Nowe uwarunkowania ochrony mokradeł

Konferencja otwierająca
Projekt „Kampinoskie Bagna”
24-25.03.2014
Izabelin

Jarosław Krogulec, Ogólnopolskie Towarzystwo Ochrony Ptaków

Nowe uwarunkowania ochrony mokradeł

1. Usługi ekosystemowe
(Constanca, Balmoford, Cambridge Conservation Initiative

2. Land sharing vs. land sparing
(Balmford, Phalan, Dept. Of Conservation Biology, Cambridge Univ.

3. Carbon credits from wetland rewetting
(Joosten et al. Uni Greifswald)

4. Paludiculture
(Josten, Wichtmann, Greifswald)

Economic Reasons for Conserving Wild Nature

Andrew Balmford,[1]* Aaron Bruner,[2] Philip Cooper,[3] Robert Costanza,[4]† Stephen Farber,[5] Rhys E. Green,[1,6] Martin Jenkins,[7] Paul Jefferiss,[6] Valma Jessamy,[3] Joah Madden,[1] Kat Munro,[1] Norman Myers,[8] Shahid Naeem,[9] Jouni Paavola,[3] Matthew Rayment,[6] Sergio Rosendo,[3] Joan Roughgarden,[10] Kate Trumper,[1] R. Kerry Turner[3]

Efekty utrzymania bądź przekształcenia siedlisk naturalnych wyrażone w wartości bieżącej netto NPV (w 2000USD/ha)

(Balmford et al. Science vol.297. 2002)

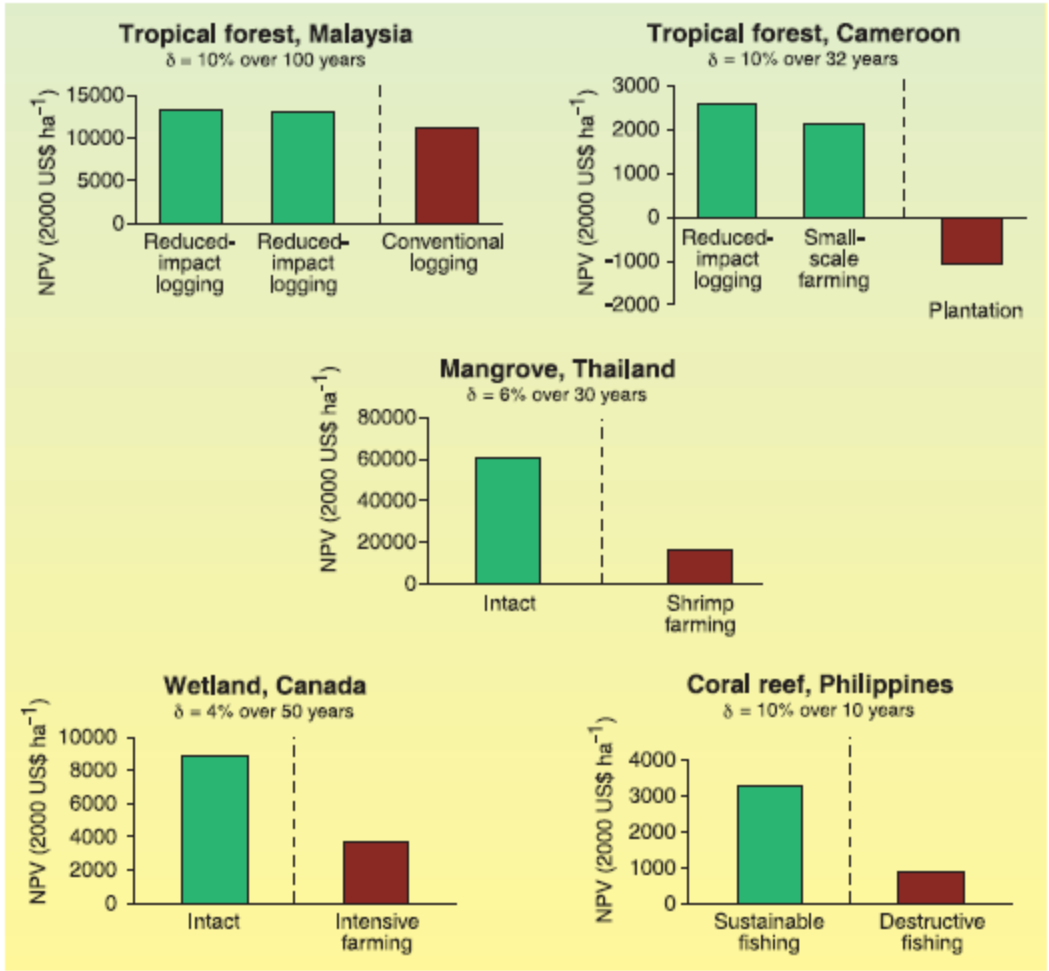


Fig. 1. The marginal benefits of retaining and converting natural habitats, expressed as NPV (in 2000 US$ ha^{-1}) calculated using the discount rates (δ) and time horizons presented. Values of measured goods and services delivered when habitats are relatively intact and when converted are plotted as green and black columns, respectively. [From (*11*–*15*); see (*10*) for further details.]

Reconciling Food Production and Biodiversity Conservation: Land Sharing and Land Sparing Compared

Ben Phalan,[1] Malvika Onial,[1] Andrew Balmford,[1] Rhys E. Green[1,2]

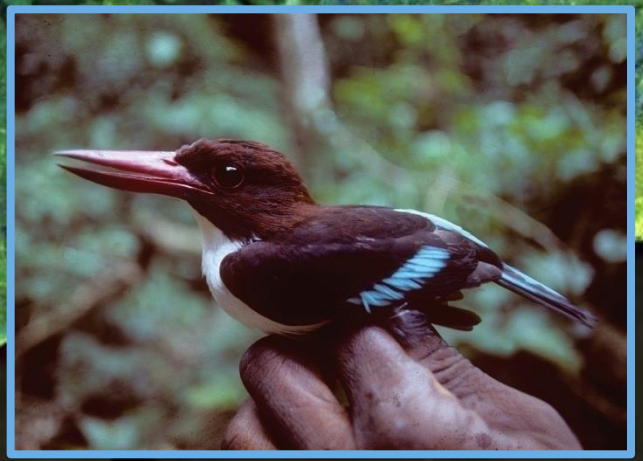
The question of how to meet rising food demand at the least cost to biodiversity requires the evaluation of two contrasting alternatives: land sharing, which integrates both objectives on the same land; and land sparing, in which high-yield farming is combined with protecting natural habitats from conversion to agriculture. To test these alternatives, we compared crop yields and densities of bird and tree species across gradients of agricultural intensity in southwest Ghana and northern India. More species were negatively affected by agriculture than benefited from it, particularly among species with small global ranges. For both taxa in both countries, land sparing is a more promising strategy for minimizing negative impacts of food production, at both current and anticipated future levels of production.

Given multiple competing demands for land, how might humanity minimize the impact on biodiversity of producing food for 9 billion people (*1–3*)? One strategy—land sharing—involves integrating biodiversity conservation and food production on the same land, using wildlife-friendly farming methods (*3–6*). A contrasting alternative—land sparing—consists ganic farming (*10–13*). Increases in crop yields do not guarantee land sparing (*14–17*), and land sharing schemes do not guarantee benefits to biodiversity on farmed land (*12*, *18*); instead, both approaches require careful design and implementation to be effective. Here we address a more fundamental question: Assuming that they could be implemented properly, which would do the

for reconciling food product
conservation (*19–22*).

We measured the mean
ties of 167 bird species and
25 1-km^2 squares in Ghan
species and 40 tree species in
India (*23*) (figs. S1 and S2).
contained remnants of fores
farmland ranging from d
mosaic agriculture to large
monocultures and have exp
food production through a c
land expansion and yield
separate density-yield functi
for two yield currencies (foo
From these functions, we c
cording to whether (i) their
farmed and unfarmed land
er or lower than that if th
forested, and (ii) their total p
and unfarmed land combi
land was farmed at the low
(land sharing), at the highe
(land sparing), or at an inter

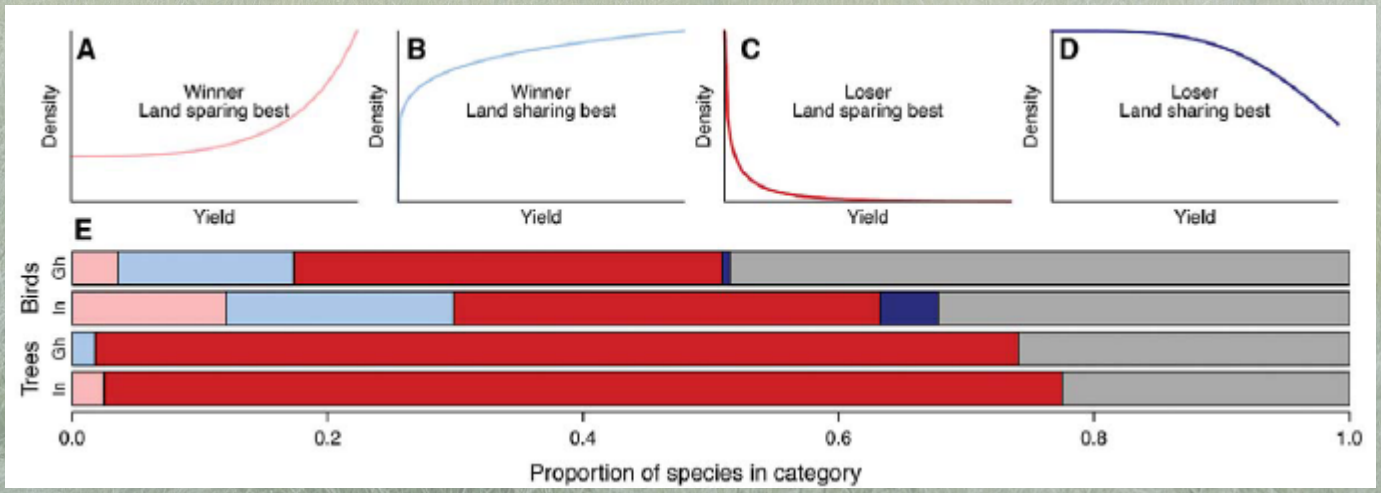
Most species had densi
one of four simple forms (
portions are shown in Fig.
winners those species with

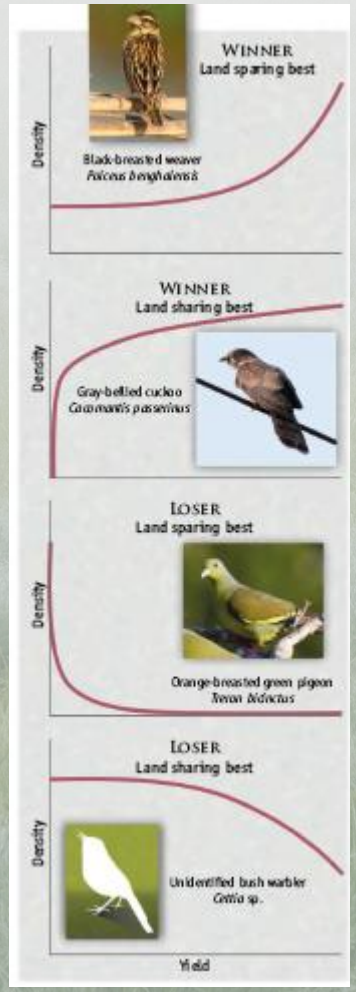


Reconciling Food Production and Biodiversity Conservation: Land Sharing and Land Sparing Compared

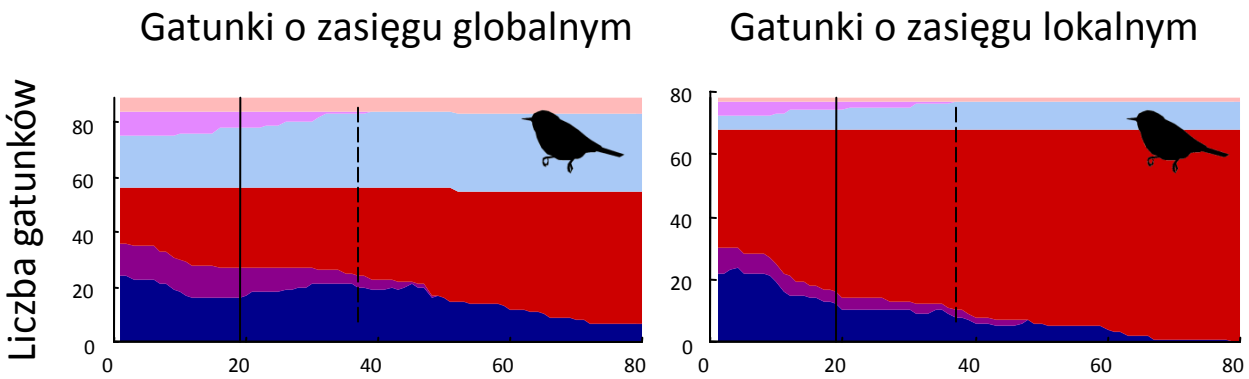
Ben Phalan,[1] Malvika Onial,[1] Andrew Balmford,[1] Rhys E. Green[1,2]

Debata
Land Sharing
vs Land Sparing
(Phalan et al. Science vol.333. 2011)





Land sparing vs land sharing



sparing best

intermediate

sharing best

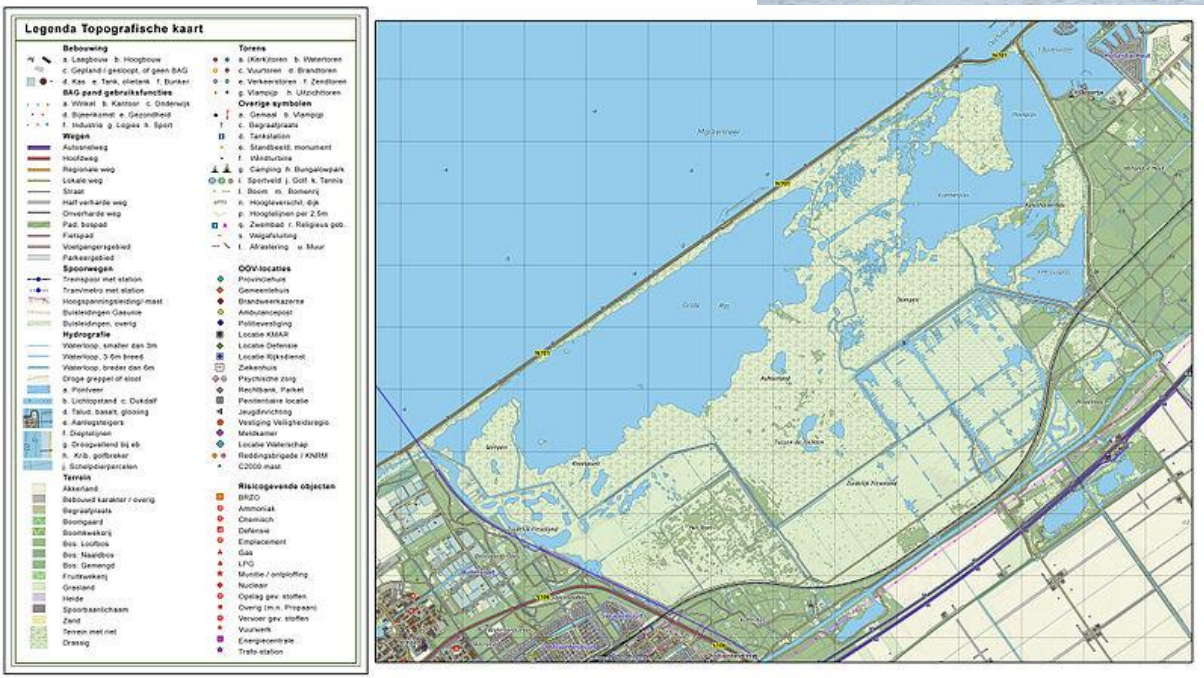
sparing best

intermediate

sharing best

Phalan et al. (2011) Science 333: 1289-1291

Land sparing vs land sharing w Europie



Oostvaardersplassen
Holandia
56 km2
Utworzony w 1968.
Od 1989 Ramsar wetland.

Balmford (2012). Wild Hope

Konwersja ekosystemów powoduje nieodwracalną utratę różnorodności biologicznej – puszcza tropikalna

LETTER

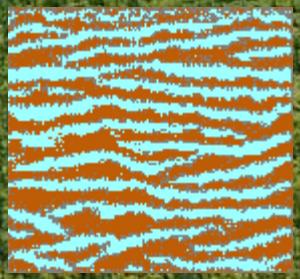
doi:10.1038/nature10425

Primary forests are irreplaceable for sustaining tropical biodiversity

Luke Gibson[1]*, Tien Ming Lee[2,3]*, Lian Pin Koh[1,4], Barry W. Brook[5], Toby A. Gardner[6], Jos Barlow[7], Carlos A. Peres[8], Corey J. A. Bradshaw[5,9], William F. Laurance[10], Thomas E. Lovejoy[11,12] & Navjot S. Sodhi[1]‡

Różnorodność ekosystemowa torfowisk

- duże zróżnicowanie rodzajów torfowisk
- różnorodna i często spektakularne zróżnicowanie ukształtowania powierzchni.



Renaturalizacja i ochrona torfowisk

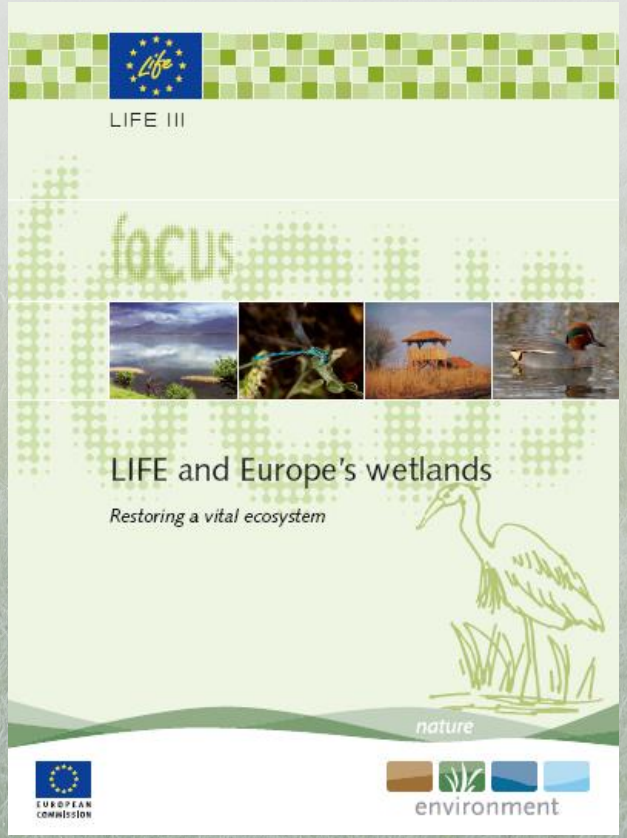
- Odtworzenie ekosystemu torfowiska po intensywnej melioracji i/lub usunięciu torfu jest niemożliwa

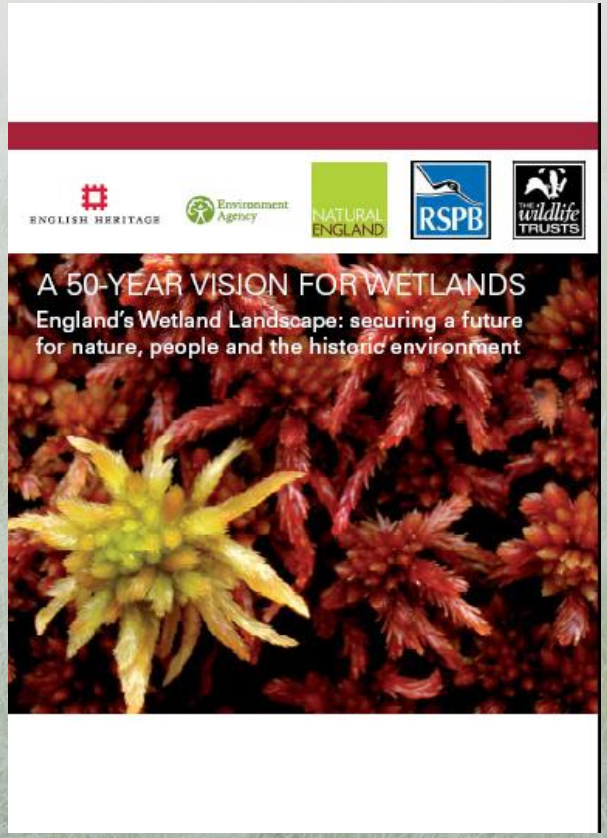
  → priorytet 1: ochronić wszystkie (semi-)naturalne torfowiska!

  → priorytet 2: renaturalizacja osuszonych torfowisk

- W obu przypadkach konieczne jest utrzymanie bądź odtworzenie kluczowych uwarunkowań i procesów na torfowiskach takich jak – akumulacja torfu, reżim hydrologiczny (łącznie z jakością wody), poziom trofii siedlisk i odpowiednia kompozycja gatunków.

Programy renaturalizacji torfowisk





Renaturalizacja torfowisk

• należy rozważyć wszystkie elementy ekosystemu torfowiska, ocenić stan degradacji możliwości renaturalizacji

Stopień degradacji

Degradation stage	Fauna/ flora	Vegeta- tion	Water regime	Soil hydraulics	Form and relief	Peat deposits	Site characteristis
Minimal							undrained, natural spontane- ous vegetation, only hunting and gathering
Minor							not/slightly drained, low-inten- sity grazing/mowing or forestry
Modest							freshly deeply drained and/or regular mowing/grazing
Moderate							long-term very shallow drain- age, long-term use
Major							long-term deeply drained or inundated
Maximal							intensively drained

Możliwość odtworzenia

Source: Schumann & Joosten 2008

W wyniku odwodnienia torfowiska, wierzchnia warstwa torfu ulega mineralizacji, w czasie której dochodzi do uwolnienia dużych ilości dwutlenku węgla i metanu do atmosfery

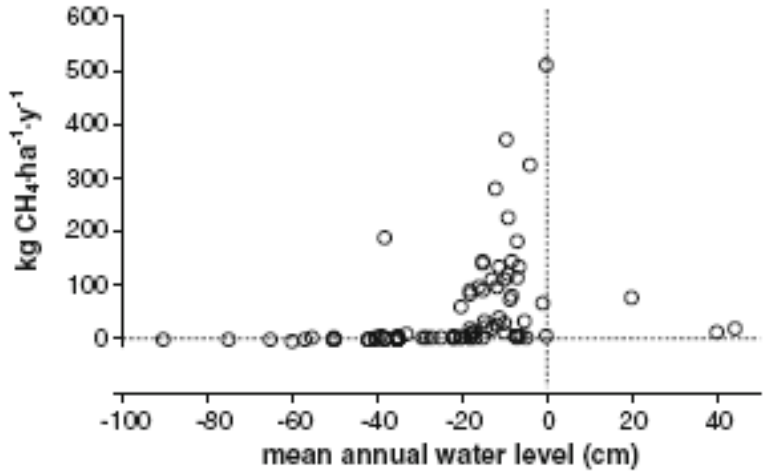


Fig. 2 Annual methane emissions (kg CH_4 ha^{-1} $year^{-1}$) from peat soils in relation to the mean annual water level ($n = 99$). Data collated from Augustin (2003, unpubl.), Augustin & Merbach (1998), Augustin et al. (1996), Bortoluzzi et al. (2006), Drösler (2005), Hendriks et al. (2007), Jacobs et al. (2003), Meyer (1999), Müller (1999), Sommer et al. (2003), Tauchnitz et al. (2008), Van den Bos (2003), Van den Pol-Van Dasselaar et al. (1999), Van Huissteden et al. (2006), Von Arnold (2004), Wild et al. (2001). Data from ditches and flooded harvests are not included

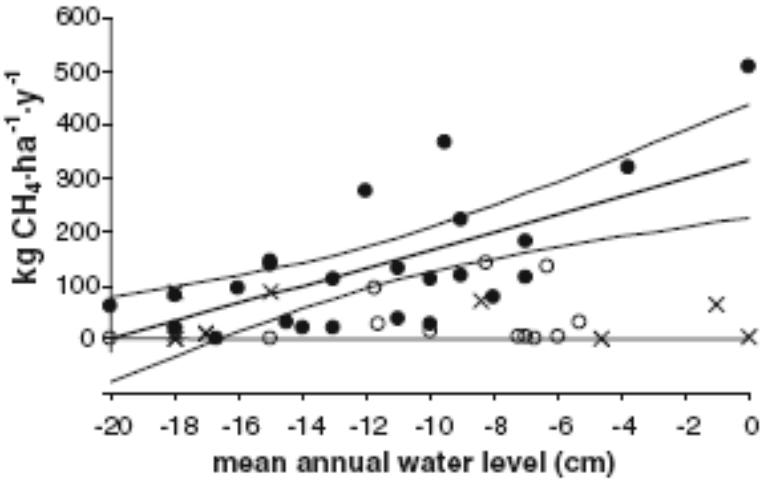
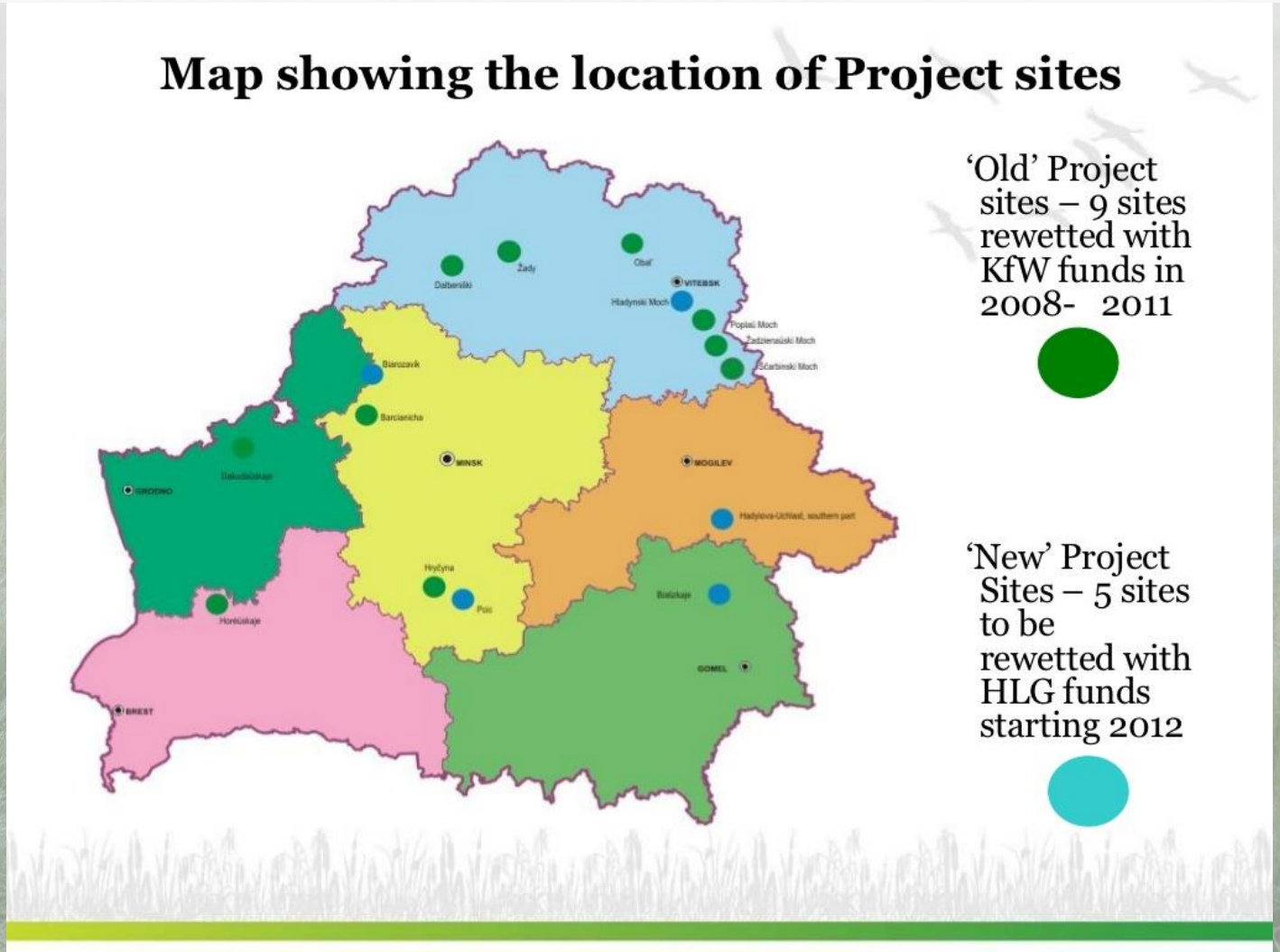


Fig. 3 Annual methane emissions (kg CH_4 ha^{-1} $year^{-1}$) from peat soils in relation to the mean annual water level. Data source as in Fig. 2; only data from sites with mean annual water level ≥ -20 cm are included. The linear regression [$y = 16.7 \times (x + 20)$; $n = 24$; $r^2 = 0.76$, $P < 0.01$] applies to the *filled black dots*, representing sites with aerenchymous shunt species. *Open dots* denote sites with open vegetation without shunt species; *crosses* denote treed sites

Couwenberg et al. 2011

Renaturalizacja torfowisk na Białorusi



Renaturalizacja torfowisk na Białorusi

Current scenario description

From the proposed options the following "medium scenario" foresees the following:

Additional area rewetted 2011-2015 – 9 440 ha
Additional area rewetted 2016-2020 – 0 ha

Emission reductions 2011 -2015 – 260 000 tCO_2e
Emission reductions 2016 – 2020 – 365 000 tCO_2e
Emission reductions 2021-2028 – 246 000 tCO_2e

TOTAL reductions 2011-2028 – 871 000 tCO_2e

Renaturalizacja torfowisk na Białorusi

Tab. 1: Kumulatives global warming potential (GWP) von 42.110 ha Mooren in den nächsten 10 Jahren mit und ohne Widervernässung (nach JOOSTEN & AUGUSTIN 2006)

					GWP CO_2 eq. kt * 100 a-1
Ohne Wiedervernässung					40,560.01
Mit Vernässung	Szenario 1	5 yrs	15 yrs	80 yrs	-6.81
	Szenario 2	20 yrs	15 yrs	65 yrs	2,676.53
	Szenario 3	50 yrs	1 yr	49 yrs	8,705.35
		Phase 1	Phase 2	Phase 3	

Cut-over peatland in Belarus seen from a helicopter. The abandoned peat mining site lies dry since years and birch and pine are only slowly re-vegetating the bare peat from the margin. Areas like this emit large amounts of greenhouse gases and are prone to peat fires, which also cause severe emissions. They need to be rewetted urgently and are promising for paludiculture, productive use under wet conditions.
© Wendelin Wichtmann, 2008

Renaturalizacja torfowisk na Białorusi

International carbon standards: Double verification process

VCS | VERIFIED CARBON STANDARD
A Global Benchmark for Carbon

- World's leading voluntary carbon standard
- 2011 – amended to allow Peatland Rewetting and Conservation Projects (PRC) – in frames of KfW funded project
- Approved monitoring and baseline methodology is under development - in frames of KfW funded project completion in early 2012

CCBA
The Climate, Community & Biodiversity Alliance

- Voluntary Standard applied in addition to VCS
- Ascertains that projects:
  - minimize climate change
  - support sustainable development
  - conserve biodiversity

Moor Futures

Ihre Investitionen in Klimaschutz.

Renaturalizacja torfowisk w Niemczech

Erst mit dem großen, dann mit dem kleinen „Löffel“: Minister Backhaus (r.) und Helfer beim ersten Spatenstich im Polder Kieve. FOTOS: GERD RINAS

Pilotprojekt Polder Kieve

Poldereigentümer Dr. Achim Ahrendt steht der Wiedervernässung aufgeschlossen gegenüber. Die Entschädigung, die er erhalten hat, gleicht den Eingriff in sein Eigentum weitgehend aus.

Das Investment in Stichworten

Investitionsobjekt	|	Polder Kieve
Kompensationsvolumen	|	14.325 Tonnen Kohlendioxidäquivalente
Investitionsvolumen	|	14.325 MoorFutures
Investitionslaufzeit	|	50 Jahre
Preis pro MoorFuture	|	35 Euro

Renaturalizacja torfowisk i paludikultura

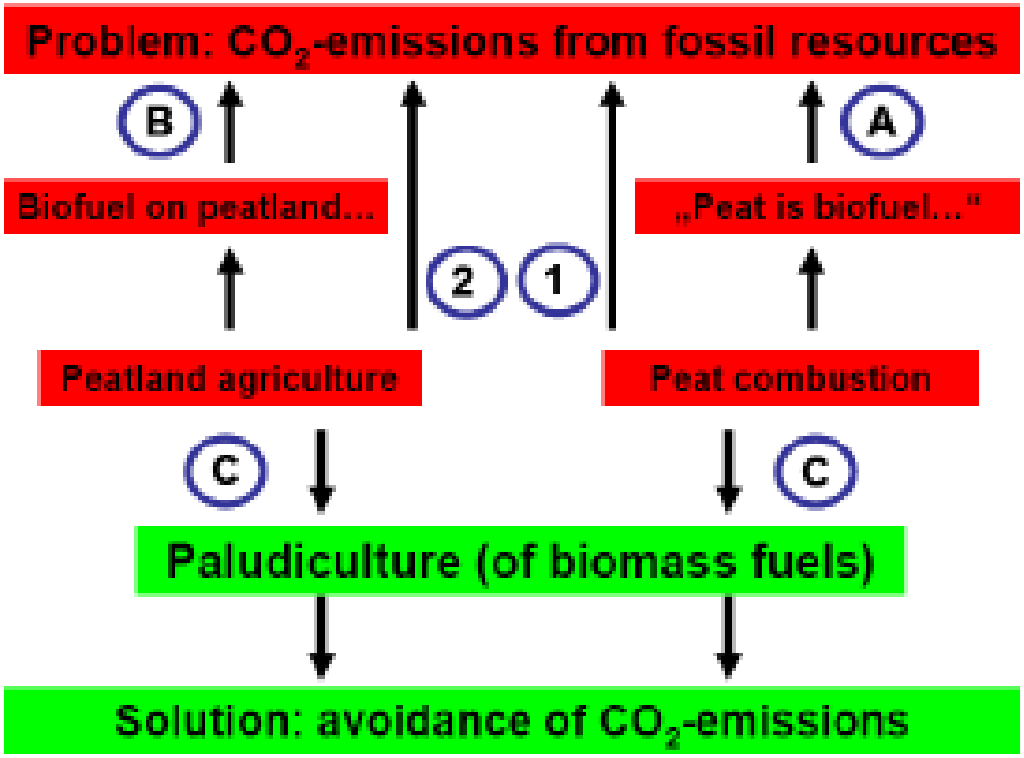


Fig. 2: The role of peatlands with respect to the CO_2 problem (from Joosten 2007).

Paludiculture is paludifuture:

Climate, biodiversity and economic benefits from agriculture and forestry on rewetted peatland

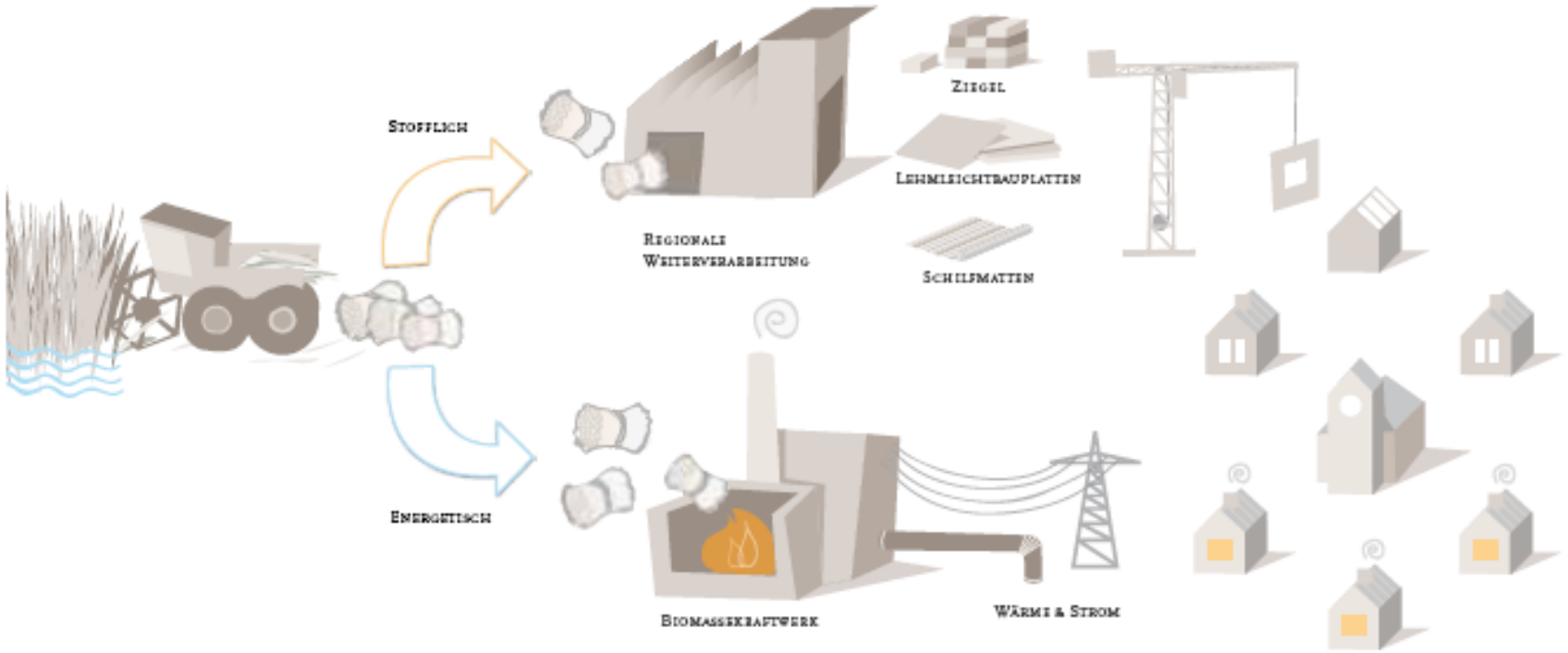
Tab. 1: Examples of biomass utilisation from wet peatlands in temperate Europe (changed after Wichtmann et al. 2000). Q* = demand for quality: ++ = high. + = medium, 0 = low).

Utilisation		Plant growth	Harvest	Q*
Agricultural	Ex situ fodder (hay, silage)	Wet meadows, reeds	Early summer	++
	In situ fodder (grazing)	Wet meadows, reeds	Whole year	++
	Litter	*Carex* meadows, reeds	Summer/autumn	0
	Compost	Wet meadows, reeds	Late summer	0
Industrial	Roofing material	Reeds	Winter	++
	Form-bodies	Wet meadows, reeds	Autumn/winter	+
	Construction/insulation	*Phragmites* reeds	Winter	++/0
	Paper (cellulose)	*Phalaris-Phragmites* reeds	Winter	+
	Basket-ware	Willow shrubs	Autumn	++
	Timber/furniture/veneer	Alder swamps	Frost	++
Energetic	Direct combustion and gasification	Alder/willow swamps, reeds	Autumn/winter	0
	Fermentation	Wet meadows, reeds	Early summer	+
	Liquid 'sun fuels'	Wet meadows, reeds	Whole year	0
Other	Officinal	Natural mires/plantations	Early summer	++
	Food	Natural mires/plantations	Summer/autumn	++
	Growing media	Peatmoss stands	Whole year	++

Paludiculture is paludifuture:

Climate, biodiversity and economic benefits from agriculture and forestry on rewetted peatland

Beispiel für regionale Verwertungsketten:



Renaturalizacja torfowisk i paludikultura

IUCN | National Committee United Kingdom

Peatland Programme

Global Peatland Restoration

demonstrating success

Możliwości finansowania renaturalizacji torfowisk w Polsce

W ciągu ostatnich 60 lat ok. 816 800 ha torfowisk niskich (80% stanu) w Polsce zostało osuszonych
(Czaplak I., Dembek W., 2000. Torfowiska Polski jako źródło emisji dwutlenku węgla. Zeszyty edukacyjne 6/2000, 61-71, IMUZ-Falenty)

Emisja CO_2 ze zmeliorowanych torfowisk w Polsce została oceniona na 23 Mt/rok. W efekcie Polska zajmuje 10 miejsce wśród największych emitorów w świecie i 5 miejsce w Europie

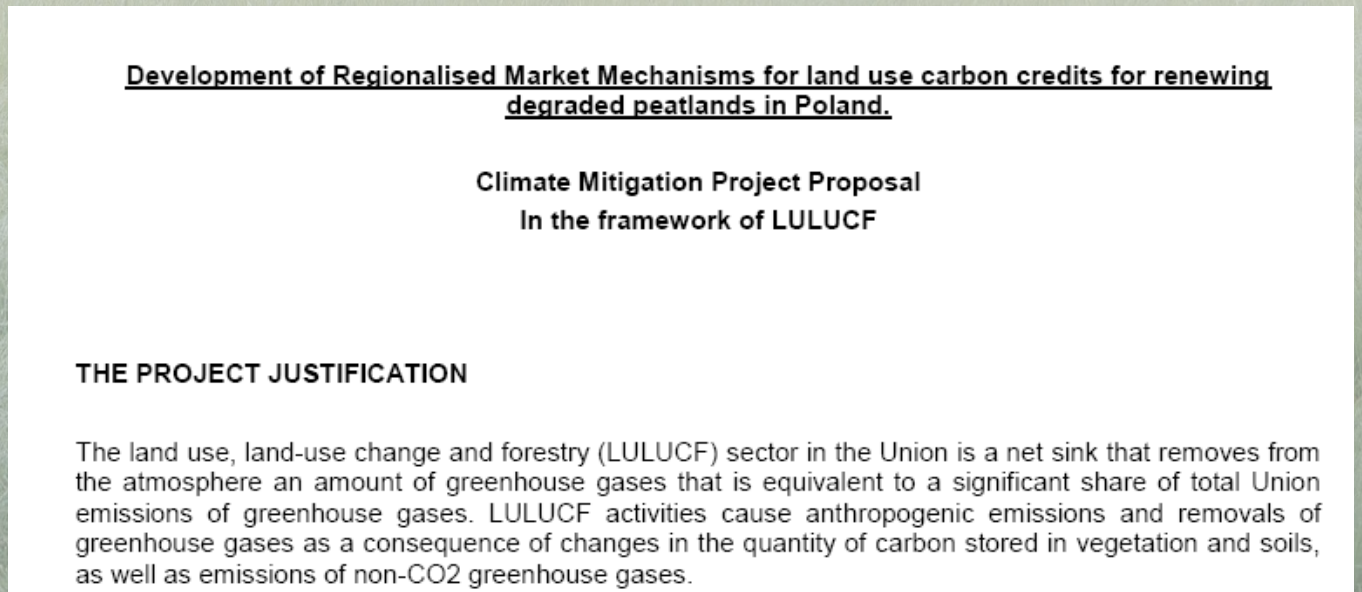
(Joosten, H. (2009): The Global Peatland CO_2 Picture. Peatland status and drainage related emissions in all countries of the world. Wetlands International)

Możliwości finansowania renaturalizacji torfowisk w Polsce

Rynek handlu emisjami gazów cieplarnianych jest regulowany poprzez Dyrektywę Parlamentu Europejskiego i Rady 2009/29/WE z dnia 23 kwietnia 2009 r. zmieniającą dyrektywę 2003/87/WE w celu usprawnienia i rozszerzenia wspólnotowego systemu handlu uprawnieniami do emisji gazów cieplarnianych oraz przez Ustawę z dnia 22 grudnia 2004 r. o handlu uprawnieniami do emisji do powietrza gazów cieplarnianych i innych substancji. (Dz. U. nr 281, poz. 2784).

Wprowadzenie redukcji emisji powstałych w ramach odtwarzania torfowisk na rynek obowiązkowy leży w gestii Ministra Środowiska.

Rozpatruje to m.in. „Strategiczny plan adaptacji dla sektorów i obszarów wrażliwych na zmiany klimatu do roku 2020 z perspektywą do roku 2030". Ministerstwo Środowiska. Warszawa, październik 2013 r.



Development of Regionalised Market Mechanisms for land use carbon credits for renewing degraded peatlands in Poland.

Climate Mitigation Project Proposal
In the framework of LULUCF

THE PROJECT JUSTIFICATION

The land use, land-use change and forestry (LULUCF) sector in the Union is a net sink that removes from the atmosphere an amount of greenhouse gases that is equivalent to a significant share of total Union emissions of greenhouse gases. LULUCF activities cause anthropogenic emissions and removals of greenhouse gases as a consequence of changes in the quantity of carbon stored in vegetation and soils, as well as emissions of non-CO2 greenhouse gases.

Ogólnopolskie Towarzystwo Ochrony Ptaków

www.otop.org.pl

e-mail:
jaroslaw.krogulec@otop.org.p

Dziękuję bardzo za uwagę!

Renaturalizacja torfowisk na Białorusi

The land use, land-use change and forestry (LULUCF)
Emissions and removals of greenhouse gases resulting from the LULUCF sector are not counted towards the Union's 20 % greenhouse gas emission reduction targets for 2020

However, the European Parliament and the Council by taking the Decision no 529/2013/EU, point out that "*In the context of moving to a competitive low-carbon economy in 2050, all land use should be considered in a holistic manner and LULUCF should be addressed within the Union's climate policy*" and argues that "*The LULUCF sector can contribute to climate change mitigation in several ways in particular by reducing emissions, and maintaining and enhancing sinks and carbon stocks. In order for measures aiming in particular at increasing carbon sequestration to be effective, the long-term stability and adaptability of carbon pools is essential".*
DECISION No 529/2013/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 May 2013 on accounting rules on greenhouse gas emissions and removals resulting from activities relating to land use, land-use change and forestry and on information concerning actions relating to those activities. L 165/80, Official

Renaturalizacja torfowisk na Białorusi

The International Panel on Climate Change, at its 33rd Session (May 2011 in Abu Dhabi), decided to produce the 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands (Wetlands Supplement), in order to fill in the methodological gaps in the 2006 IPCC Guidelines with regard to wetlands, focusing on the rewetting and restoration of peatlands.

The UNFCCC XIX Conference of the Parties, by its Decisions approved the 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands, and encourages Annex I Parties to use it in preparing their annual inventories under the Convention due in 2015 and beyond.

2013 SUPPLEMENT TO THE 2006 IPCC GUIDELINES FOR NATIONAL GREENHOUSE GAS INVENTORIES: WETLANDS. Methodological Guidance on Lands with Wet and Drained Soils, and Constructed Wetlands for Wastewater Treatment.

http://unfccc.int/files/adaptation/application/pdf/tanabe_wetlands_supplement_ws_oct2013_rev2.pdf

Decision 24/CP.19. Revision of the UNFCCC reporting guidelines on annual inventories for Parties included in Annex I to the Convention.

Renaturalizacja torfowisk na Białorusi

Poland by ratifying the United Nations Convention Framework on Climate Change and its Kyoto Protocol, joined the international efforts to prevent climate change. One of the main obligations arising from the ratification of the Kyoto Protocol by Poland is to reduce greenhouse gas emissions by 6 % between 2008 – 2012 compared to the base year, which is 1988 , according to the provisions of Article 4.6 of the UNFCCC and the decisions 9/CP.2. For the HFCs , PFCs and SF6 gases and gas groups, 1995 was adopted as the base year.

Renaturalizacja torfowisk na Białorusi

In 2011, the total national GHG emissions amounted to about 399.390,000 tons of eq. CO2, excluding emissions and removals of greenhouse gases from category 5 (Land use, land use change and forestry - LULUCF) . In comparison to the base year emissions for the year 2011 decreased by 29.1 %.
Poland, for the period 2008-2011, provided each year the balance of emissions and removals of greenhouse gases, broken down by activities related to land use, land use change and forestry (LULUCF) activities under Article 3.3 and 3.4 of the Kyoto Protocol. Only the activities within forestry sector were included. For activities related to afforestation of non-forest land and forest management balance is negative, which means the net CO2 uptake.
In 2011, the activities under Article 3.3. of KP, i.e. afforestation / reforestation resulted in emission reductions in the amount of 6,129.16 Gg eq. CO2, and the deforestation in increase of emissions by 235.67 Gg eq. CO2. Activities under art. 3.4. of KP – Forestry reduced emission by 25.232,72 Gg eq. CO2. In total the category 5 (LULUCF) reduced the total GHG emissions of Poland by 7,4%.
Neither arable lands nor grasslands and renewing plant cover are included in possible range of activities within the art. 3.4. of KP.

Renaturalizacja torfowisk na Białorusi

According to IPPC good practice guidance, Poland has 1.255 mill ha of peatland areas (unmanaged and managed), of which 760 thou ha constitute drained peatland in agriculture sector under the cropland and grassland, another 370 thou ha are drained managed forest and finally some 2,5 thou ha undergoes peat extraction.
Original extent of peatlands in Poland estimated on the basis of fen peat deposit extent was about 12,5 thousands of square kilometres (Computer Bank of Peatlands in Poland 1996) which equates about 4,2% of the total country surface. Fens occupy 92 percent, transitional bogs 3 percent and raised bogs 4 percent of the total peatland area (Ilnicki *et al.*, 2002).).
In 77 percent of the 49 500 peatland sites, the peat layer does not exceed 2 metres in depth (Ilnicki and Zurek, 1996).
Good Practice Guidance for Land Use, Land-Use Change and Forestry. The Intergovernmental Panel on Climate Change (IPCC), 2003.

Renaturalizacja torfowisk na Białorusi

Carbon stock and greenhouse gas emissions Poland's estimated peat carbon stock is 875 megatonnes. With respect to peatland emissions, Poland is the 10th most important country in the world (23.5 megatonnes CO2 per year) (Joosten, 2009). The National Adaptation Strategy was adopted by the Council of Ministers in October 2013. The chapter 1.4 - Protection of biodiversity and forestry in the context of climate change" is the only part of the Strategy which mentions wetlands as ecosystems requiring actions aimed at their protection and restoration whenever it is possible. Regarding the LULUCF, the Strategy focuses exclusively on forests and does not offer any future measures focused on wetlands and peatland in particular. Strategiczny plan adaptacji dla sektorów i obszarów wrażliwych na zmiany klimatu do roku 2020 z perspektywą do roku 2030. Ministerstwo Środowiska. Warszawa, październik 2013 r.

Renaturalizacja torfowisk na Białorusi

The Decision no 529/2013/EU provides for accounting rules applicable on a voluntary basis to revegetation and wetland drainage and rewetting activities, however Poland within the LULUCF has not chosen any voluntary activities within the Kyoto Protocol art. 3.4 yet. The activities of afforestation, reforestation, deforestation and forest management within the LULUCF decrease (counterbalance) some 8 % of total Polish emissions of GHG. The rewetting activities over degraded peatlands could further reduce emissions by (depends on estimates) from 3,1% till some 8,4%. These rates, confronted with national commitment to reduce emission by 20% up to year 2020 can not be neglected.

DECISION No 529/2013/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 21 May 2013 on accounting rules on greenhouse gas emissions and removals resulting from activities relating to land use, land-use change and forestry and on information concerning actions relating to those activities. L 165/80, Official Journal of the European Union, 18.6.2013.

Jurczuk S. 2012. Emisja dwutlenku węgla ze zmeliorowanych gleb organicznych w Polsce. Woda-Środowisko-Obszary Wiejskie. T. 12. Z. 3 (39) s. 63–76.

JOOSTEN [2009} ???????