order to be effective at improving farm management practices, policies for reducing agricultural pollution should include three effective components that should be taken into account in the review and further development of the legal and institutional frame for the introduction of BAP at the national level:

- a policy strategy (or number of strategies)
- policy instruments and
- an implementation structure.

In the present report six Strategic Aims with eleven Objectives for measures for control and reduction of agricultural pollution have been identified related to:

1. Use of mineral fertilisers and manure
2. Use of pesticides
3. Compliance and enforcement of regulatory instruments
4. Development of appropriate economic instruments
5. Development of capacities of agricultural extension services
6. Promotion of organic farming and other low input farming systems.

The described policy aims and objectives have to be adapted to national and regional conditions focusing on the review and further development of the legal and institutional frame at the national level. In this context, the needed assistance should be provided to EU Candidate Countries – due to join the EU after 2004: Bulgaria and Romania and possibly Croatia (preparing application to join the EU) and to non-EU Accession Countries: Bosnia-Herzegovina, Serbia-Montenegro, Moldova and Ukraine. Most of these countries should also benefit from agricultural demonstration project for the introduction of BAP in the Danube River Basin.

For practical implementation of proposed policies a two-step approach is anticipated:

**STEP 1** - specific guidelines should be developed for each of the above mentioned countries to facilitate reviews of national agricultural policies and legislation and to strengthen institutional arrangements for the introduction of BAP:

- to improve agricultural practice (fertiliser, manure and land management) and to reduce the risk of diffuse nutrient pollution through better management of fertilisers and manures,
- to reduce the levels of harmful active substances used for crop protection by prohibiting and/or substituting the most dangerous pesticides with safer (including non-chemical) alternatives,
- to encourage the proper use of pesticides by farmers and other operators, and to assure compliance with regulatory instruments through the control of specific farming practices,
- to develop and introduce appropriate economic instruments to encourage implementation of BAP,
- to review and adapt the mandate and structure of agricultural extension and advisory services,
- to develop the capacity of agricultural extension and advisory services for the promotion of BAP,
- to develop and support pilot projects for the promotion of BAP by agricultural extension and advisory services,
- to promote certified organic farming and other low input farming systems as viable alternatives to the conventional use of mineral fertilisers and pesticides.

This first step should be carried out by national consultants in close cooperation with international assistance. Specific outlines for the review of existing national legislation and proposals for changes and/or amendments of the legal and institutional frame should be prepared to facilitate the introduction of the concept of Best Agricultural Practice (BAP) at the national level. Policy reviews should also take into account transboundary issues to enhance regional cooperation as well as the requirements of the process of EU integration in adopting relevant EU directives and regulations into national law.

**STEP 2** - twinning projects should be developed (TOR and outline of project description) and sources of financial and technical support for projects implementation should be identified to assure effective introduction of new concepts for agricultural pollution control in national policies and legislation.

Review and amendment of national policies and development of respective legislation should be considered as an iterative process that takes into account the opinions and needs of the stakeholders concerned as well as transboundary issues related to land management and environmental protection. In this context, particular attention should also be paid to reviewing institutional mechanisms for promotion of BAP focusing on the mandate and the needed support of agricultural extension services.

The financial support for twinning projects should be mobilized in the frame of bilateral and multilateral assistance relating to the EU enlargement process and assistance to NIS countries. This approach is in line with GEF operational principles to generate additional financial and technical support for national capacity building and further implementation of GEF proposed measures for nutrient reduction in the DRB countries.

## 15.2 Practical Demonstration of BAP in the Framework of Pilot Projects

Within Output 1.3 of the Danube Regional Project (DRP), seven countries of the central and lower DRB region (Croatia, Bosnia-Herzegovina, Serbia-Montenegro, Bulgaria, Romania, Moldova and Ukraine) have been identified as a priority for the development and implementation of pilot projects to promote the concept of Best Agricultural Practice.

The pilot projects will be implemented in Phase 2 of the DRP (2004-2006) and it is anticipated that they will involve 18-24 months of practical implementation. The immediate beneficiaries of the pilot projects will be the agricultural extension and advisory services in the selected countries. The ultimate beneficiaries of the results will be the farmers' community (environmental and economic benefits), the consumers (healthy and organic food products) and in the final analysis the society as a whole (healthy environment and unpolluted surface and ground waters).

**The specific objectives of the pilot projects will be to: “demonstrate how improvements can be made in the capacity/effectiveness of agricultural advisers/extension services to provide appropriate information and advice that supports the highest level of pollution control practice by farmers according to local context”.**

The potential impact of improving the effectiveness of agricultural advisers/extension services in the central and lower DRB countries is:

- raised awareness of pollution risks amongst farmers
- increased avoidance of bad practice – including improved compliance with relevant legislation
- increased adoption of good practice – including utilization of economic incentives.

Pre-requisites and selection criteria taken into account in identifying pilot projects for demonstration of BAP responding to a specific pollution issue included:

- Coherence with Government policies and/or the political commitment to introduce BAP;
- Existence of a reliable counterpart organisation, credible to the agricultural community;
- Location in a specific geographical area, if possible reinforcing transboundary cooperation with neighbouring communities;

- Response to a specific pollution issue – fertiliser and manure handling, pesticides use and agricultural run-off, as identified by stakeholders;
- Potential for replication at national and/or regional levels;
- Reinforcement of other GEF interventions and promoting cooperation with existing international and bilateral projects in agricultural development.

The proposed pilot projects for introduction of BAP should demonstrate the practical implementation of revised agricultural policies at the farmers' community level and the technical and economic feasibility of proposed agricultural practices for fertiliser and manure handling, use of pesticides and run-off control to reduce water pollution from agricultural activities while improving the economic situation of farmers.

For effective project implementation the following points should be considered:

- **Specific concepts and outlines for the implementation of selected pilot projects** should be developed in consultation with the stakeholders concerned (farmers' community) and in cooperation with related Government institutions and extension services. Further, relevant ToR and scope of work for international assistance and national project management should be prepared;
- **Competent extension services** should be identified, having the required experience as service provider and being accepted by the agricultural community as well as by Government;
- **Financial support** should be made available for project implementation in particular to facilitate the work of national extension services and to promote awareness raising in the farmers' community;
- **International assistance** should be contracted to provide technical advice in introducing BAP adapted to the local or regional context and to assure follow-up on project activities that includes (i) regional coordination of pilot project activities, (ii) dissemination of results, (iii) organization of training workshops, and (iv) cooperation with other projects of bilateral, EU and international assistance in related subjects (agricultural policy development, introduction of BAP and other measures for nutrient reduction from agricultural non-point sources of pollution).

In implementing the agricultural project components (1.2 and 1.3) of the UNDP/GEF Danube Regional Project, particular attention should be paid to assuring effective coordination with other UNDP/GEF project activities (Black Sea) as well as with EU projects in EU accession countries, in the Balkan countries as well as in NIS countries aiming to reinforce national capacities and to adapt national legislation in line with EU requirements (EU Water Framework Directive and other related directives for nutrient reduction and priority substances) and to create the appropriate mechanisms for compliance.