



Forest biodiversity and climate change



GTK

Dr. Bożena Kornatowska
Dr. Jadwiga Sienkiewicz

Photos © G&T Kłosowscy, SFIC, IEP



SFIC

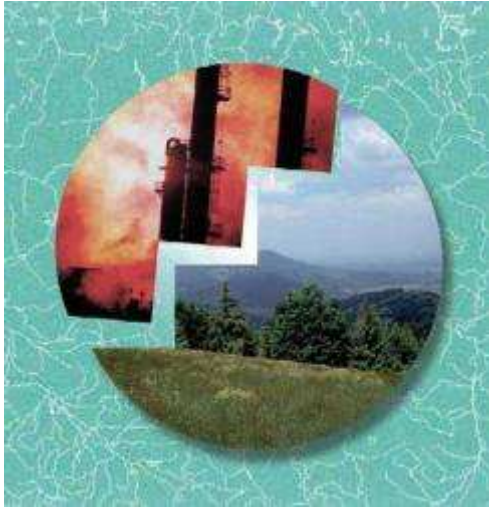
PolSCA Meeting, Brussels 25 November 2009

CONTENTS

- Institute of Environmental Protection as potential partner
- Forests in Poland versus climate change
- Initiatives to evaluate and halt the loss of biodiversity
- Challenges and actions to be taken

GTK

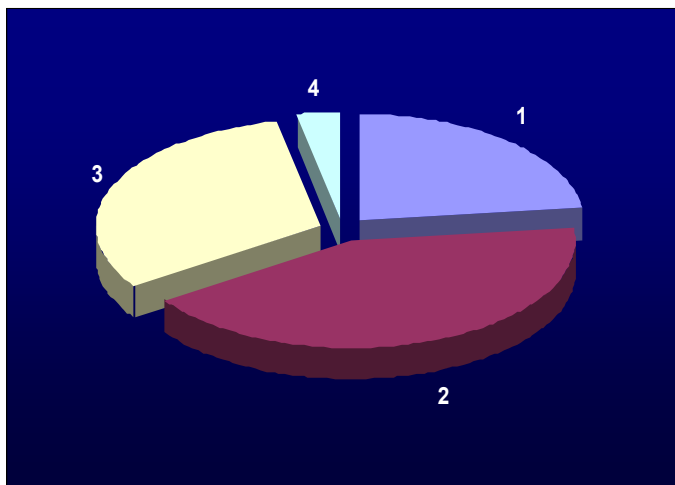
GTK



IEP

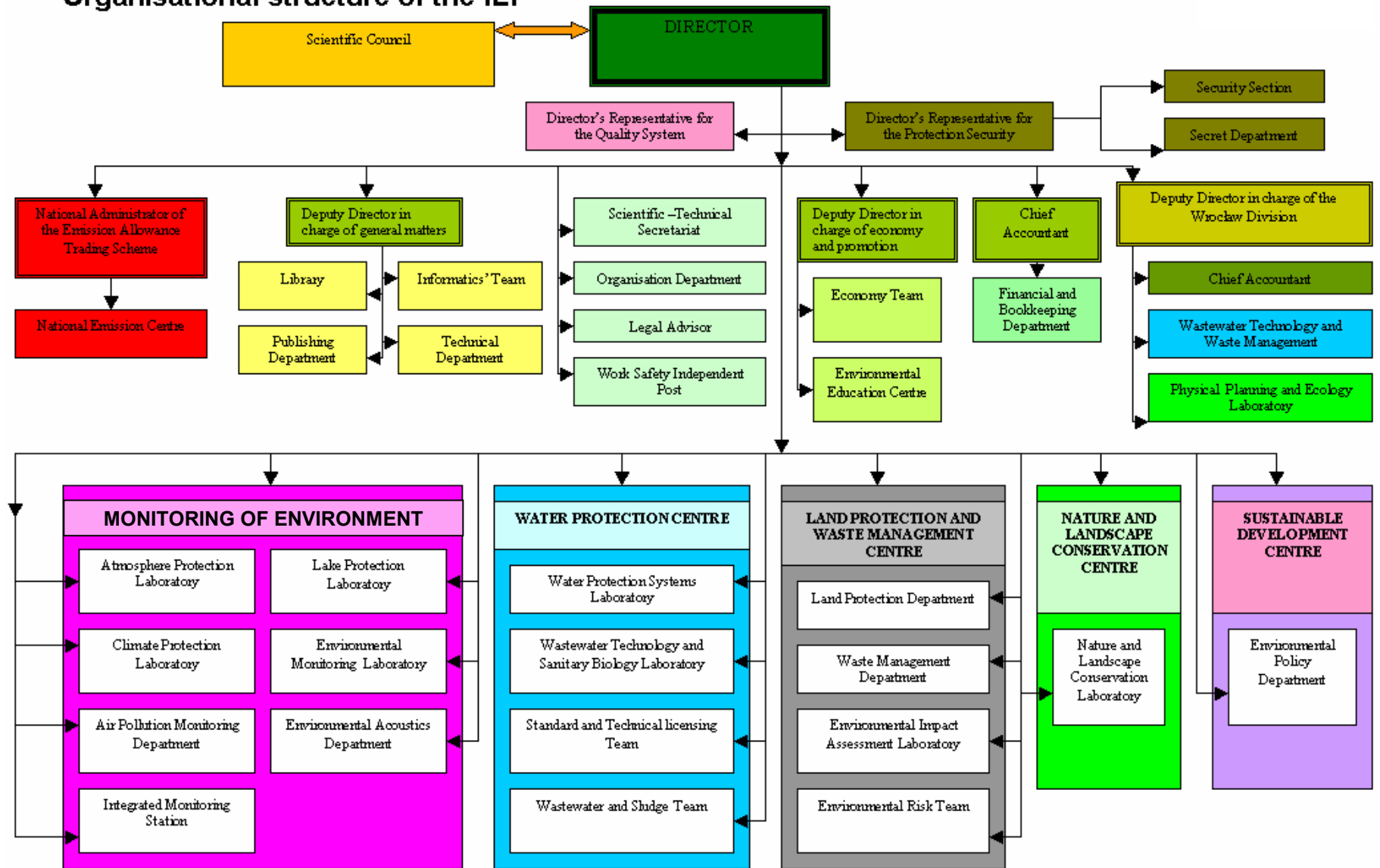
- Founded in 1986 as an independent state unit for R&D (under supervision of the Minister of Environment).
- Employs 186 persons (including the Centre for GHG Emission Balance & Trade) (28 PhD and Professor degree).
- Aim: to provide scientific background for national policies and strategies on environmental protection, including technical, economic and legal expertise for the implementation of policies.

Structure of income in 2008



1. Research financed by the Ministry of Education and Science (22%).
2. Research surveys and expertise financed by the Ministry of Environment, the Inspectorate for Environmental Protection and the National Fund for Environmental Protection and Water Management (44%).
3. Elaborations and projects performed as environmental services financed by various institutions, including international sources (32%).
4. Other financial operations (2%).

Organisational structure of the IEP



Key:
 → subordinate relations,
 ↔ advisory and consultancy functions,



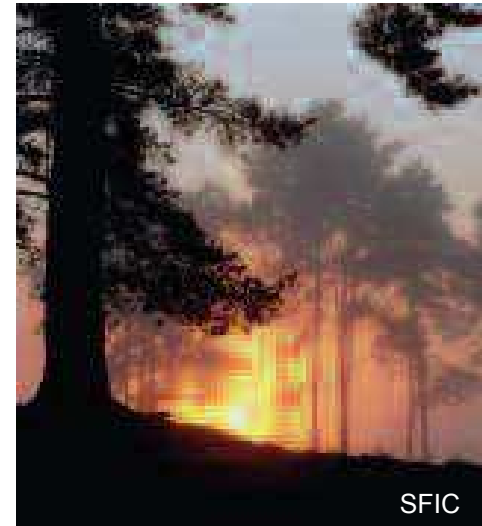
scientific research areas

IEP: Nature and Landscape Conservation Centre

Main activities

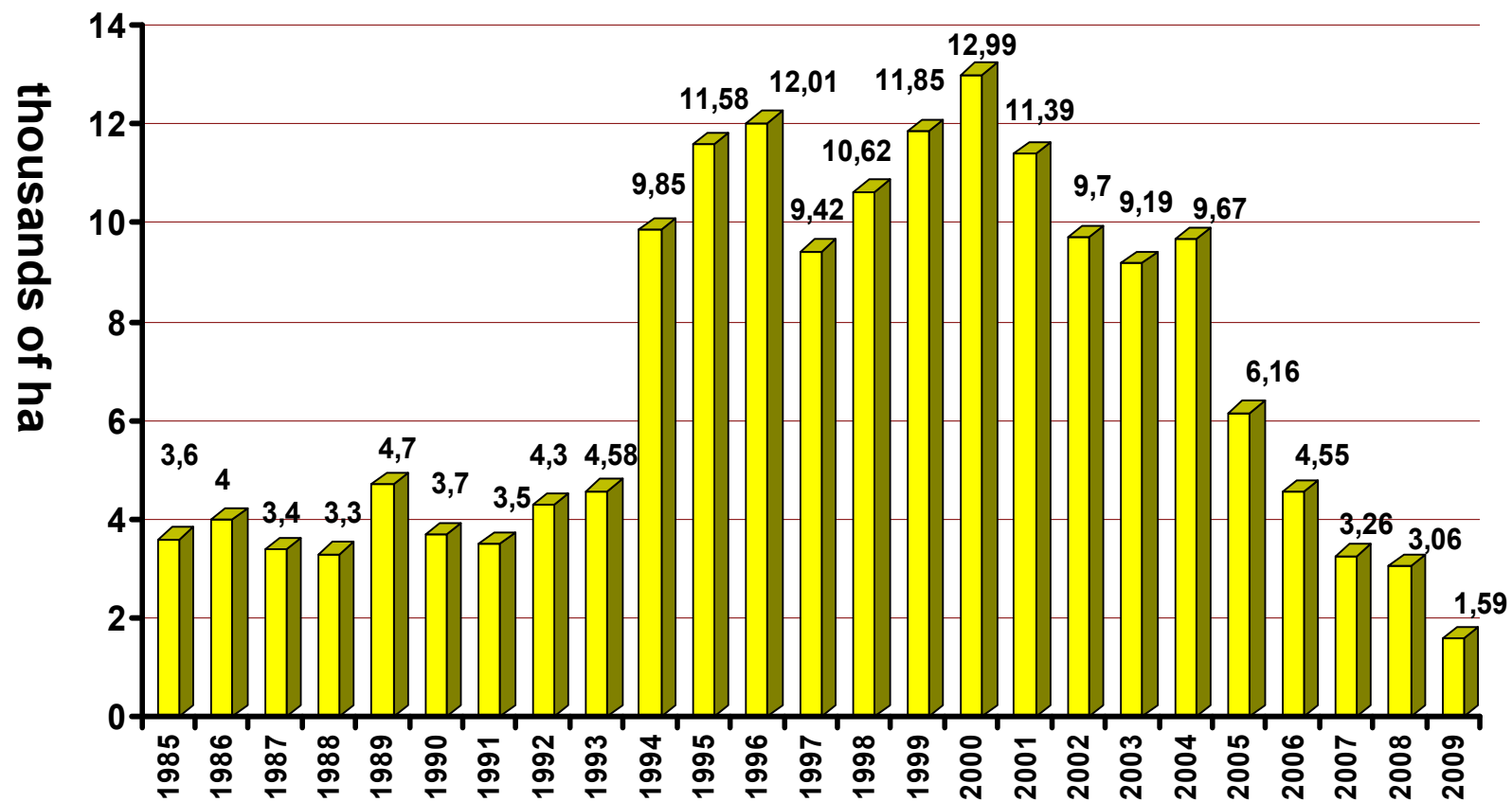
- ❖ **Studies on species and site diversity**
- ❖ **Studies on climate and biodiversity**
- ❖ **EIA for various investment types**
- ❖ **Development of textual and GIS databases for designated areas in Poland**
- ❖ **International cooperation:**
 - **European Green Belt**
 - **Ramsar Convention**
 - **Natura 2000**
 - **CBD**
 - **UNFCCC**

Forest in the face of climate change



- ❖ Deforestation has taken centre stage in the UNFCCC negotiations (Bali Action Plan, 2007).
- ❖ According to the IPCC WGIII (2007), during the decade of the 1990s, deforestation in the tropics and forest re-growth in temperate and boreal zones remained the major factors contributing to emissions and removals of greenhouse gases (GHG) respectively.
- ❖ Carbon accumulation in Poland's forests has been constantly increasing as a result of stand conversion, introduction of underwood and due to afforestation.

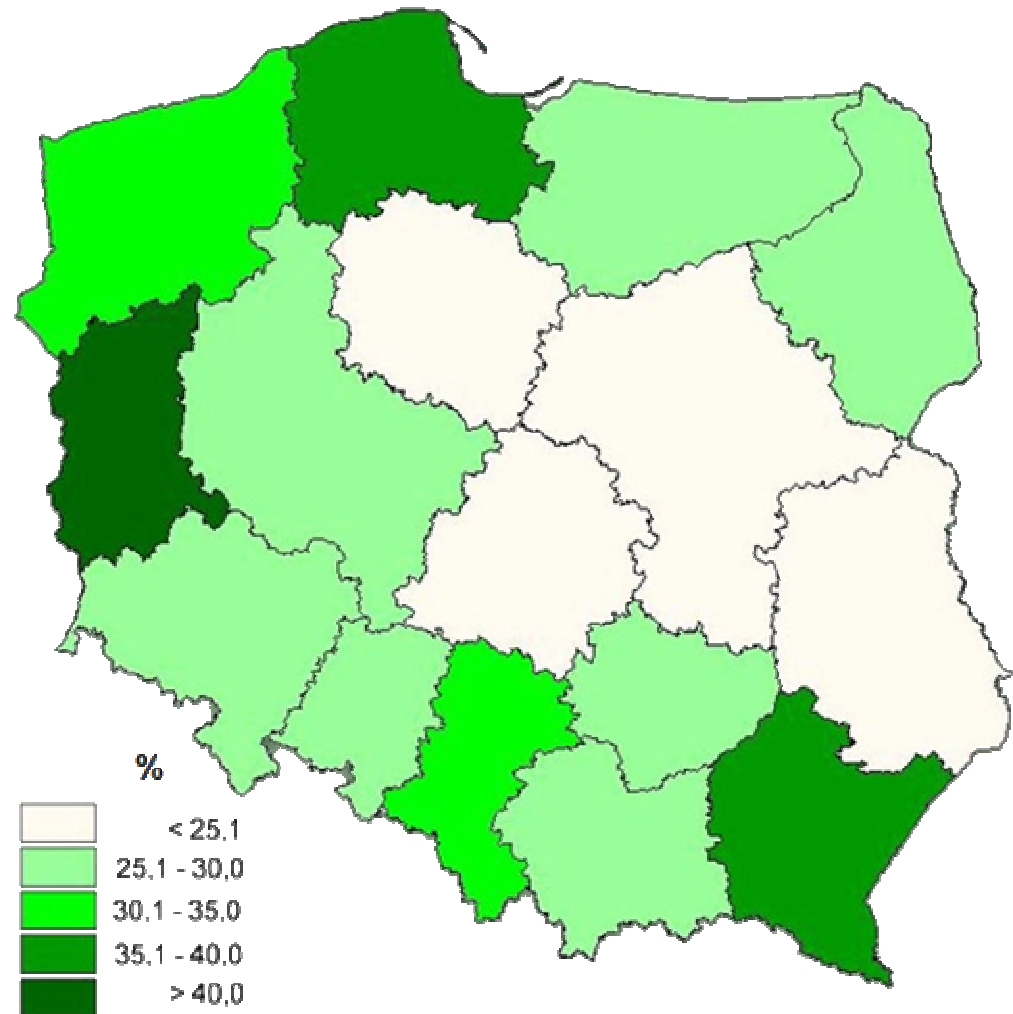
Afforestation in the State Forests from 1995 to 2009 (NPAFC - The National Programme for the Augmentation of Forest Cover)



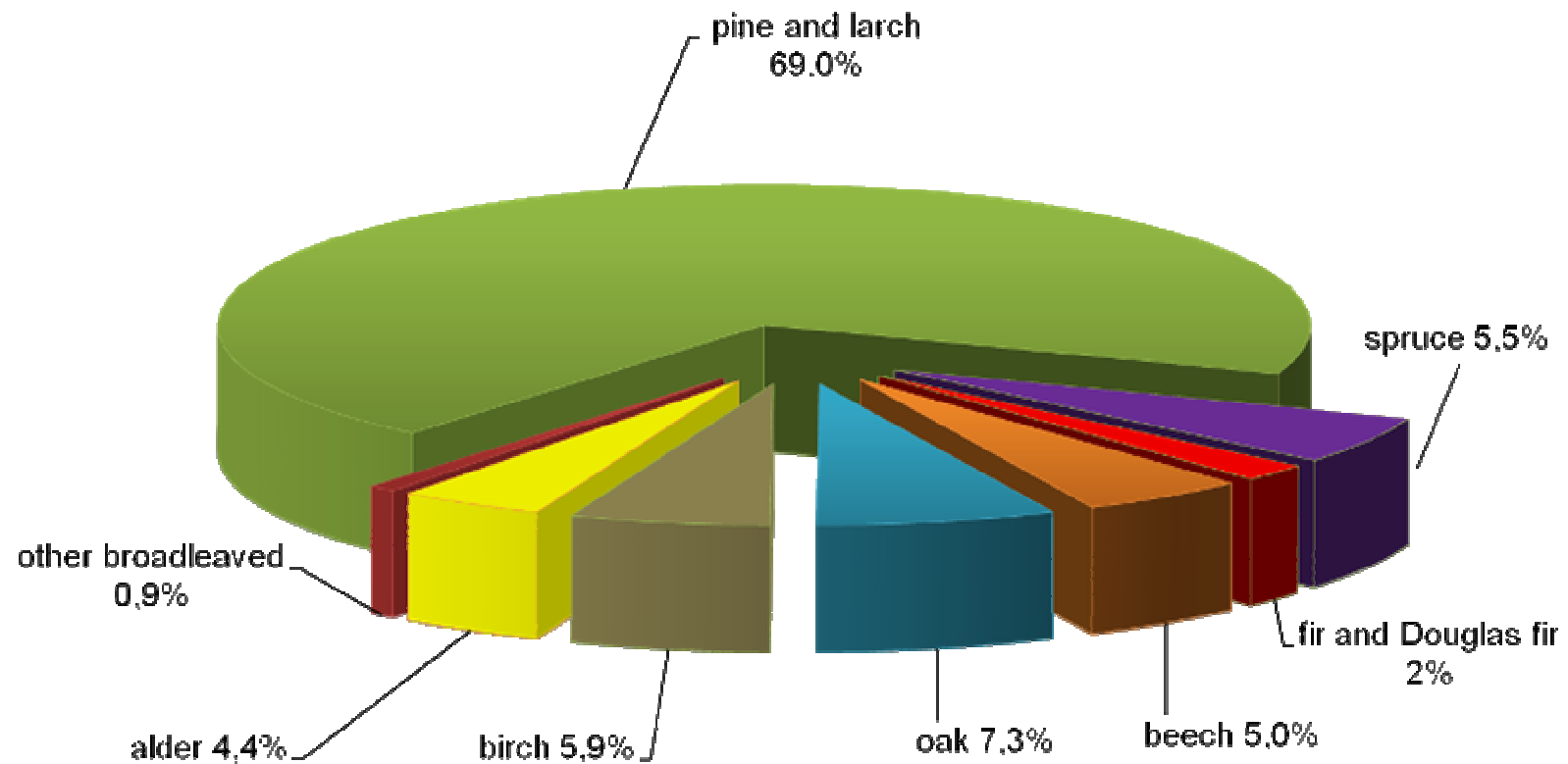
Forest cover in Poland by State Forests administration districts

**Forest area:
ca. 9.2 million ha**

Forest cover: 29%



Species structure of forest stands in SF



Forests and Biodiversity

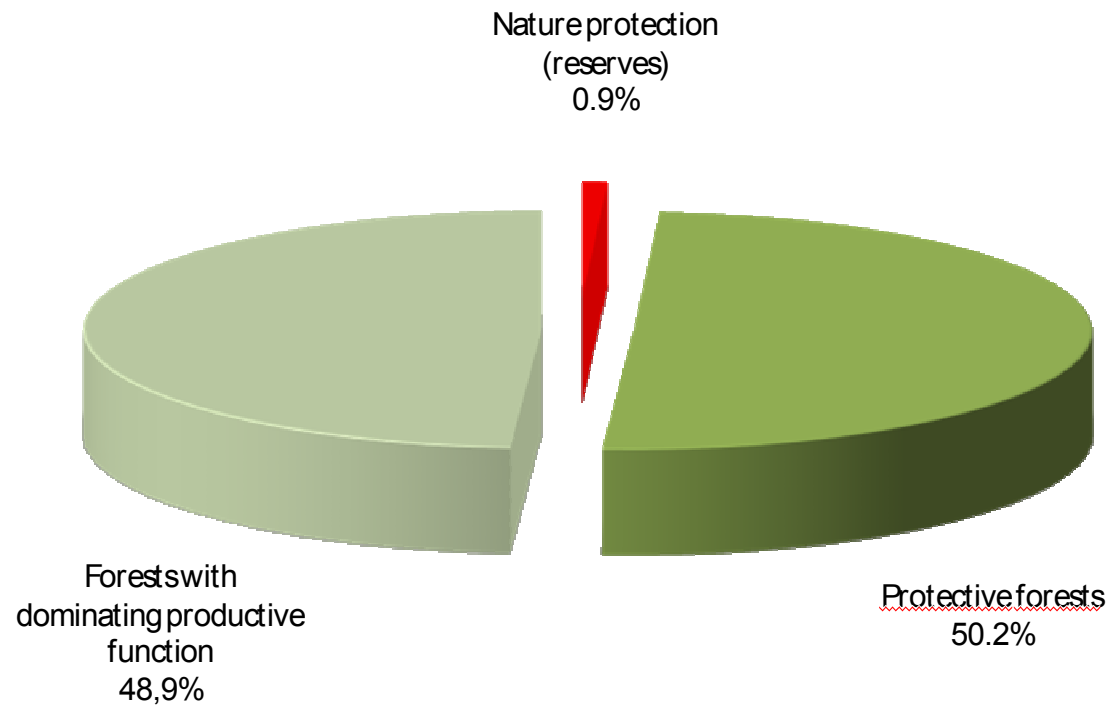


- ❖ For a technical definition of biodiversity, the 1992 United Nations Convention on Biological Diversity, Article 2 defines 'biological diversity' as: 'the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems'.
- ❖ Despite that 75% of forest area is taken by monospecific, simplified stands it is estimated that forest environment embraces as many as 32,000 species, or about 65% of all species occurring in Poland.
- ❖ Within the limits of the State Forests NFH there are numerous natural sites under various designations. Most of the European Network Natura 2000 sites in Poland governed by the provisions of Habitats Directive and Birds Directive, are situated in forest areas managed by the State Forests NFH.



GTK

Forest Nature Protection in Poland



Forest Biodiversity and Climate



- Most ecosystems and the biodiversity contained within them have become exposed to multiple pressures, such as habitat destruction, pollution, overexploitation and climate change.
- According to the Millennium Ecosystem Assessment (2005) climate change is likely to become the dominant direct driver of biodiversity loss by the end of the century.
- Projected changes in climate, combined with land use change and the spread of alien species will most probably accelerate species loss.
- Poland will face significant decrease of spruce in the species composition of the mountain zone forests. In the pessimistic variant spruce will totally disappear in Poland moving to the north and east of our continent.

Initiatives (policies) to evaluate and halt the loss of biodiversity



Throughout the development of international policy focused on biodiversity, the need for tools for assessment and evaluation of forest diversity has arisen:

- CBD COP (2002) identified general indicators for assessing progress towards the 2010 Biodiversity Target at the global level – Parties are invited to establish their own targets and identify biodiversity indicators within the flexible general framework.
- Pan-European level: MCPFE developed indicators for evaluating forest biodiversity status (Vienna 2003).
- EU level: initiative SEBI 2010 — Streamlining European 2010 Biodiversity Indicators include 26 indices of which several can be applied for forests.

Polish policy to preserve forest diversity: SFM criteria and indicators of biodiversity status



- Changes in the area of natural & semi-natural habitats as well as strict reserves and forests under special protection management.
- Changes in the ratio of threatened species in the total number of all forest species.
- Changes in the number and area of stands specially managed for the protection of gene pools.
- Percent of natural regeneration area versus the total area of forest under regeneration.
- Area of forests with introduced undergrowth and/or ongoing stand reconstruction.
- Mean area of special forest habitat management units per 1000 ha.

WHAT ARE THE CHALLENGES

- ❖ What is the current status?
- ❖ What are the causes?
- ❖ What actions can be taken?



Current status



In view of current pressures, especially due to global change, there is a need to monitor changes in the forest biodiversity status. In Poland's forests several activities have been performed:

- General Map of Biodiversity of Polish Forests (1: 500 000) was published (1997).
- The overall inventory of natural habitats and species of forest flora and fauna provides general data on natural habitats and species listed by Annexes to the Habitats and Birds Directives (2006-2007).
- In total, 76 types and subtypes of natural habitats of European importance were identified along with 48 animal species and 23 plant species of European importance as well.

The inventory constitutes a good base for examination of threats to Poland's forest biodiversity.



The causes

Most important causes of forest biodiversity loss involve:

- Habitat fragmentation
- Industrial & infrastructure investment and urban sprawl
- Land draining in the past
- Chemicals in environment
- Tourist pressure
- Climate change



Area of numerous hydrogenic forest habitats is shrinking and forest wetlands are disappearing.



Actions to be taken



Most urgent actions include increasing natural water retention by:

- Restoration of natural forest wetlands
- Preservation of natural mid-forest aquatic bodies
- Maintenance of riparian forest vegetation as refuge for rare species of plants and animals
- Preservation of mid-forest mires and other wetlands as well as open meadows and dunes
- Priority to natural forest regeneration - initiation of natural forest renewal in all habitats

Photos:

Grzegorz & Tomasz Kłosowscy (GTK)
State Forests Information Center (SFIC)
Institute of Environmental Protection (IEP)

Source of data & figures:

Urszula Zabrodzka - General Directorate of the State Forests
Wojciech Gil - Forest Research Institute (FRI)
Institute of Environmental Protection (IEP)

Technical support:

Malgorzata Smogorzewska





**INSTYTUT
OCHRONY
ŚRODOWISKA**

INSTITUTE OF ENVIRONMENTAL PROTECTION

Thank you

<http://www.ios.edu.pl>

PolSCA Meeting, Brussels 25 November 2009

GTK