



# Discussion on Key questions - I

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- **Q: Impacts and vulnerability:** Greatest challenges for adaptation? Benefits to be expected? Regions be most affected?
- **Higher climatic variability (what to adapt to?)**
- **Different responses in South (lack of water) and North (lack in summer – excess in winter). Central Europe may be particularly affected through increased climatic variability.**
- **Benefits include longer vegetation period (North) and possible change in vegetation period (South)**
- **The timeframe of changes in vulnerability depends on whether change in mean conditions or change in variability is considered**
- **Increasing pressure on irrigation systems and water supply in South (in particular in intensively irrigated regions)**
- **Increased nutrient losses in North leading to negative effects on aquatic ecosystems (in particular near lakes or brackish waters)**
- **Increased pest and diseases (Central and North), need for more pesticides**



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- **Q: Adaptation options:** Available options? How to decide about implementation?
- **Farm management:** e.g. cultivation intensity, crop choice, sowing date, insurance, measures to reduce nutrient losses to aquatic environments
- **Watershed management:** Pricing of water, landscape (wetland. riparian land) management, land use planning
- **National/EU management:** Implementation and enforcement of regulations (WFD), changing subsidies related to irrigated crops
- **Technologies:** water conservation (e.g. mulching, conservation tillage), improved irrigation efficiencies (e.g. night time irrigation), improved varieties, cleaning of dirty/saline water
- **Water management:** Timing of water availability for irrigation, need to save water for later use (climatic variability)
- **Education and advice is needed to ensure efficient adaptation at farm and regional scales**



# Discussion on Key questions - I

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- **Q: Policy action:** What could be gained from EU level action? Modifications of CAP? How to ensure consistency of different policies?
- **Adjustment is needed of the CAP to include climate change aspects, in particular in relation to water use and protection of aquatic environment**
- **Resource (e.g. water framework directive) policies and environmental (e.g. biodiversity) policies need to be fully implemented and include climate change aspects**
- **Adjustment of policies need to account for regional differences in response to climate change**
- **Need to better understand interactions among climate change and adaptation at various levels in society, which will determine policy efficiency and consistency**
- **Need to integrate also policies for developing countries**



# Discussion on Key questions - II

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- **Q: Integrated approach:** Role of agriculture in integrated adaptation strategies? Relationship with adaptation measures in other sectors?
- **Integrated agriculture and land use planning to save and protect water resources and provide flood protection**
- **Nature conservation issues should be integrated in agricultural land use management (amount and quality of water in aquatic ecosystems)**
- **Conflict between objectives of individual farmers and objectives of the society**
- **Landscape scale conflicts, e.g. related to management of excess water from urban/built areas.**
- **Conflicts with other human use of water (e.g. navigation, tourism, cooling of power plants)**
- **Relations with mitigation options (e.g. biofuel production)**
- **Enhancement of waste water reuse, e.g. for irrigation purposes**



## Discussion on Key questions - II

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- **Q: Conflict resolution:** How to mitigate conflicts between agriculture and other water users? Criteria for decision-making and allocation?
- **Improve awareness of possible conflicts**
- **Implement decision structures involving all stakeholders**
- **Introduce market based instruments. This includes reform of water rights and introduce water charges appropriate for different users of water, in order to promote efficiency of water use**

## Discussion on Key questions - II

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- **Q: Economic instruments:** How to share the costs of adaptation?  
Cost-recovery principle?
- **Distribute costs according to amount of water consumed**
- **Costs for protecting aquatic systems against pollution should be covered by the polluter**
- **Redirect some of the CAP support (e.g. agro-environmental schemes) towards supporting implementation of increased water use efficiency in agriculture and for protecting aquatic ecosystems**



## Discussion on Key questions - III

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- **Q: Funding:** Use of funding mechanisms to support and encourage adaptation?
- **Further reform of the CAP and redirection of funding towards supporting higher water use efficiency and protection of water resources and aquatic environments**
- **Use of EU and national research and innovation capacities towards developing technologies that increase water use efficiency and protect aquatic ecosystems**
- **EU structural and cohesion funds may be used to support adaptation**
- **Funding also needs to go into communication and awareness raising**



## Discussion on Key questions - III

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- **Q: Avoiding social impacts:** Social and distributional impacts to be expected? How to avoid social hardship?
- **Effects of climate change and water use interact with current trends of increased urbanisation and pressures in rural development**
- **Reductions in agricultural productivity from climate change may be substituted by increases in other rural activities (diversification), e.g. tourism**
- **Abandonment of agricultural land may be needed in some regions, and planning is needed for this to limit social impacts**



# Discussion on Key questions - III

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- **Q: Research needs:** Knowledge gaps with regard to impacts, vulnerability and adaptation options?
- **How will increasing CO<sub>2</sub> concentration affect the overall water use and water use efficiency of various crops under European growing conditions?**
- **How will a change in climatic mean and variability affect the water use, crop yields and applicability of various adaptation options?**
- **What are the possibilities of optimising water use by shifting cropping seasons, changing crops and adopting water conserving practices?**
- **How will adaptation options affect environment and biodiversity?**
- **Will current options for reducing environmental impacts of quality of aquatic systems be efficient and sufficient under climate change?**
- **How to integrate agriculture in land use planning to save and protect water resources?**
- **Need for regional studies because impacts and adaptations vary strongly within Europe**



# Discussion results/conclusions

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Federal Ministry for the  
Environment, Nature Conservation  
and Nuclear Safety



**Thank you for your contributions.**

