



Monitoring European farmland biodiversity: What is needed and what are the costs?

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[The steps to take



- From survey to monitoring
- Overview of farming systems in Europe
- Exploring sampling strategies
- Accounting for costs and efforts

From survey to monitoring



- From a once-off survey to a long-term monitoring scheme.
- Determine the objective of the monitoring scheme

From survey to monitoring



- Determine requirements of the monitoring program to deliver required data:
 - sensitivity in indicators or frequency of sampling over time

Farming systems in Europe



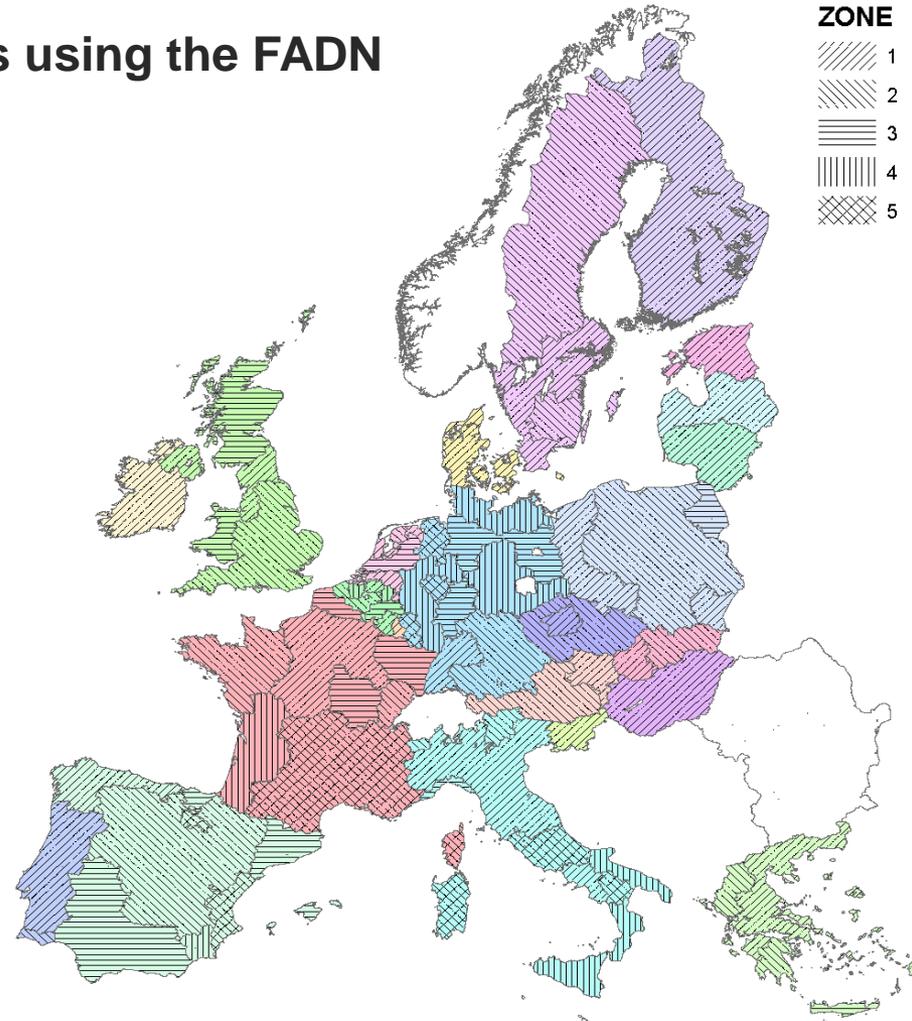
- To know when you have a representative sample
You need to know what is:
 - What the main farm types are in Europe
 - How are they distributed
 - What could be homogeneous regions within Europe
 - How many farms are within these regions

Farming systems in Europe



Design of homogeneous regions using the FADN based SEAMLESS database

1. All NUTS2 regions were analysed on area covered by different farming types
2. Farming types were aggregated into major types
3. The environmental zone for each region was identified.
4. Per country comparable NUTS regions were merged based on categories >75%, 50-75% and 15-50% coverage of farming types and it was avoided that Mediterranean types fell in the same farm type region as continental and Atlantic.



[Sampling strategy



- Farms characterised by type of farming and not on size or intensity due to coarseness of this information in the Seamless database
- Regions are homogeneous in terms of their internal distribution, but the regions are very different in nature.

Sampling strategy



- When choosing to sample a percentage of all the farms in Europe
- This may lead to a sampling design not suitable for national monitoring purposes

Luxembourg	0.3%	1.4%
Number of farms	4	17

- Corrections may be needed for
 - Certain regions
 - Certain farming categories would be under sampled.

Costs and efforts



•Start-up and development:

- Design
- **Pilot study**
- Planning

•Regular monitoring:

- Scientific oversight
- **Data collection**
- Data management
- Quality control
- Analysis and reporting
- Administration
- Other costs (e.g. training)

BioBio

Executive
phase

Costs and efforts: pilot study

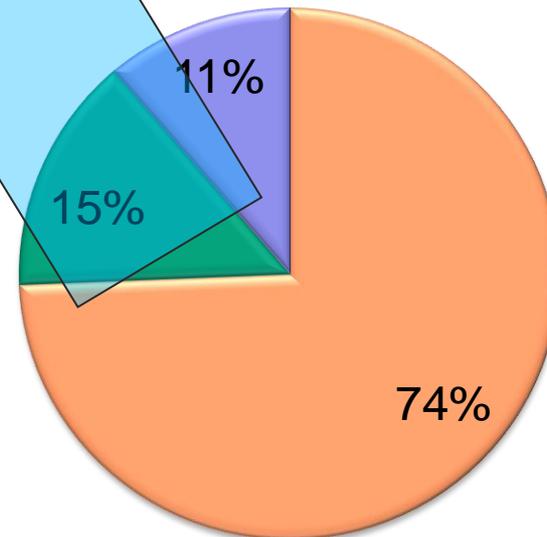


- × Labour *(time/labour category)*
- × Transport *(vehicle cost)*
- × Equipment *(non-perishable: computer, etc.)*
- × Consumables *(perishable: chemical reagent, etc.)*
- × Other costs *(food, etc.)*

Total cost 12 CSAs
≈ € 763.000

**Granted by EU
commission!**

Cost share

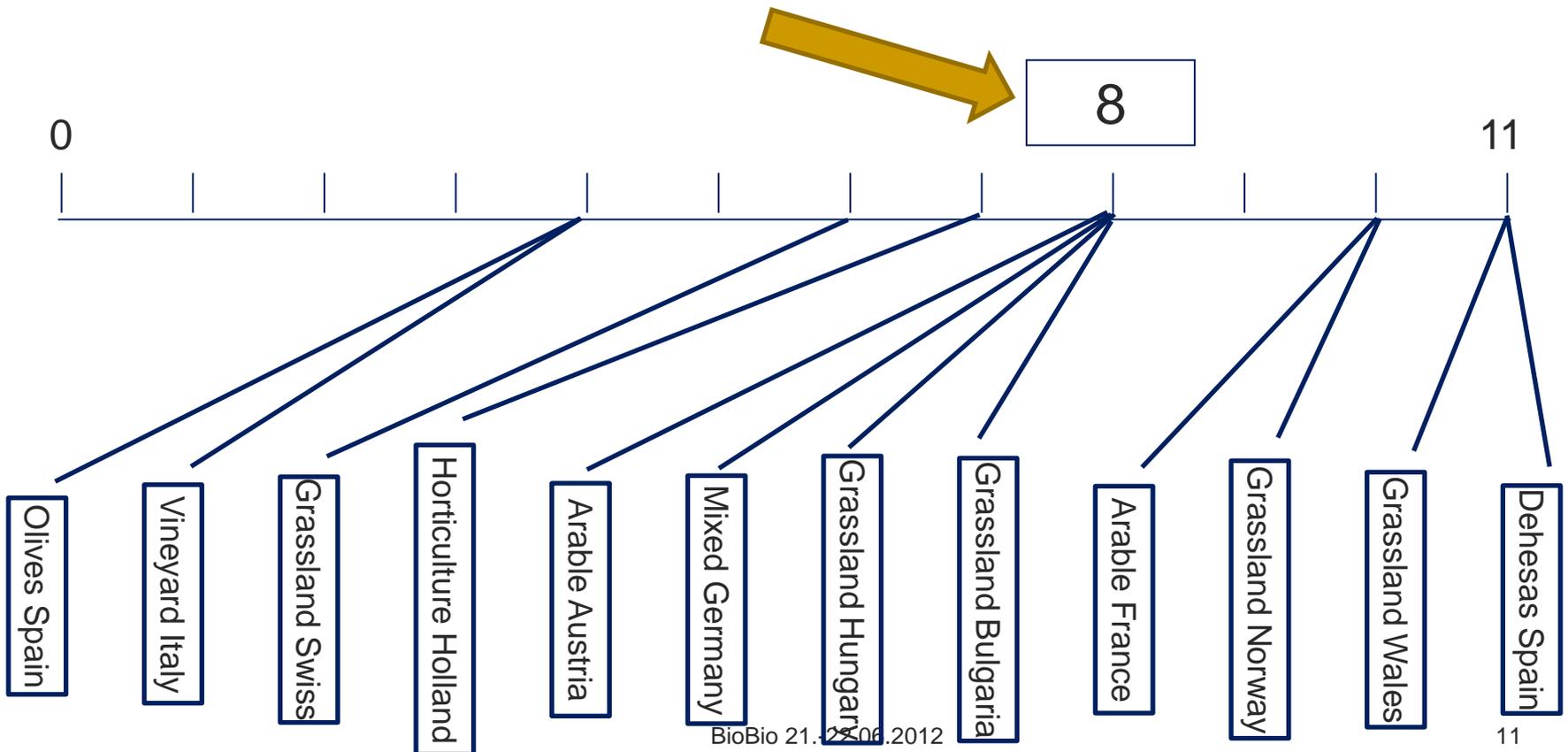


- Labour (field, lab, desk-work)
- Labour (taxonomy)
- Consumables, Equipment, Vehicle, Other

Costs and efforts



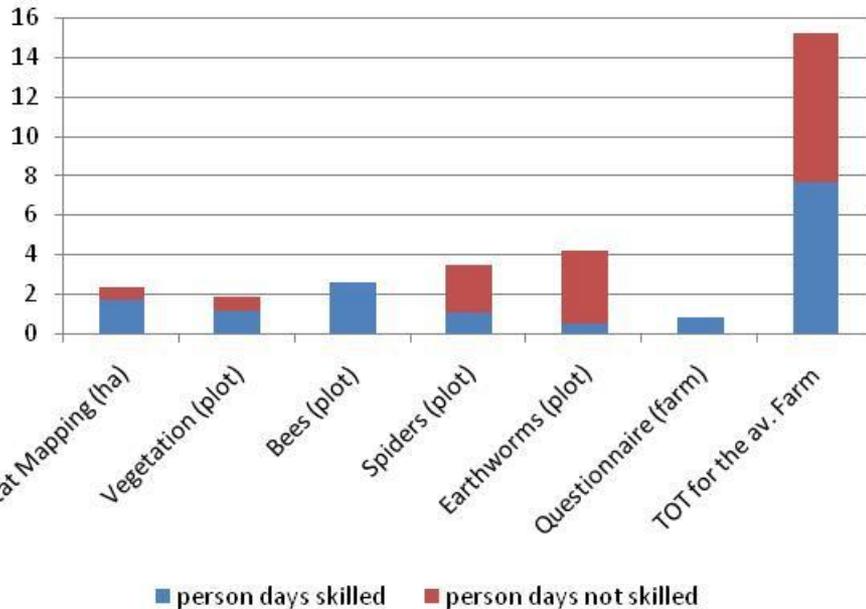
- The average BioBio farm



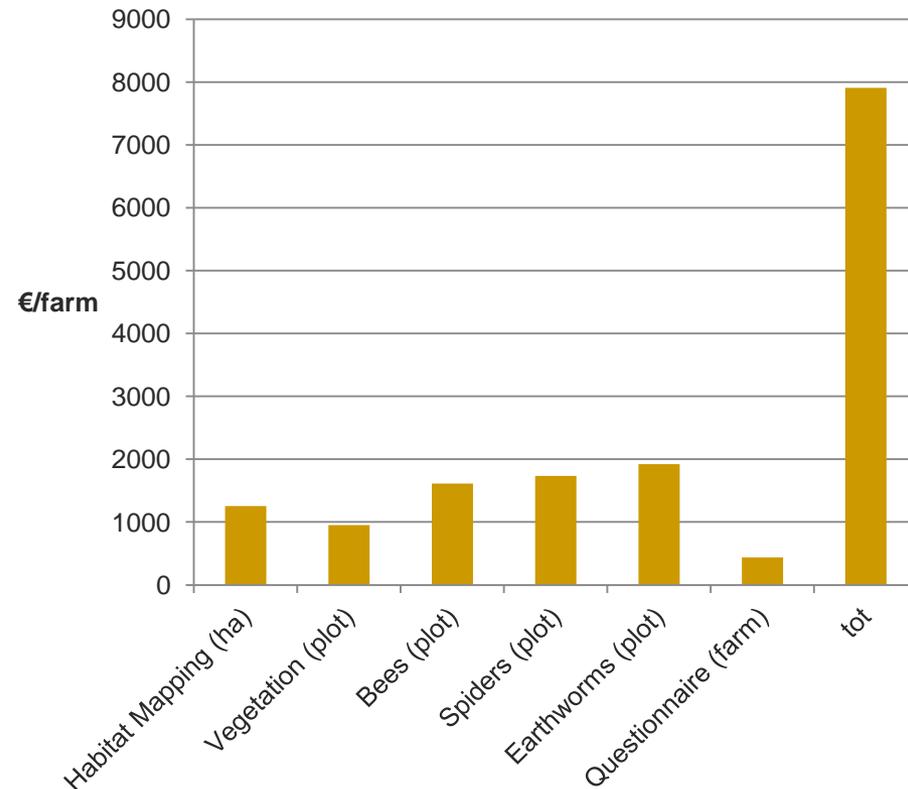
Costs and efforts: regular monitoring



efforts for the average farm (travels incl.)



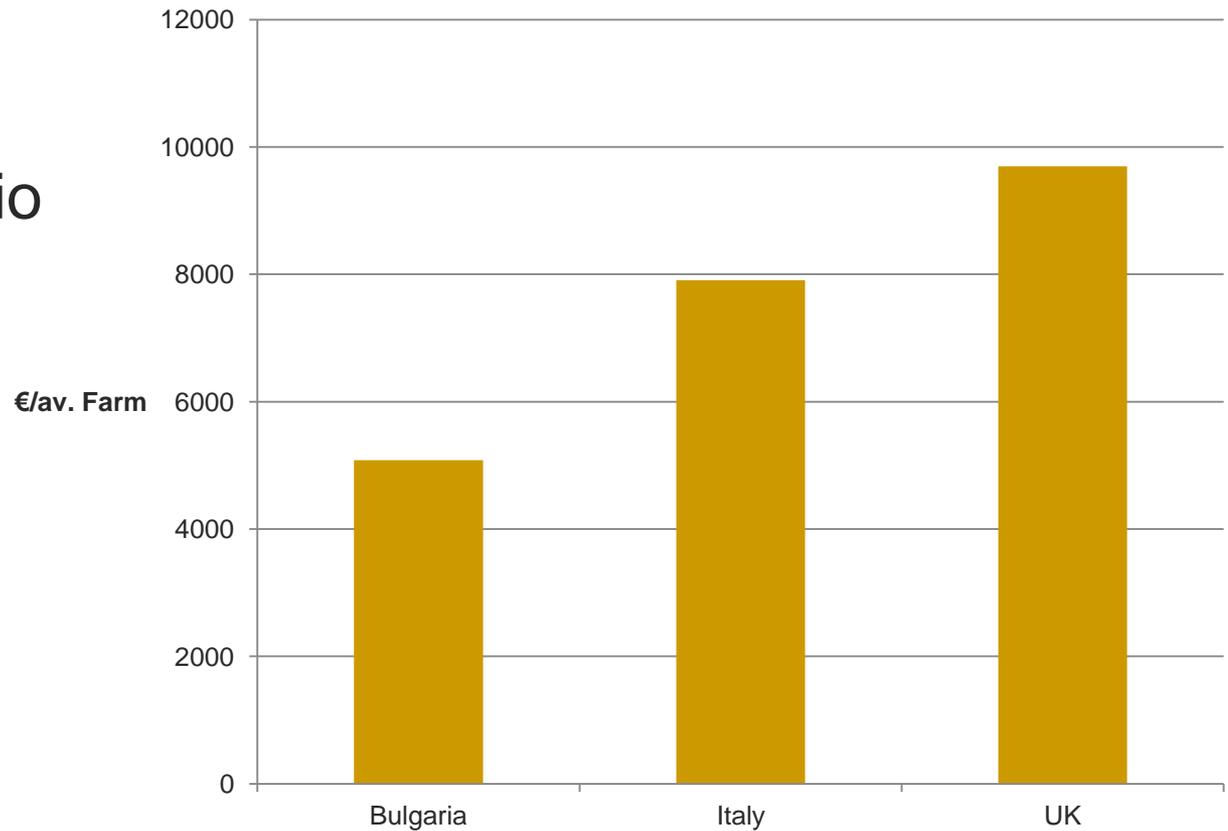
Costs:



Costs and efforts: regular monitoring/2



Cost of the full
monitoring set for
the average BioBio
farm



Costs and efforts of an ideal monitoring program

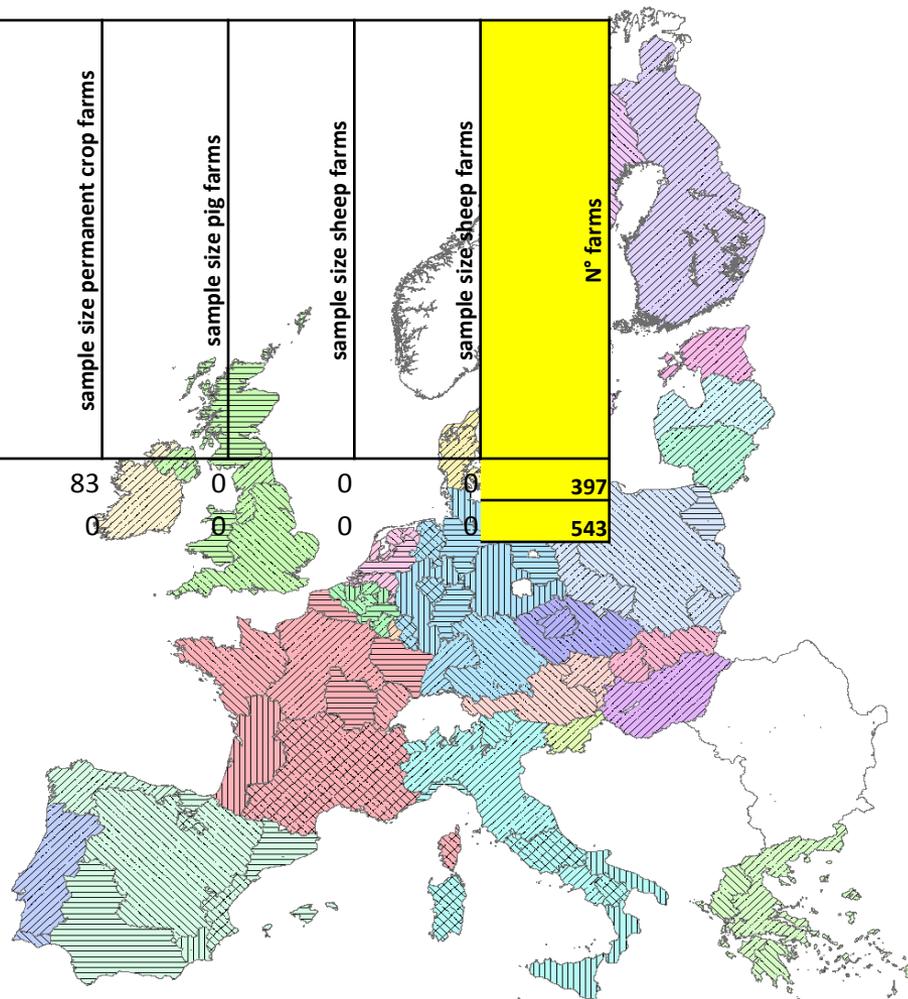


- Budget = 0.25% of the CAP for biodiversity monitoring
- 5 years rolling survey
- Total \approx 50,000 farms (1.7% of EU farms)

A look at the sampling regions...



REGION	total nr farms	sample size arable farms	sample size beef farms	sample size dairy farms	sample size horticulture farms	sample size mixed farms	sample size permanent crop farms	sample size pig farms	sample size sheep farms	sample size sheep farms	N° farms
BIOAT1	26684	134	52	77	0	52	83	0	0	0	397
BIOAT2	40895	42	132	311	0	58	0	0	0	0	543



REGION	scientific oversight	data collection	Data management, analysis and reporting	Quality assurance	Administration and other expenses	total cost
BIOAT1	€ 30.201	€ 3.020.082	€ 818.503	€ 740.373	€ 30.201	€ 4.639.359
BIOAT2	€ 41.327	€ 4.132.743	€ 1.120.056	€ 1.013.142	€ 41.327	€ 6.348.596

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Recommendations



- This is still "work in progress"
- BioBio presented a working and much needed set of indicators.
- Required monitoring = farm monitoring and landscape monitoring
- a "rule of thumb" is that 3-5% of the funding for a policy should be used to evaluate and monitor its effects.
- BioBio recommends to use 0.5% of the CAP for its monitoring

Recommendations



- An allocation of 0.25% of the CAP for monitoring farms allows for a reasonable sample number of farms throughout Europe
- BIOBIO consortium strongly recommends the European Commission to implement such a monitoring;
- Monitoring at farm scale is expensive (but cost, effectiveness, and simplification/communication is different for the indicator groups) but
 - *it will cost 125 M€ per year*
 - *non-action on biodiversity on agricultural areas will cost 200 b.€/year in Europe (ten Brink et al., 2008)*
- An intermediate stepping stone: a pilot study in several regions throughout Europe on the same farming systems.



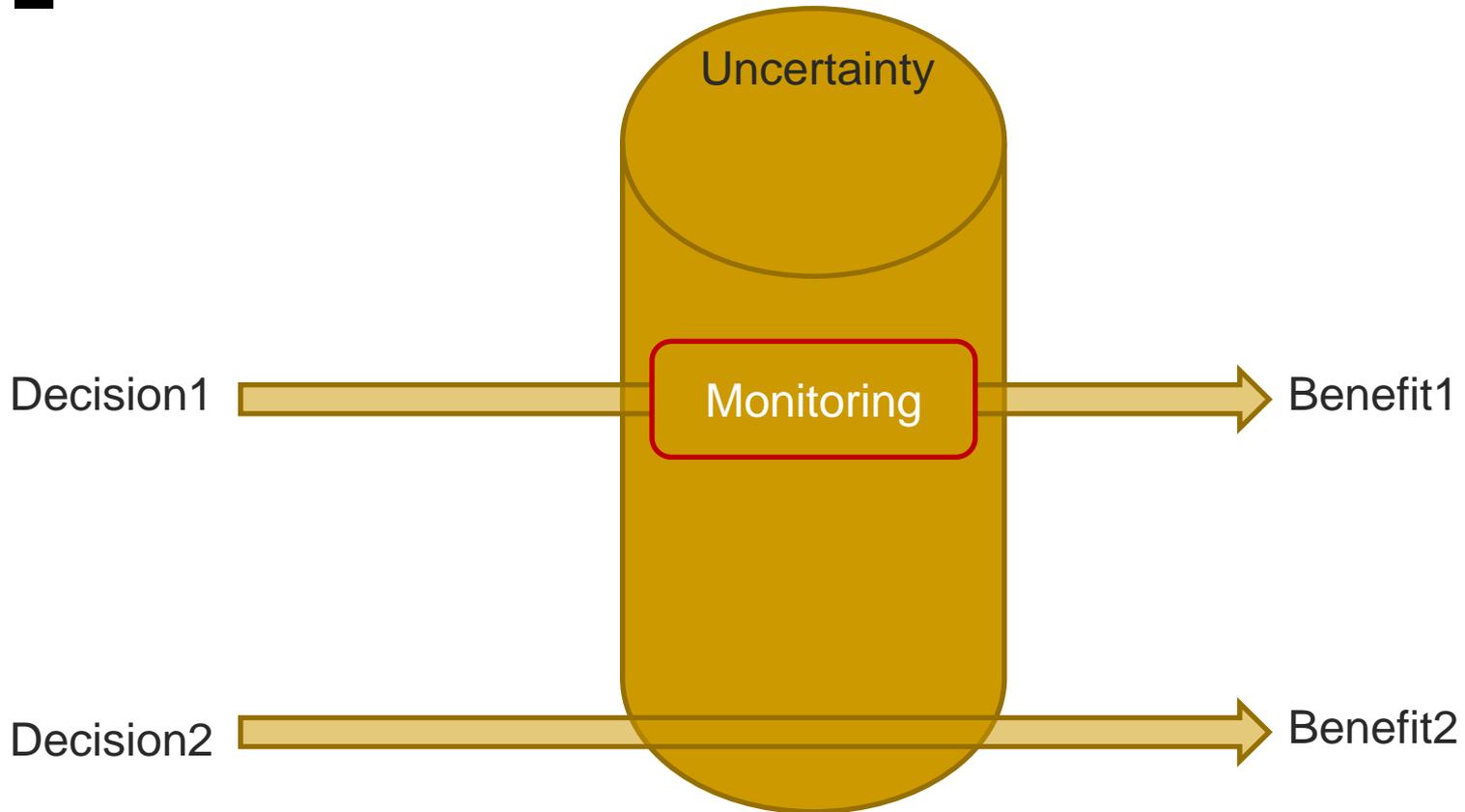
Thank you for you attention

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Value of the monitoring program



$$\text{Benefit1} - \text{Benefit2} = \text{value of monitoring program}$$

Cost vs. simplification, communication



Effectiveness?
...upcoming

