Environmental Policy Instruments for Nature Conservation

Jiří Louda

Faculty of Social and Economic Studies

Jan Evangelista Purkyně University

In Ústí nad Labem

louda@ieep.cz

Why should we take care of the environment?

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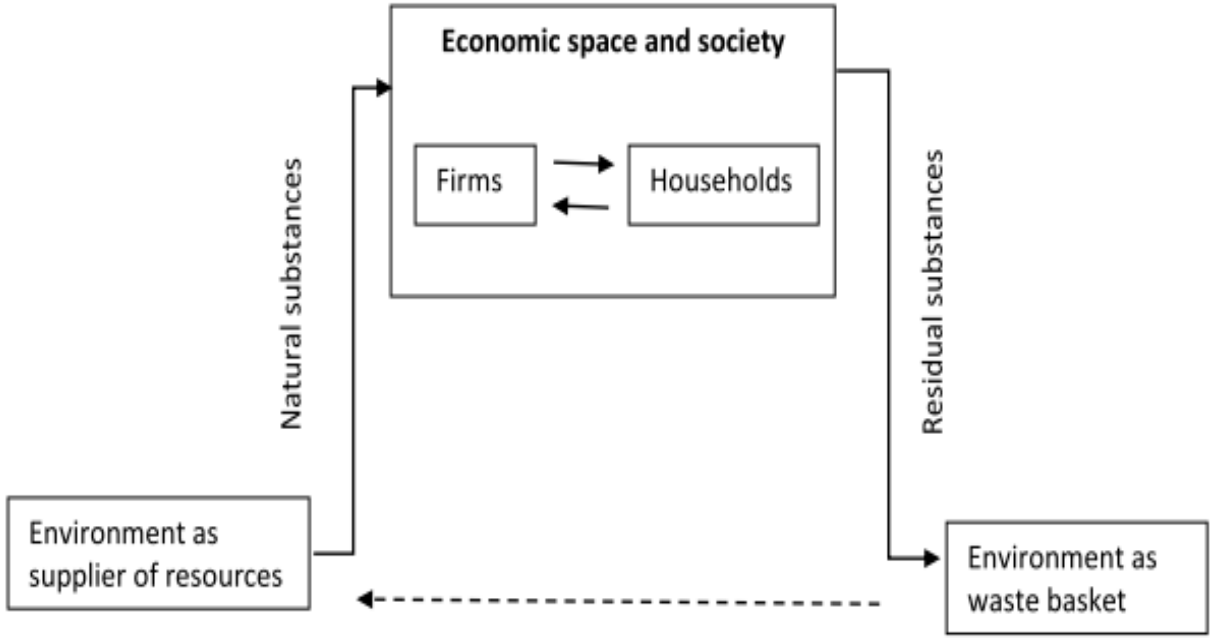

How can people care about the environment?

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- Individual actions, e.g.:
  - Avoid long showers
  - Walk/public transport instead of driving
  - Separate your garbage and recycle
  - Find out natural alternatives for chemical cleaners, etc.
- Civic engagement, e.g.:
  - Environmental NGO
  - Land trusts, etc.
- Institutional protection
  - Environmental policy

What is ENVIRONMENTAL POLICY?

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- Commitment of an organization (government/ministry/city/firm) to the regulations, laws, and other policy mechanisms concerning environmental issues
- Aim of policies:
  - To set rules how to deal with natural resources (input for economy) and how to deal with waste materials (output of economy)
  - To regulate the negative impact of human acting on the environment
  - Declaring of strategy goals and measures, setting instruments for achieving the goals
- Many sectoral environmental policies
  - Air pollution
  - Climate change
  - Water
  - Protection of natural resources
  - Energy
  - Biodiversity and ecosystem services

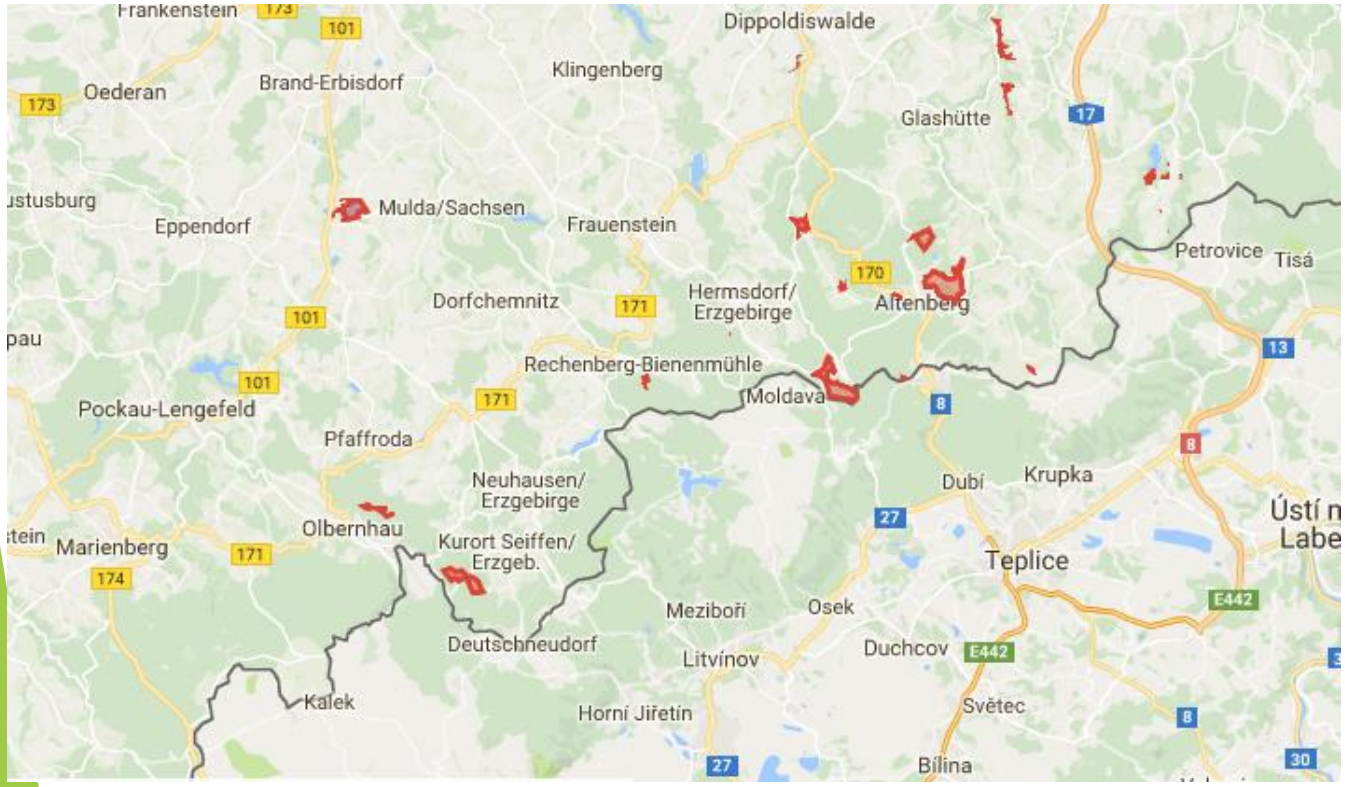
Environmental policy instruments

- Environmental strategy policy documents are implemented at different levels:
  - **International** (Convention on Biological Diversity – 1992)
  - **National** (Nat. Biodiversity Strategy of the CR – 2005; German National Strategy on Biological Diversity - 2007)
  - **Regional** (Regional Strategies for Nature and Landscape Protection – Ústi region does not have any; Programm zur Biologischen Vielfalt im Freistaat Sachsen - 2009)
  - **Local** (The Plan of Management/Care of Nature Reservation Špičák - 2013)
- Main types of policy instruments
  - Administrative/regulatory instruments (command-and-control instruments)
  - Economic instruments
  - Voluntary environmental instruments
  - Information instruments

Administrative/regulatory instruments

- Quite „quick“ action and reaction
- But public authority has only poor information about individual costs of polluters
- Instruments like
  - Prohibitions/bans x permission/authorization
  - Commands
  - Qualitative or quantitative standards
- Examples:
  - Ban on entry to certain sites
  - Command to move only on the marked paths
  - Standards on timber harvesting
  - Protected areas (national parks, Natura 2000)

Protected Areas in Eastern Ore Mountains



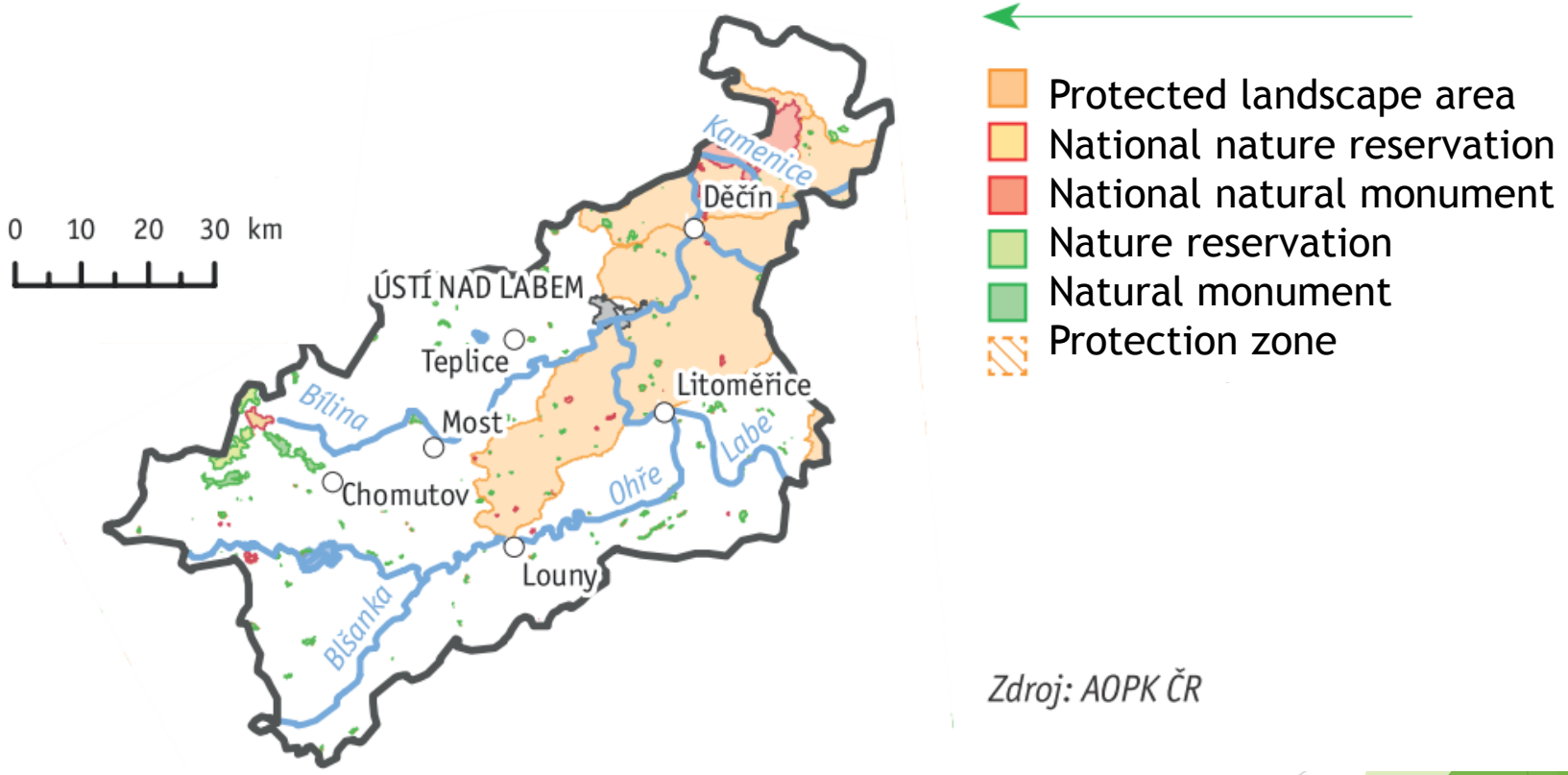
SAXONY - Protected landscape areas:

- Bärenbachtal 67 ha
- Hirschberg - Seiffener Grund 173
- Großhartmannsdorfer Großteich 155
- Trostgrund 26
- Weißeritztalhänge 449
- Rabenauer Grund 98
- Gimmlitzwiesen < 2
- Schwarzbachtal 14
- Hofehübel 72
- Weißeritzwiesen 23
- Hemmschuh 253
- Am Galgenteich 14
- Georgenfelder Hochmoor 14
- Weicholdswald: 104
- Geisingberg 314
- Grenzwiesen + Fürstenauer Heide 507
- Müglitzhang 78
- Trebnitzgrund 41
- Oelsen 128

CZECH REP. –Nature reservation

- Černý rybník/Schwarzer Teich 33 ha
- Grünwaldské vřesoviště/Grünwalder Heide 39
- Vlčí důl/Wolfstal 33
- Salesiova výšina/Salesiushöhe 2
- Domaslavické údolí/Deutzendorfer Tal 60
- Buky na Bouřňáku/Geisterbuchen am Stürmer 3
- Černá louka/Schwarze Wiesen 130
- Špičák/Sattelberg 74

Protected Areas in Usti Region



Zdroj: AOPK ČR

Voluntary environmental instruments

- **Voluntary environmental agreements**
  - Based on (industry) self-regulation; considered as a purely private activity.
  - Agreements or obligations between a public authority and private entities.
  - Companies declare to do more for the environment than as required by law (e.g. they invest extra money for cleaning water etc.)
- **Eco Management and Audit Scheme (EMAS) and ISO 14001**
  - Certification of companies which care about the impact of their market activities and company processes on the environment
- **Eco-labelling**
  - Special labels on products, which are environmental friendly (organic food etc.)

Information instruments

- To support monitoring and evaluation and public administration in general
- Education of the public (consumers, firms, etc.) about different ways how to protect the environment
- Organized by state, NGOs, schools
  - Billboards, leaflets, TV shots
  - Information campaigns
  - Environmental education at schools or environmental education centres
  - Information systems/portals for public

Economic instruments

- Instruments which aim to change the behaviour of subject on the market by internalizing environmental costs into the costs of market activities of these subjects
- Instruments of positive stimulation (subsidies, grants, supports, reliefs)
  - Subsidies for organic farmes
  - Landscape Care Programme
  - River System Restoration Programme
  - Support from the State Environmental Fund
- Instruments of negative stimulation (taxes, fees, penalties)
  - Fees for pollution of the components (water, air) of the environment
  - Penalties for illegal interventions in nature (penalties for illegal tree cutting)
  - Taxes (Carbon Tax)
  - Toll entrances to the site
- Marked based instruments
  - Tradable permits (Emission trading system – CO_2, water emissions etc.)
  - Payments for ecosystem services (payments to beekepers paid by fruit growers for pollination)
  - Biodiversity banking

Ecosystem Services – some definitions

- Ecosystem Services are the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfil human life
- **Ecosystem Services are the benefits human populations derive, directly or indirectly, from ecosystem functions**
- Ecosystem Services are the benefits people obtain from ecosystems
- Ecosystem Services are components of nature, directly enjoyed, consumed, or used to yield human well-being
- Ecosystem Services are the aspects of ecosystems utilized (actively or passively) to produce human well-being
- **Ecosystem Services are the direct and indirect contributions of ecosystems to human well-being**

Source: Braat and Groot (2012), Farley and Costanza

What are Payments for Ecosystem/Environmental Services (PES)

- Wunder (2005) defines PES as
  1) *voluntary* transaction where
  2) *well-defined* ES (or land use likely to secure that service)
  3. is being 'bought' by a (minimum one) ES *buyer*
  4. from a (minimum one) ES *provider*
  5. if and only if the ES provider secures ES provision (*conditionality*)

In practice, PES often involves a series of payments to land or other natural resource managers in return for a guaranteed flow of ecosystem services.

New approach in environmental policy: shift from **polluter pays principle** to **beneficiary pays principle**

Source: Wunder (2005)

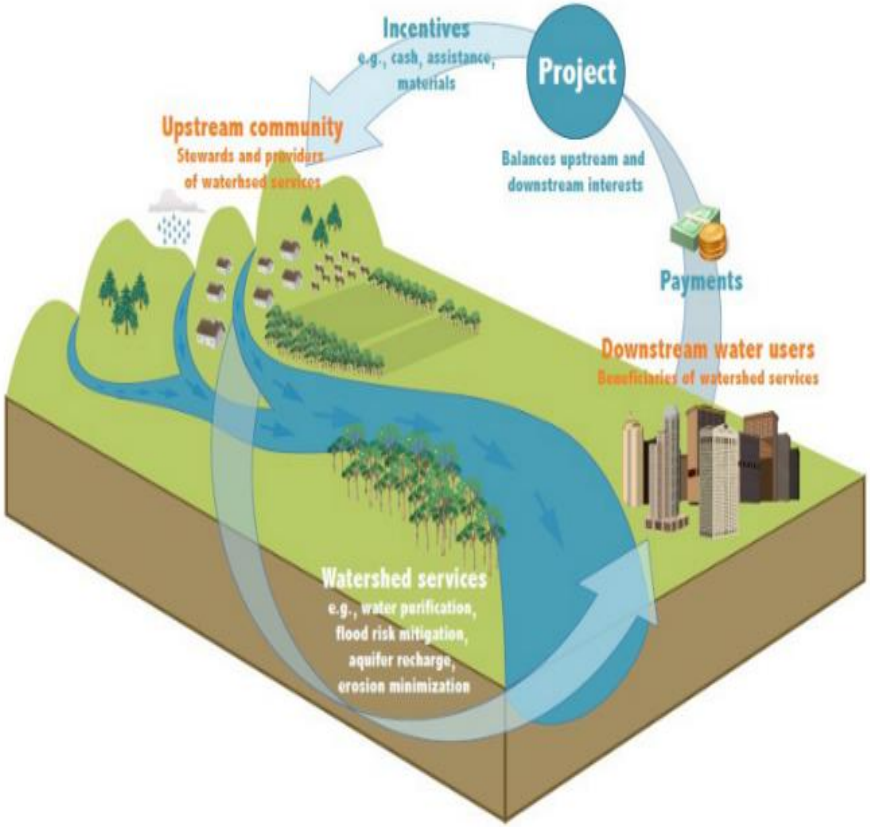
The actors involved in PES

- **buyers:** beneficiaries of ecosystem services who are willing to pay for them to be safeguarded, enhanced or restored
- **sellers:** land and resource managers/owners whose actions can potentially secure supply of the beneficial service
- **intermediaries:** who can serve as agents linking buyers and sellers and can help with scheme design and implementation
- **knowledge providers:** these include resource management experts, valuation specialists, land use planners, regulators and business and legal advisors who can provide knowledge essential to scheme development

Source: DEFRA (2013)

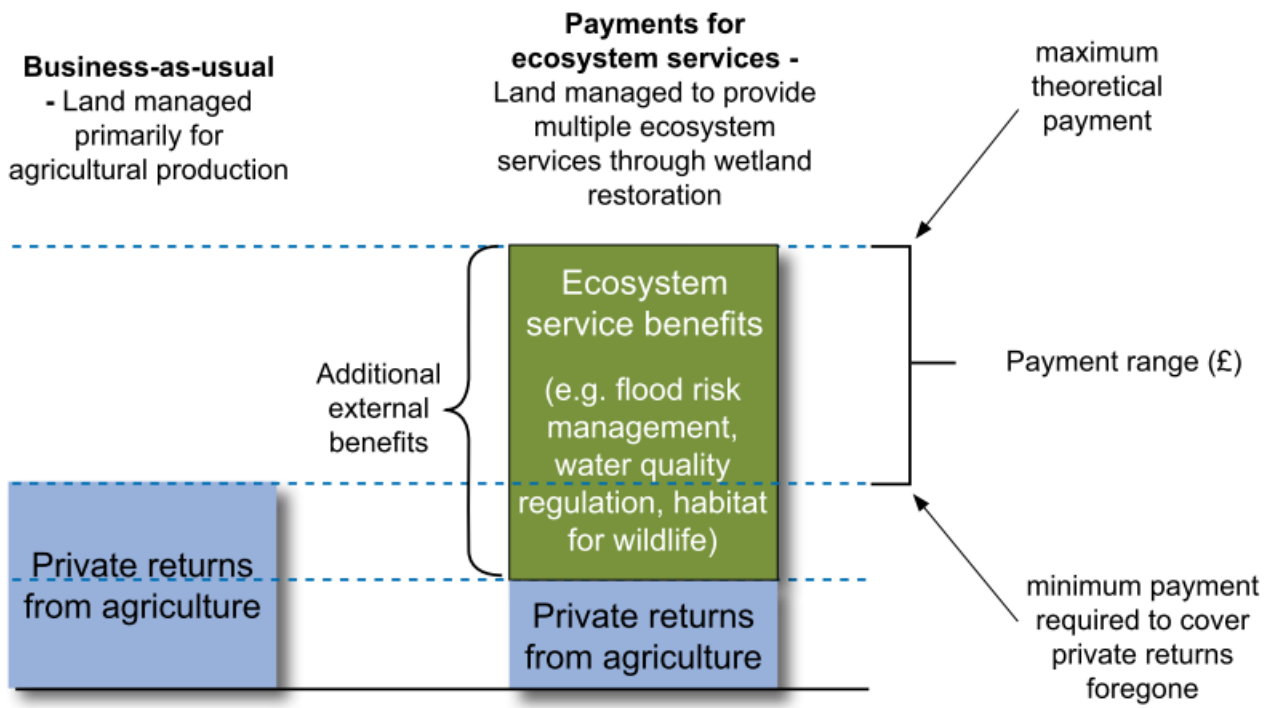
How do PES mechanisms work

- It should be a **win-win** situation for both buyers and sellers
- In almost all cases, PES works by **paying providers** for specific land uses that are thought to generate the desired ES
  - programs involving to **change the land uses** (for example, reforesting land that has been deforested) => higher costs than
  - programs focused on **retaining existing land uses** (for example, preserving forests threatened by clearing)
- **Performance should be measured** (it must be possible to verify the existence of the ES and to establish a **baseline** against which additional units 'provided' can be measured) => ideal PES: output-based (e.g. payments for carbon sequestration or wildlife offspring).



Source: Engel (2008), DEFRA

How do PES mechanisms work



Land managed primarily for agricultural production (using conventional fertilizers, herbicides etc.) vs. land managed to provide multiple ecosystem services under a PES scheme

Source: DEFRA (2013)

Characteristics of PES programs

- Who are the buyers?
  - a/ **users of the ES** (user-financed PES programs); „Coasian type of PES“
  - b/ **third party** (typically the government, an NGO, or an international agency) acting on behalf of the users; „Pigouvian type of PES“
- Who are the sellers?
  - the potential ‘sellers’ of an ES are those actors who are in a position to safeguard the delivery of the ES => **landowners/landmanagers**
    - public landowners
    - private landowners (most PES programs are focused on these)

Source: Engel (2008)

Various schemes of number of buyers and sellers

- **one-to-one:** for example, where a company enters into a contract with a single major land-owner to provide enhanced carbon sequestration
- **one-to-many:** for example, where a water utility makes arrangements via a broker to pay many farm businesses for water-sensitive management practices in a key catchment
- **many-to-one:** for example, where multiple buyers together invest in the development and maintenance of urban green space
- **many-to-many:** for example, where government pays farmers for sympathetic land management practices on behalf of the wider public

Source: DEFRA (2013)

User-financed PES programs

- **Fully voluntary** for both ES providers and users, who can enter (and exit) contracts voluntarily
- Mostly only **small local programs** (because of transaction costs)
- Institutional framework is **more flexible**
- Greater adherence to a pure PES definition
- **More targeted** in their effects
- „Coasian type of PES“

Source: Wunder

Government-financed programs

- Typically **only voluntary on the provider side** (third party acting on behalf of service buyers)
- To the extent that these programs are financed through **user fees**, the fees are **mandatory**
- Providers, on the other hand, are not forced into PES programs, with the exception of China
- These programs are **much larger** => they tend to have significant **economies of scale**
- Institutional framework conditions are stable over time (no or only few changes) => **low flexibility**
- Often have broader **and less well-defined** objectives
- „Pigouvian type of PES“ - the Pigouvian conceptualization is based on the “Pigouvian philosophy of taxing negative or **subsidizing positive externalities** within existing product markets”. The Pigouvian technique requires that the payment equals the marginal net benefit that it is supposed to generate.

Scale of PES programs

- **International:** examples include Reducing Emissions from Deforestation and Degradation (REDD+) whereby developing countries that are willing and able to reduce emissions from deforestation and degradation are paid by developed countries for doing so
- **National:** for example the Environmental Stewardship program in UK, a government-financed scheme in which about £400 million a year is paid to farmers and land managers on behalf of the public in return for more environmentally-sensitive farming
- **Catchment:** for example, downstream water users paying for appropriate watershed management on upstream land. These schemes tend to be private-financed, for example where a water utility pays upland land managers on behalf of its customers to implement certain measures designed to stabilize or improve water quality.
- **Local / neighborhood:** for example, a scheme whereby residents collectively fund a warden or environmental organization to manage local green space for biodiversity, landscape and recreational value.

Source: DEFRA (2013)

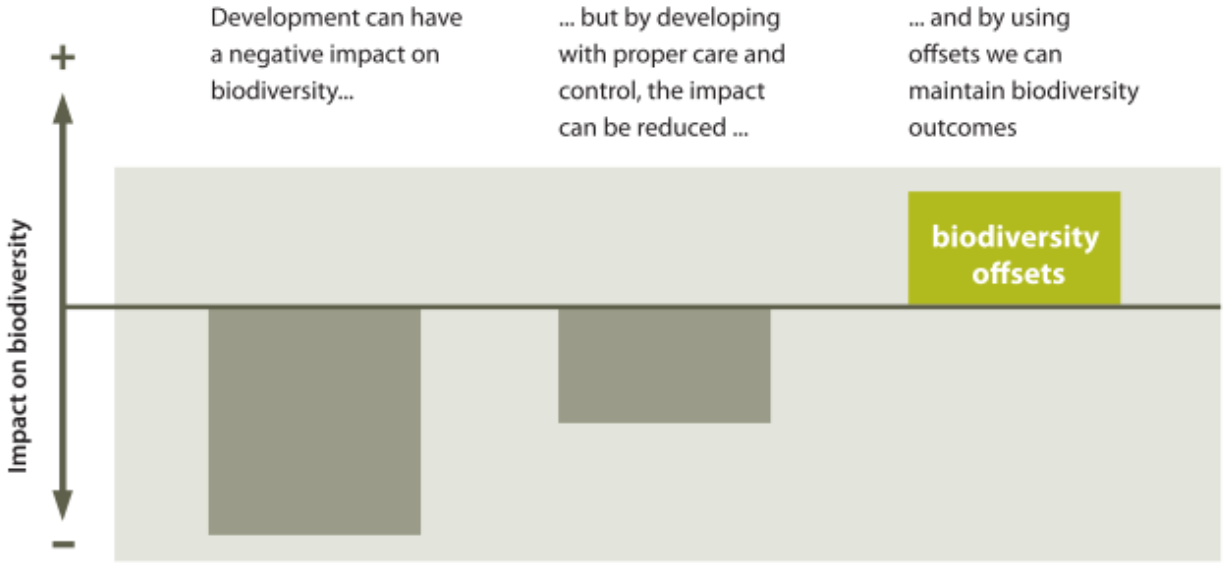
Ecosystems that are most often objective of PES schemes

- Watersheds
- Agriculture land
- Forests

BIOBANKING (Biodiversity Banking)

- **Market-based scheme**
- Provides a streamlined **biodiversity assessment process** for development, a rigorous and **credible offsetting scheme**
- Opportunity for rural landowners to **generate income by managing land for conservation.**
- BioBanking enables '**biodiversity credits**' generated by landowners and developers who protect biodiversity values on their land
- These **credits** can then be **sold**, generating funds for the management of the site.
- Credits can be used to **counterbalance (or offset)** the impacts on biodiversity values that are likely to occur as a result of development or
- sold to those seeking to **invest in conservation outcomes**, including philanthropic organisations and government.

Figure 1 Using offsets to help address biodiversity loss



Source: Department of Environment and Climate Change, 2007

PES programs in the World I – User-financed PES programs

- Great Britain – Nature Lakeland: Visitor Payback Scheme supporting the ecosystem services pilot in Bassenthwaite Catchment. **Visitors donate money to promote landscape management** via participating local businesses, providing a mechanism for tourists who benefit from the natural environment to directly support it *(buyers - visitors of the National Park, sellers - local conservation projects)*
- France – Vittel – PES for water quality: To address problems relating to the aquifer from which Vittel's bottled water is drawn, principally rising nitrate concentrations from agricultural intensification in the area, **Vittel paid above-market prices to purchase land around its water springs and signed contracts with other farmers to use more sustainable dairy** farming techniques and to improve farm facilities. The net result of these initiatives has been a reduction in non-point source groundwater pollution *(buyer - bottled water company, sellers - farmers)*
- USA – Bonneville Environmental Foundation Water Certificates: Enables private sector urban water users to invest in critically and chronically dewatered ecosystems. W**ater users purchase Water Restoration Certificates** (administered by the BEF) **which compensate landowners for transferring their water abstraction rights to serve environmental purposes; and importantly, to 'leave the water in the stream'** *(buyers - private sector business, sellers - farmers and landowners)*
- Ecuador – Pimampiro: This PES scheme relies on the local municipality, charging an **obligatory water fee to downstream water-using households**. The fee is paid via a water fund **to upstream landowners, who are contractually committed to halting deforestation** and allowing some degraded lands to naturally regenerate and thus reverse agricultural expansion – **there is no voluntary aspect!!** *(buyers - water-using households, sellers - landowners)*
- Several PES schemese in Africa - wildlife conservation: A community-based ecotourism program in Cambodia targets highly threatened bird species. The scheme links generated revenues from bird-watching tourism to long-term species conservation. Villagers are paid for ceasing to hunt birds *(buyers - tourists, sellers - villagers living in the area of threatened bird species)*

Source: Schomers and Matzdorf (2013), Laurans (2012)

PES programs in the World II – Government-financed programs

- Mostly in Costa Rica, Mexico, the EU member states, the US and China
- USA – US Conservation Rewards Program: **Nationwide land retirement program which incentivizes landowners to change land use on highly erodible and environmentally-sensitive cropland** and pasture via inverse auctions *(buyer – US government, sellers – farmers)*
- Australia – Bush Tender**: Landholders competitively tender for contracts with Victoria State Government to be paid for protecting** and improving the native vegetation on their land. The scheme uses a reverse auction-based approach, in which landowners propose conservation activities and their cost. The scheme aims to facilitate better management of native vegetation on private land *(buyer – local government, sellers –landowners with water rights)*
- Bolivia - PES scheme for watershed management and migratory bird conservation in Los Negros Valley: Watershed management targets on curbing upland deforestation to overcome the growing problem of water scarcity. However, upstream **landowners are not paid directly by local downstream irrigators, but rather by the municipality** of Pampagrande. The international conservation donor, US Fish and Wildlife Fund, paid the PES start-up costs and payments for biodiversity conservation, particularly bird protection *(buyer – municipality and international conservation donors, sellers – landowners)*

Source: Schomers and Matzdorf (2013), Laurans (2012)

Thank you for attention

Jiří Louda

louda@ieep.cz