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CPES summer meeting
9th and 10th June 2020
Organised by
project partner
'University Rennes1'
Location : microsoft teams

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Channel Payments for Ecosystem Services (CPES) is a cooperation project managed within the Interreg VA France (Channel) England programme. It is co-financed by the European Union and the European Regional Development Fund, and runs for 45 month (2017-2021). Fourteen partners in six pilot catchments in Southern England and Northern France are working towards a common goal: to improve water quality through change of land use and land management by implementing sustainable payments for ecosystem services (PES) schemes.

Regular meetings to follow the developments in the single case studies take place every 6 months with rotation of the location between the project partners. Due to the sanitary crisis (Covid-19), this meeting had to be virtual but was still hosted by the University of Rennes1. 28 participants from 6 pilot studies (3 in France, 3 in Great Britain) participated. We are grateful for the technical help to project partners from the Chichester University, and the technical solution enabling the simultaneous translation being part of the meeting.

Instead of presenting the developments of each case study, this meeting was dedicated to summarize the achievements as a group. Goal was to compare the case studies and go forward with a synthesis of the achievements, show the extra-value of the collaboration within our 6 case studies. Hence this meeting was organized in 4 workshops:

Workshop 1: Socio-Economic Assessment

animated by Laurence Couldrick (Westcountry Rivers Trust, UK)

Workshop 2: Toolbox (deliverable)

animated by Will Roberts (University of Chichester)

Workshop 3: Cohesive pilot scheme (deliverable)

animated by Claudia Wiegand (Universtity of Rennes1)

Workshop 4: markets of ecosystems services in relation to the PES in the project

animated by Sara Hernandez (Sara Hernandez Consulting) and Laurence Couldrick (Westcountry Rivers Trust, UK)

Workshop 1: Socio-Economic Assessment

animated by Laurence Couldrick (Westcountry Rivers Trust, UK)

The aim of the CPES Socio-Economic Assessment workshop is to review the level other ecosystem services have been assessed in addition to the main water quality benefits. The objective is to **create a collective understanding of which ecosystem services could be turned into Payments for Ecosystem Services (PES) markets** to increase the adoption of land use and land management measures.

Farmers and buyers are looking for a balance between yield and cost: nutrient efficiency, pollution reduction, etc. It is important to evaluate socio-economic benefits to go beyond purely economic decision processes at sellers (farmers) and buyers' sides:

1. Qualify any potential conflict due to other negative or positive impacts
2. Quantify any changes in service to allow for local evaluation.
3. Assigning a monetary value to non-financial services. This involves describing a monetary value for all these services. There is a lot of uncertainty in this mechanism. What are consumers willing to pay?
4. Convenience of the service so that it can be traded or marketed

Improving soil health for example provides direct use value by yield gain or nutrient savings.
Whenever land management changes the ecosystem services that come from that area change with it and that impacts on the goods and services humans derive in both a positive and negative way. All of these services have a socio-economic value (see Fig. 1), but few have direct access to markets (e.g. food) as these services are too indirect or distal to allow the provision of a clear, well-defined payable service. In many existing markets, such as the provision of food, negative externalities (e.g. pollution) are not costed into the market. PES schemes addressing water quality have been shown to help address these negative externalities alongside effective regulation of the food provision market. Whilst private PES markets can help correct for existing negative externalities it is vital that they don't negatively impact on the provision of other indirect use or non-use values, as these are unlikely to ever be marketable, and therefore seen solely as a public good due to the inherent uncertainty in provision at a landscape scale.

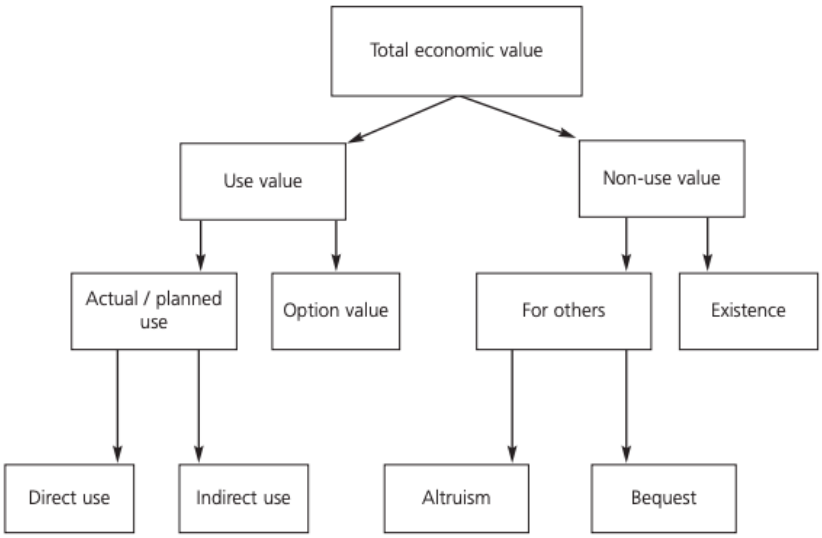

Figure 1 *– Total economic value framework splitting into 'use value' and 'non-use value'. From Defra 2007*[1]

Each lot in a watershed provides different services. For the last 50 years, we have been interested in what we could promote: meat, cereals, etc. We were able to provide commercial values in the different models.

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69192/pb12852-eco-valuing-071205.pdf

In order to create a sustainable and fully funded PES scheme that ensures the ethical trading of ecosystem services it is vital that we are able to understand for each change in land management if, and how, ecosystem services change. These include:

- Qualification – Has the provision of the service increased or decreased (e.g. ++, +, 0, - or --)
- Quantification – How much has the service increased or decreased (e.g. +50tC/ha)
- Monetisable – Can we value the service using a defined valuation method (see table 1)
- Marketable – Is it possible to demonstrably secure provision and what are the barriers/enablers

***Table 1** – Valuation method for monetising different ecosystem services (from Defra 2007[1])*

Valuation method	Element of TEV captured	Ecosystem service(s) valued	Benefits of approach	Limitations of approach
Market prices	Direct and indirect use	Those that contribute to marketed products e.g. timber, fish, genetic information	Market data readily available and robust	Limited to those ecosystem services for which a market exists.
Cost-based approaches	Direct and indirect use	Depends on the existence of relevant markets for the ecosystem service in question. Examples include man-made defences being used as proxy for wetlands storm protection; expenditure on water filtration as proxy for value of water pollution damages.	Market data readily available and robust	Can potentially overestimate actual value
Production function approach	Indirect use	Environmental services that serve as input to market products e.g. effects of air or water quality on agricultural production and forestry output	Market data readily available and robust	Data-intensive and data on changes in services and the impact on production often missing
Hedonic pricing	Direct and indirect use	Ecosystem services that contribute to air quality, visual amenity, landscape, quiet i.e. attributes that can be appreciated by potential buyers	Based on market data, so relatively robust figures	Very data-intensive and limited mainly to services related to property
Travel cost	Direct and indirect use	All ecosystems services that contribute to recreational activities	Based on observed behaviour	Generally limited to recreational benefits. Difficulties arise when trips are made to multiple destinations.
Random utility	Direct and indirect use	All ecosystems services that contribute to recreational activities	Based on observed behaviour	Limited to use values
Contingent valuation	Use and non-use	All ecosystem services	Able to capture use and non-use values	Bias in responses, resource-intensive method, hypothetical nature of the market
Choice modelling	Use and non-use	All ecosystem services	Able to capture use and non-use values	Similar to contingent valuation above

By understanding which services can be monitised AND marketed it is possible to bring together genuine multiple buyers by either 'bundling' all the services into a package that arises from the change in land management, or 'layering' services, where each buyer is purchasing a different service from the change in land management (See Fig. 2). If there is a single buyer there is an expectation that any services that are not claimed are 'free riders' where other beneficiaries receive services free of charge.

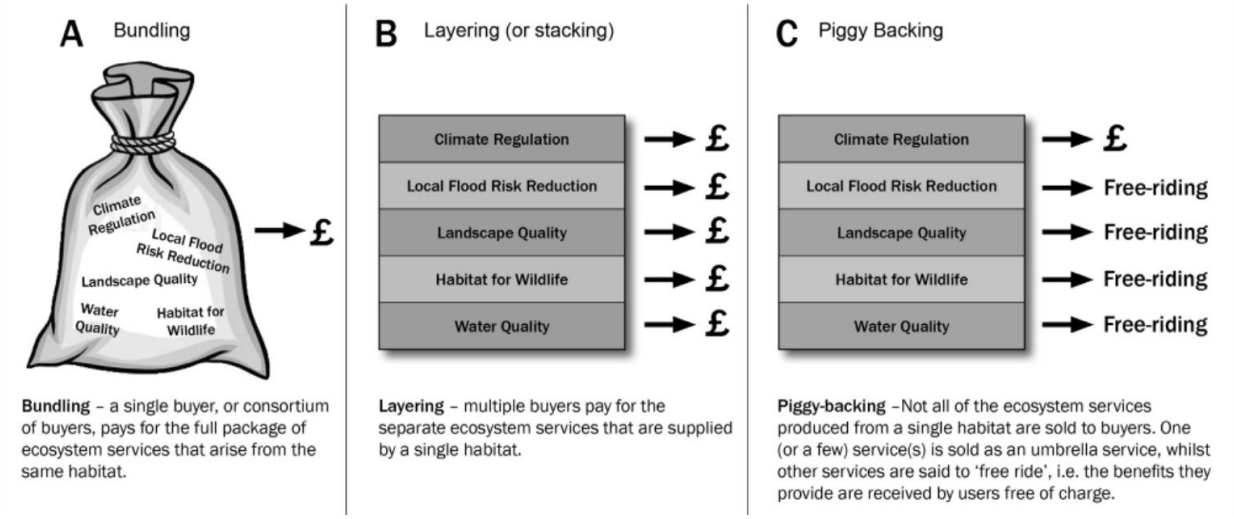

Figure 2 *– Utilising marketable ecosystem services by bundling or layering services or accepting free riders (from Defra 2015[2]).*

Summary of Workshop 1 – The excel based exercise looking at socio-economic assessment of each pilot highlighted the relative ease that some services can be qualified, quantified and monitised as well their potential to be marketed. However, these were predominantly those of direct use services such as Food, Fuel, Nutrient efficiency and Carbon sequestration but also included in-direct use services, such as water quality improvements and flood risk management, but these were harder to marketise. The group found it much harder to quantify and monetise the non-use values, such as cultural or aesthetic value but qualification of the changes in services did show the ethical importance of understanding who might lose (irrespective of if there is a financial loss) in any management change.

Alongside the ethical value of understanding the wider shift in services as a way of building trust and broad acceptance for any management change the workshop also showed the potential for direct use services that were relatively easy to marketise as these could add to the future payments for water quality improvements. The clearest opportunity revolved around the carbon sequestration potential of land use change and land management change measures as it was easier to provide certainty of service compared to services accrued further way (i.e. down-stream).

A key barrier for the utilization of other services was the lack of either a standardized and accredited accounting method or the acceptance of a trusted and ethical broker to purchase on behalf of multiple buyers accepting that there will always be some free riders.

Workshop 2: Toolbox (deliverable)

animated by Will Roberts (University of Chichester)

Payments for ecosystem services are gaining popularity in France and England. However, there is a lack of guidance on how to make PES schemes work. The purpose of the CPES toolbox is to provide those looking to establish a PES outside the project with an understanding of the tools required to implement PES. It will therefore facilitate the wider implementation of PES and improvement in water quality in the Channel Region and beyond; an important goal of the project. The toolbox currently contains more than 80 different resources contributed from all case-studies and partners. To further develop the toolbox structure for the website, it is necessary to ensure all the resources used in each case study are included with a level of detail appropriate for the end user. As this is a deliverable for the project, this workshop reviewed and updated the contents and links of all the resources mentioned in the toolbox and the toolbox facility for the website display.

[2] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/200920/pb13932-pes-bestpractice-20130522.pdf

Workshop 3: Cohesive pilot scheme (deliverable)

animated by Claudia Wiegand (Universtity of Rennes1)

Main goal of this workshop was to compare the strategies in how PES have been approached in the single case studies and to find commonalities, differences and obstacles in dependence from the case study characteristics, or legislation differences between the two countries. Quite many parallels between the case studies were identified: Commonalities that help to progress with promoting PES schemes (and developing a cohesive PES), differences indicating that there is no 'one fits all' solution, instead PES have to be adapted to the conditions of the single cases, and we can learn mutually from the obstacles encountered.

The **PES implementation strategies** used were very similar between the 6 case studies, in preparations and actions for the motivation of the farmers and also to convince buyers: based on broad information, followed by single meetings in person, implementation benefited from long term, good relations, maybe a 3rd party's involvement (farmers' association), and explicitly developed business plans for both, farmers and buyers.

The PES implementation strategy was public - private for two study sites (French water companies), and private-private for the other 4 study sites: including UK water companies, other buyers (companies or private individuals, however in these cases an intermediate is beneficial (e.g. farmers' association)

The **payment** is merely annual, but the length of the contract matters, 3-7 years, with the most convenient duration of 5 years. Single payments are exceptional, and sometimes in goods instead of money. A critical question arises as payments could differ for the same action: in particular in cases of inverse auctions.

As **outcome measures** are an obligatory part of the PES scheme, different options apply in the 6 case studies, from control of the results, as they were fixed in the contract (control of soil or water quality, remaining nitrates etc.) to being activity based (implementing of permanent cover, hedge rows etc).

In the pilot of Tremblay Omonville, the payment is linked to the achievement of a result in terms of the nitrate left over in winter (control measures), it takes into account the individual investment and the risk incurred (risk premium), and can include a bonus linked to the collective action in the territory. A collective bonus is calculated on the basis of the minimum surface area necessary to have a positive impact in the catchment area. The farmer is paid x €/ha for the achievements plus an additional sum which is the bonus for the achievements in the area. This payment structure is beneficial for the farmers, because if a farmer has not reached his objective, the bonus may still be received, if the whole area is involved with minimum impact. This bonus-related payment requires however trust between the farmers to engage in this collective action. Simulations helped to demonstrate the interest of the individual effect for the common and collective good. In contracts however, individual payments should be considered separately and the bonus in addition.

Possible **sanctions** include: in case of non-achievement, no bonus, and the cost of the control is borne by the farmer. This is a limited cost but symbolic enough for it to represent a penalty (SERPN). Additionally, in case of a common achievable goal, there is pressure within the community. In the case of the source of the Vigne, sanctions will be applied on farmers in case they do not comply with the specifications of the contracts: breaking the contract could result in the repayment of sums received or payment of only part of the payment. In several cases the situation becomes difficult however, if the land is on lease and contracts are made with the owner not the tenant. The Rother Valley pilot investigates in this direction.

PES find a good **acceptance at the farmers' side** (30 – 50%); varying with the pilot site, time of collaboration between farmers and buyers (i.e. water companies) and depending on the level of payment, or if the PES can be integrated in farmers' management systems (co-development of PES is essential, big changes are difficult). PES require an investment in addition to other funding programs, which needs to be identified.

Acceptance at the buyers' side is very good for water companies, but less successful with the aim of water improvement alone for other buyers, they tend to ask for other environmental services such as carbon sequestration.

There is a need for a strong business case that watershed management is good value (as opposed to technical treatment or inaction) but a high level of uncertainty can make it difficult at the outset. In the UK, there is strong

pressure from the regulators for PES. Some contracts can also be made with companies in the food industry. A survey among water users revealed their willingness to pay for preventive measures.

The **obstacles** are manifold, but similar between the cases and concern long term economical security for the farmers, slow and complex reaction of the admin and juristic side, timing and the future. Timescales matter, as long term changes are needed, but planning is influenced by factors obliging flexibility, such as short term tenant contracts and market requirements. A particular situation arises if the land is managed by a tenant, which needs special PES agreements of which the conditions are not yet developed. Tenants are less likely to engage in PES due to short term contracts hence the hesitation to invest in long term changes (planting of hedgerows) or in equipment, as they may not receive the long-term benefits.

At the buyers' side, funding may be released in 5 year cycles, which may or may not fit the farmers' schedule, moreover this requires a new activity of mutual engagement in PES every 5 years. Collateral costs for controls, IT structures etc. need to be included in the contract. As there is a variety of buyers, it can also happen, that the allocated money doesn't arrive in the chosen catchment.

Moreover, political aspects, and the duration and complexity of the process with the administrative management as well as the not ready developed juristic frame may discourage farmers and buyers.

Differences existing between the 6 case studies, they concern in particular ground- versus surface water, as the human health aspect is of higher importance thus they also concern different buyers: water works respectively manifold private buyers. Moreover, the legislation regarding the source of money for PES differs between the two countries, as waterworks are private in UK but public in France. As tailor-made solutions are necessary, there is no 'one fits all' PES, and PES contracts will include both, similar aspects and case to case adaptations.

The **success**, however depends on a thorough and often long term preparation:

Good working relationships are key, thus an animation for several years (at the source de la Vigne over 30 years) on the nutrient loss issue, which develops a strong support within the farmers' community. It can include the support of 3rd parties trusted by the farmers e.g. agronomists, farmer group facilitators. Trusted relationships with individuals e.g. Catchment Officers, rather than with the company. Important measures include at the farmers' side, one to one meetings / or meetings with voluntary farmers first in group, then singly, advising about **their legal responsibilities are and where PES can help improve their business**. Receiving feedback from sellers is of great value.

At the buyers' side (water companies and others): the companies in the area who are willing to feed the PES mechanism need to be identified, and the amounts that they would be ready to pay determined. A cost benefit analysis of catchment schemes vs (nitrate) water treatment costs can be convincing for water works, and a business case needs to be set up to secure the funding for the PES. Monitoring and modelling of the benefits allows the buyers to gain confidence in the PES scheme; and as for the farmers, experiences from other (water) companies.

For sellers and buyers, a **concerted design of the PES** is essential, that is a coherent scheme with local agronomic and socioeconomic stakes, a clear definition of object, duration, clear annual objectives, amount of payment and targeted measures to be checked while ensuring the economic sustainability of the farms. There is a need to synchronise the possibilities of the companies and the needs of farmers to enable changes of agricultural practices. Contracts need to be clear in goals and activities and any action from farmers or buyers side requires transparency in order to reduce mismatched expectations.

As the goals may only be reached within decades, evaluation of the capacity of the measures to improve the water quality can be achieved by modelling linking agricultural practices to environmental targets.

It was also of interest to evaluate if the same measures create additional storage of carbon in soils, and of the possibility that this additional storage of carbon is financially valued within the framework of a local carbon market.

The **activities chosen** consequently started very similar in the 6 case studies with single meetings or phone calls with the farmers to allow each farmer to build up his individual PES offer, if needed with the assistance of an external expert (also using mail and internet consulting). This was followed by group meetings for workshops on training or experience sharing; Information was provided by (catchment) newsletters. Delivering promotion workshops and larger meetings are useful for later stages but will increase the outreach for other PES projects.

Moreover, in the Tremblay a in depth economic analysis was made and currently a toolbox covering economic questions shall be created. In the case of the Lyd pilot one online reverse auction was conducted.

The **success is a multi-partners work**: public institutions (Ministry, Commission), agricultural experts for the construction of PES, IT resources, buyers, and farmers.

Workshop 4: markets of ecosystem services in relation to the PES in the project

animated by Sara Hernandez (Sara Hernandez Consulting) and Laurence Couldrick (Westcountry Rivers Trust, UK)

CPES PES schemes have been implemented mainly to support the preservation of the water quality addressing whole catchment areas. Through changes in best agricultural practices, farmers are providing ecosystem services for water but also for carbon sequestration and biodiversity. While CPES PES schemes are targeting at water quality, other benefits are provided in other types of ecosystems services produced by water bodies. These potential markets-based mechanisms for ecosystems services may produce some (un)expected spillovers and bottlenecks when it comes to respond to all potential benefits associated to good management agricultural practices in catchment areas.

The CPES PES payments are financed by different channels provided by public or private funds. However, the question arises on the sustainability of the financing of PES in the case of an increase in PES contracts or extension of the PES schemes to larger scales. The financial sustainability of PES schemes explains our interest to call upon carbon market in which soils' carbon sequestration at the farm level opens new financial opportunities to attract private resources and support the current CPES schemes for water resources.

The aim of this workshop is to discuss the potential spillovers or bottlenecks of associating carbon markets to PES schemes for the preservation of water resources. We will organize the overall discussions around the following questions:

What are the ethical implications of calling upon carbon market to support the preservation of the quality of water resources:

- questions related to the divergences between private interest and public good nature of ecosystems services.
- questions related to the type of companies interested in investing in the carbon market due to conflicts of interest between farmers and agro-food companies.

Is there any windfall effect in creating a carbon market for carbon sequestration as farmers are already paid for changing practices in favor of water quality?

- should farmers be paid twice (for water quality and for soils carbon sequestration) as the payments flag the same agricultural practices?

Soil carbon sequestration measurement and calculation of credits:

- what is the additionality target by the carbon market?
- What are the methods available to estimate carbon credits?
- how to include risks (destocking soil carbon)?
- should we consider any insurance schemes to secure private operators in the carbon market?

Conditions to make carbon market work:

- are there any conditions to secure the supply side of the carbon market?
- are there any conditions to secure the demand side of the carbon market?
- how to link (justification/rational) carbon market and the preservation of water resources?

Reflections during the discussion

Water quality as PES seems of lower interest to investors, compared to carbon credits for private-private financing; but it needs to be clarified how to get insurance that gives farmers security. Thus, identifying companies interested in investing into carbon market could be a chance, as it operates simultaneously several

environmental services: carbon sequestration, reducing nutrient loss, water regulation in terms of flood risk and draughts. The ES of carbon sequestration is linked to climate change attenuation.

Special attention needs to be paid to not double pay the same service. Nevertheless, the carbon market could increase the interest by farmers who are less concerned by the water quality issue.

The price of wood is important for the retention and future supply of the wood market (biofuels). A long-term vision and agreements is necessary. Private companies work together through a system of layers, namely water companies and airports.

West country rivers trust conducted a soil sampling at 50 fields, including 4 crop fields for carbon content already in 2015 for a reference database, from which farmers can take decisions to ameliorate the soil carbon content. Knowing the history of those fields, soil carbon content correlated to the years without mechanical intervention. Additional factors are land use (arable and milk production) and geological factors including soil type (clay) contribute. The soil analyses will be repeated in autumn 2020. Action can benefit from experiences in areas where carbon PES are implemented concerning the preservation of the resources and the interaction between stakeholders (scientists, farmers, landowners, etc.)

Sara Hernandez Consulting: To assess the economic potential of soil carbon storage for a voluntary carbon market an evaluation of the initial state of the soil carbon stock is necessary followed by a modelling of the potential for additional soil carbon storage (external provision)/ Evaluation of the BAU. This modelling can ideally be used to calculate the potential for carbon storage in soils of the total territory of the basin. On the other side the conditions for the viability of the carbon market need to be studied. The certification for carbon sequestration in soil differentiates two cases: 1. Regulatory: Emissions trading and carbon offsetting quota that must be certified by the UN, and 2. a voluntary market: no certification requirement.

Initiatives exist already, for example in Australia, where the project is led by 'agriprove', with a baseline in 2016, aiming to change soil management practices and management of livestock systems, with a carbon-credit of 100 AUD. Contrarily, in France, the project lead by 'CarboneAgri' with the same goals but a carbon-credit of 30€. One carbon credit corresponds to the equivalent of the emission of one metric ton CO_2. Projects that remove carbon from the atmosphere give a fixed number of carbon credits. Credits must be certified for the regulatory market and can be verified for the voluntary market.

The lines of conduct for carbon offsetting are not too different from those for the water quality:

- measurability: how much carbon has been removed from the atmosphere
- verifiability: setting up of annual audits to check the progress of the project
- permanence: will it be withdrawn for a fairly long period of time
- additionality: for a carbon credit to be issued, the credit must be additional to a baseline. It cannot be based on what already exists but on the additional stock compared to the change in practice.
- activity: several buyers is to be avoided.

In France, the regulatory legislative framework does not consider soil carbon sequestration as a priority for the moment. Hence, it is difficult to sell them without a label, and the labelling costs have to be covered.

West country rivers trust: In the UK, there are labels and programmes certified for carbon offsetting. The difficulty is measurability, permanence and verifiability. There is great interest in national and local programmes by companies. In a meeting, organized by West country rivers trust the necessity to meet all the criteria for certification was evidenced and that this is expensive. Some dedicated people in certain companies trust without certification.

To promote the carbon sequestration in the soils in the areas that are part of our programmes, the idea to create financial trusts that could guarantee individual contributions to a fund (third party) that could be redistributed directly to farmers was discussed. A third actor could intervene: insurance companies that could act as a lever for farmers or companies interested in carbon credits.

Large national companies and they are not interested in small restricted areas, it is crucial to find companies with a connection with the territory, which however are then small and medium-sized companies with more limited resources.

As for the PES concerning water quality, it is again important to match the interests of buyers and sellers in a given area. Give notes to those who do more than others. It takes time to gain the confidence of companies,

possible target companies can be buyers of dairy or meat products. They can be provided with more than the opportunity to offset their carbon footprint, as they gain an ethical image. Studying the tourist value of the place and the possibility of financing can be supporting for example it is known that hedge-rows increase the attractiveness for tourism, which in turn can be valorised economically.

A solid, reasonable scientific basis, is needed to solve questions concerning payment, financing, money collecting, analysis of those who benefit, size of the area for implementation. Other question concern the national framework about the carbon sequestration in France. The second part of a carbon-market related project could allow to include ministries to have a national view.

Conclusions / Feedback to the whole meeting

This workshop – organized CPES meeting went extraordinary well given the circumstances of having to organize it by Visio conference. All participants acknowledged the step forward to accomplish the deliverables and to see the common progress made, and valued the workshops to visualize the common achievements and the complexity of the project within each but commonality between the 6 case studies. As the carbon market seems to be very promising there is the option of applying for a last time within this INTERREG Manche program by September. Having NGOs participating could be interesting to accomplish the commercial aspect by a different view. It would also improve relations.