



Państwowe Gospodarstwo Leśne  
Lasy Państwowe



Poland  State Forests

## Climate change - management change?



Konrad TOMASZEWSKI (PhD), Director General of the State Forests  
Tomasz ZAWIŁA-NIEDŹWIECKI (Prof.), Deputy Director General

# Does climate change require forest management change?



# How can state forests contribute to climate change mitigation?

# SFM form the basis for forest contribution to climate change mitigation efforts

The Forest Act determines the model of Polish forestry, sets the goals of sustainable forest management (SFM) - including the significance of non-productive role of forest ecosystems (environmental and social).

In practice, this means that provision of non-productive functions of forests should go hand in hand with the production of wood and a variety of other social and environmental services, whenever possible in a balanced way.

The statutory obligation of the State Forests is to pursue SFM in order to ensure preservation of forests, increase of forest resources and their continuous multifunctional utilisation.

The increase of carbon stock in forests through SFM might be one of the numerous effects of the implementation of the other than productive functions.

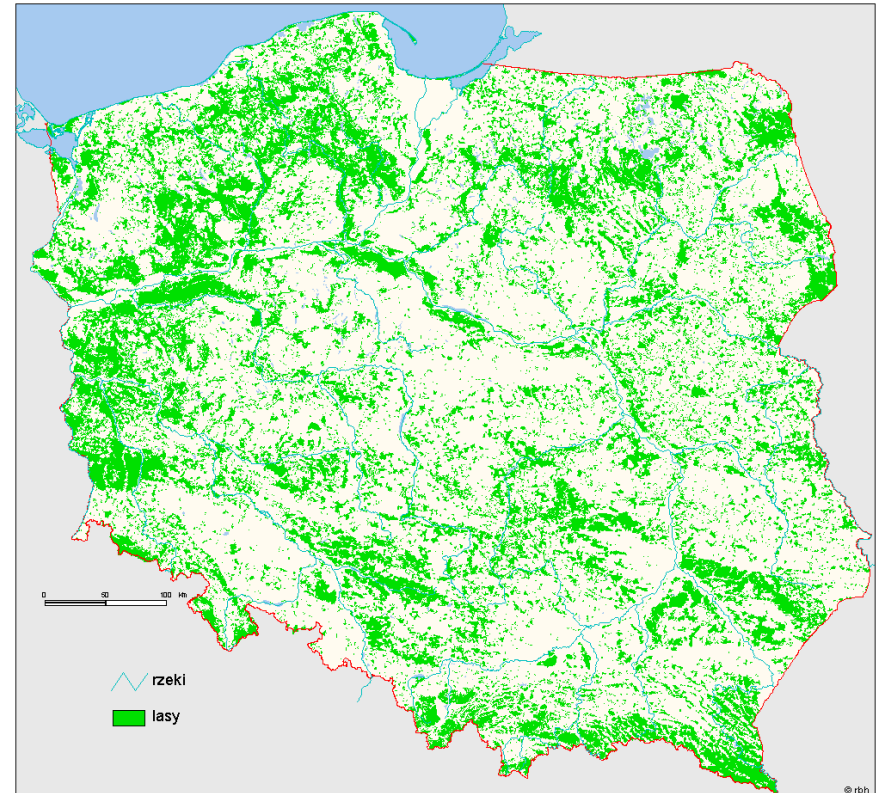
# Forests in Poland

## Total area of forests:

- 9.2 million ha (29.4% of land area)
- growing stock: 2.4 billion m<sup>3</sup>

## Ownership structure:

- 81 % of forests are publicly owned
- 77.1 % administered by the State Forests



## Organisational structure

The SF comprises:

- the Directorate-General of State Forests (DGSF),
- 17 Regional Directorates of State Forests (RDSFs),
- the basic organisational units of the SF are forest districts, which employ more than 90% of the LP's 25 000 staff.



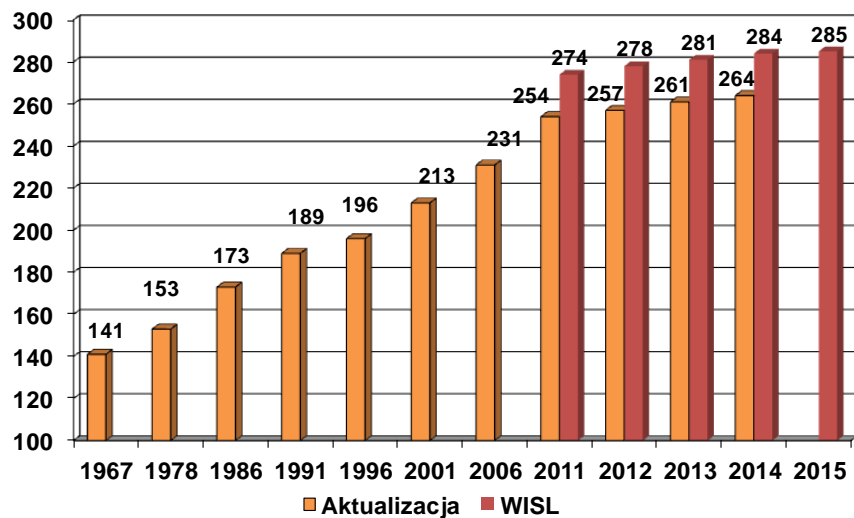
Directorate General  
of the State Forests

Regional  
Directorates  
(17)

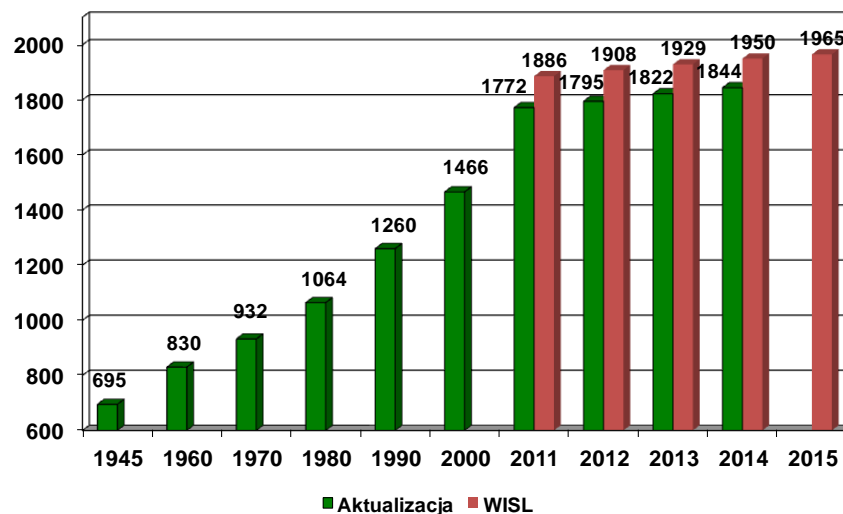
Forest Districts  
(430)

Forest Management Plan (FMP) means the primary forest management document drawn up for a given area (forest District), containing a description and assessment of the condition the given forest is in, as well as the objectives, tasks and methods of forest management (duration of 10 years)

# Growing resources



**Average growing stock: 285 m<sup>3</sup>/ha**



**Timber resources: 1 965 million m<sup>3</sup>  
gross merchantable timber**

In 2013-2020 Poland's forests are to **absorb 27 133 000** tons of carbon dioxide annually (FMRL)



Foto: <http://www.krone-trailer.com/>



A number of studies carried out in Poland have indicated that in the years 2013–2020, the total value of CO<sub>2</sub> absorption by our forests **can be higher** than the total amount of the base absorption limit for this period.

## „Forest carbon farms” (FCF)

Establishment of a functional network within the State Forests

Promotion of forest management activities that contribute to the enhancement of mitigation efforts

Support by a new research projects with the aim to improve the procedures for estimating GHG removals

Experimental national system for marketing the removal units generated as a result of additional forestry-related activities

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## Additional activities

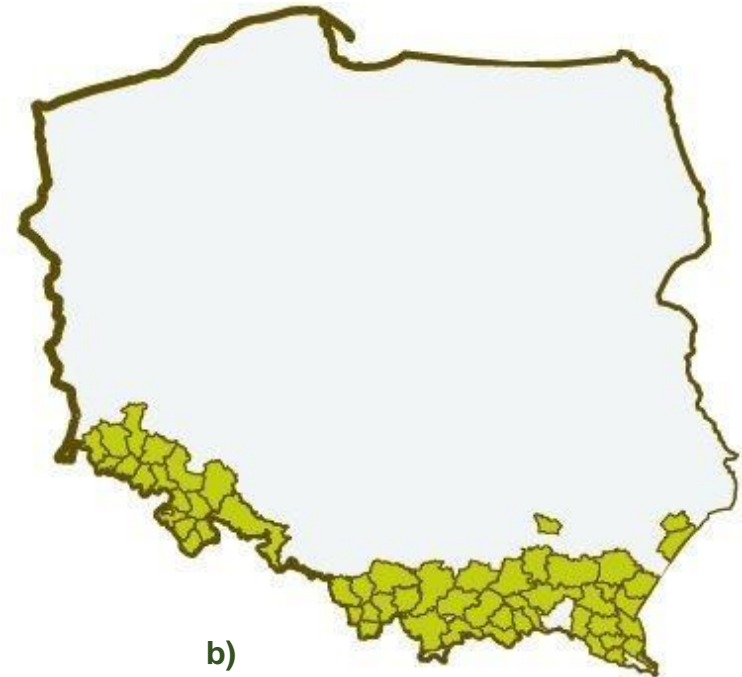
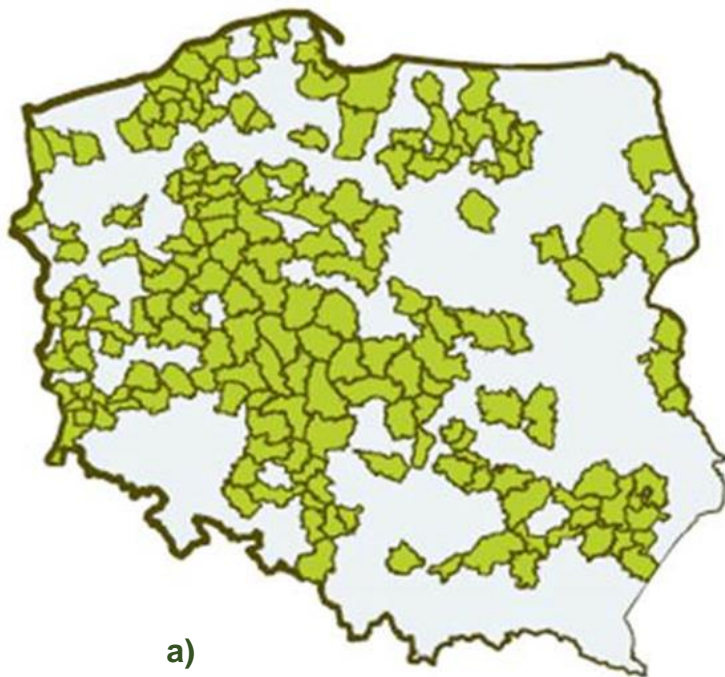
### Long term effects:

- rebuilding forest stands with regard to species composition
- shaping multi-storey structure of forest stands
- enhancing biodiversity and water retention

### Short term effects:

- revising the rotation age (defining the optimal age for the average volume increment of organic carbon absorbed by the forest stand)
- improving forestry techniques to reduce emissions (e.g. changing forest regeneration system in order to avoid exposure of the forest ground)

## Implementation of water retention program



Maps of territorial range of forest districts participating in the Small Water Retention Program in 2007-2015

a) **Water retention on lowlands** – 3600 accomplished objects in forest districts

b) **Water retention in mountainous areas** – 3500 accomplished objects in forest districts

## National Forest Inventory

- ✓ forests of all properties, all types and age classes,
- ✓ about 28 thousands of permanent sample plots,
- ✓ one cycle - five years (from 2005) ,
- ✓ annually 20% of total samples in the entire country.

## Stand and district level inventory

comprehensive information system based on numeric maps

- ✓ forest site and stand inventory,
- ✓ periodic forest inventory (10 year cycle),
- ✓ online registry on all activities on stand level - more than 2 million records.

## Monitoring and research plot networks

Various networks focused at *inter alia*:

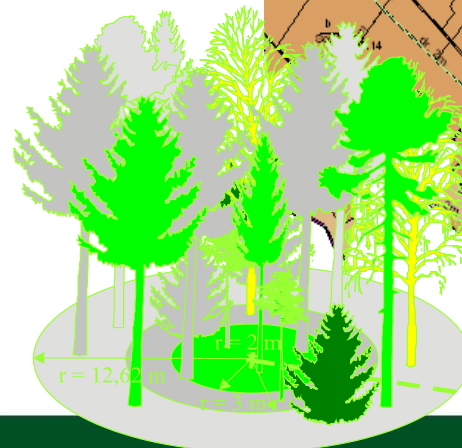
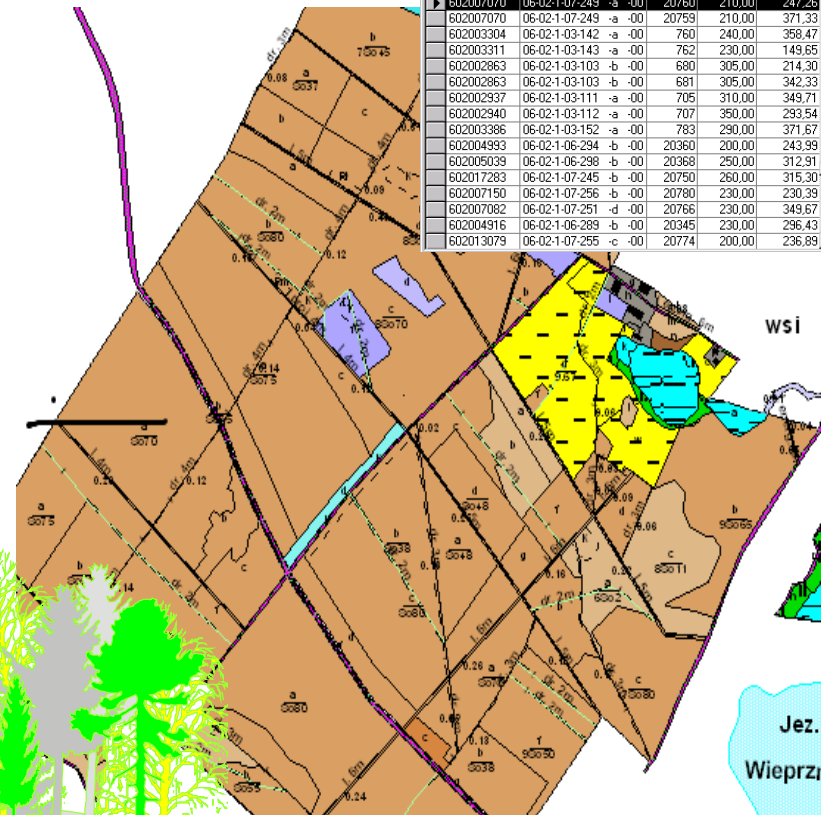
- expansion factors refinement,
- forest condition monitoring,
- forest endangerment monitoring.

Wyniki regresji  
Numer obszaru leśnego: 1

Nr taksatora	Liczba obserwacji	a	b
1	300	97,501446	0,707930
2	318	130,508687	0,589140
3	303	64,630968	0,832406
4	207	102,156809	0,696351

Nr wew. wzd.	Adres leśny	Nr pow. próbnego	x	y
602007070	06-021-07-249 -a -00	20760	210,00	247,26
602007070	06-021-07-249 -a -00	20760	210,00	371,33
602003304	06-021-03-142 -a -00	760	240,00	358,47
602003311	06-021-03-143 -a -00	762	230,00	149,65
602002863	06-021-03-103 -b -00	690	305,00	214,30
602002863	06-021-03-103 -b -00	681	305,00	342,33
602002937	06-021-03-111 -a -00	705	310,00	349,71
602002940	06-021-03-112 -a -00	707	350,00	293,54
602003386	06-021-03-152 -a -00	783	290,00	371,67
602004993	06-021-06-294 -b -00	20360	200,00	243,99
602005039	06-021-06-298 -b -00	20368	250,00	312,91
602017283	06-021-07-245 -b -00	20750	260,00	315,30
602007150	06-021-07-256 -b -00	20790	230,00	230,39
602007082	06-021-07-251 -d -00	20766	230,00	349,67
602004916	06-021-06-289 -b -00	20345	230,00	296,43
602013079	06-021-07-255 -c -00	20774	200,00	236,89



# Methods for assesment of „additionality effects”

## Comparison of carbon stocks in homogeneous stands

Outside  
„Business as usual”



Growing stock = X m<sup>3</sup>/ha

Carbon stock = C1



Forest Carbon Farms  
Additional activities



Growing stock = Y m<sup>3</sup>/ha

Carbon stok = C2

Comparison of carbon stocks in homogeneous stands characterised by:

- the same age,
- the same species composition,
- site condition.

A national system of modeling of forest carbon stocks:

→ monitoring → reporting



IN

- data from national forest inventories
- data from stand and district inventories
- growth curves
- allometric equations and biomass thus carbon sequestration of the 8 main Poland's forest species
- stand history
- soil monitoring
- meteorological data



CBM



OUT

- calculation of carbon stocks
- calculation of carbon stocks changes
  - monitoring
  - the future projection
- creation and simulation of forest management scenarios in order to assess impacts on carbon
- support strategic and operational planning
- Decision Support System (DSS)

## Overall objectives for FCF

- promote active forest management
- pave the path for accounting and reporting framework that incentivises additional mitigation action
- increase the accuracy of monitoring and reporting

*Implementation of experimental national system for marketing of removal units generated in result of additional measures in forestry*

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# Implementation of national system for marketing of removal units

- allow operators of national entities with designated emission limits as part of the ETS to purchase the carbon dioxide units absorbed by forests in order to fulfill their emission limits under the climate-energy package,
- provide the possibility for creating market opportunities to trade a portion of the registered units of absorbed emissions of carbon dioxide, with the optional purpose for obtaining funds for pro environmental development of rural areas.

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# Conclusions

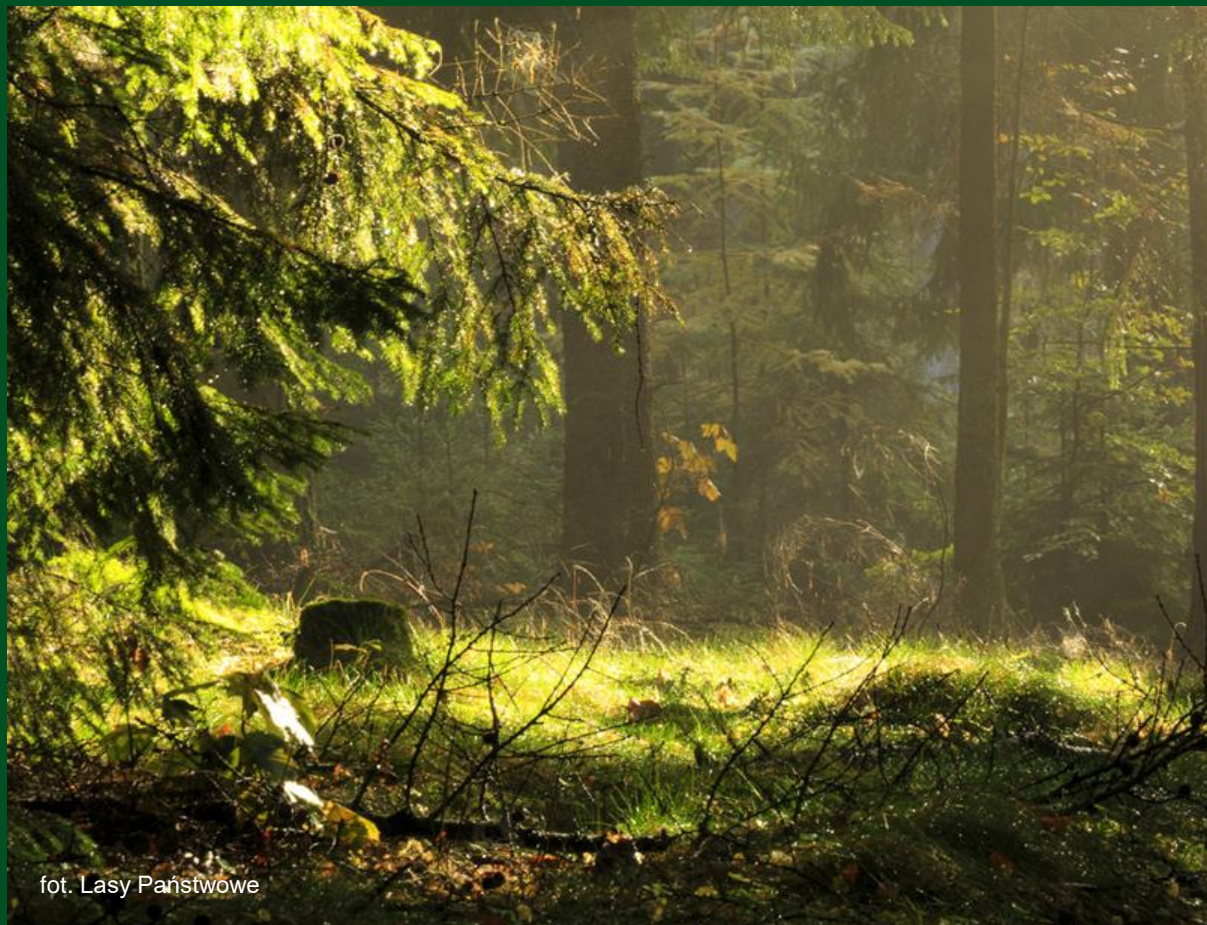
- Additional forestry activities play an important role in increasing net GHG removals
- Responsible forest management has the potential to make a much more meaningful contribution to the achievement of goals of GHG emission reduction targets
- Development of national legislation and monitoring system is necessary to enable experimental marketing of removal units

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## Thank you for your attention!

[www.lasy.gov.pl](http://www.lasy.gov.pl)  
tel. +48 22 58 98 102  
[sekretariat@lasy.gov.pl](mailto:sekretariat@lasy.gov.pl)

[www.lasy.gov.pl](http://www.lasy.gov.pl)