



Climate Change Mitigation Potential in the Republic of Belarus and Post-Kyoto Commitments



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This presentation

content

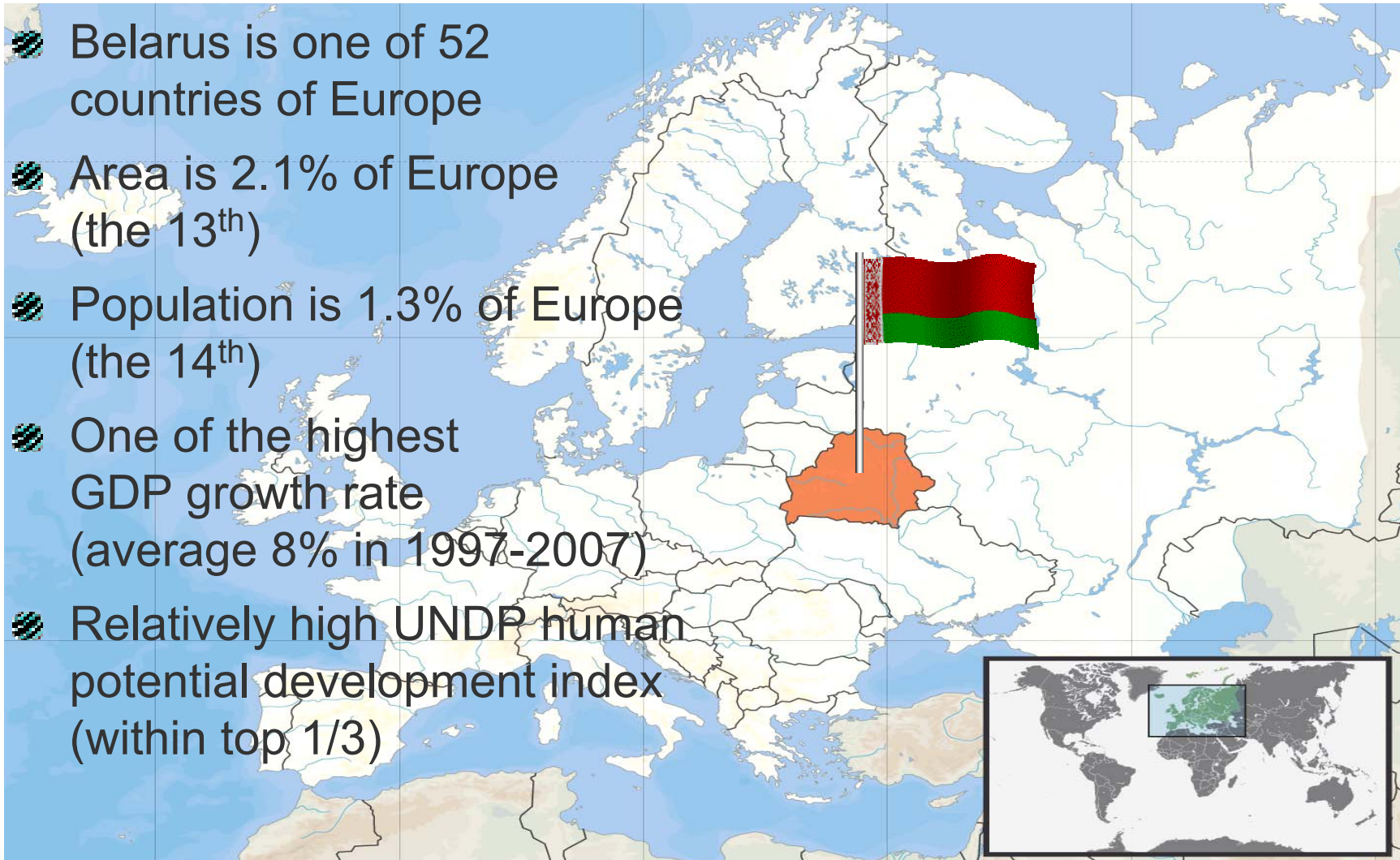
- Belarus in brief
- Country commitments in historical context
- National circumstances and GHG emission trends
- GHG sink effect: Belarusian peatlands and forests
- Restoration of degraded peatlands
- GHG emission forecast until 2020
- Climate change mitigation potential assessment
- Limiting factors for climate change mitigation potential
- Carbon market mechanisms and climate change mitigation potential
- Post-Kyoto targets of Belarus



Belarus in brief

in Europe

- Belarus is one of 52 countries of Europe
- Area is 2.1% of Europe (the 13th)
- Population is 1.3% of Europe (the 14th)
- One of the highest GDP growth rate (average 8% in 1997-2007)
- Relatively high UNDP human potential development index (within top 1/3)



Belarus in brief

in climate change conventions

- Belarus is a Party to the UNFCCC
 - ratified on 11 May 2000 (Annex 1 country)
- Belarus is a Party to the Kyoto Protocol
 - ratified on 26 August 2005
 - no commitment inscribed in Annex B
- Amendment to Annex B to the Kyoto Protocol
 - adopted by decision 10/CMP.2 and ratified by Belarus on 30 April 2007
 - quantified emission reduction commitment = 92% of 1990 emission level
 - the amendment will enter into force after ratification by at least 135 Parties to the Kyoto Protocol (11 to 12 Parties ratified so far)



Belarusian Amendment

acknowledgment

■ Ratified

- Czech Republic
- The Republic of Belarus
- Uzbekistan
- Russian Federation
- Vietnam
- Australia
- Norway
- Turkmenistan
- The Republic of Moldova
- Armenia
- India

■ Informed about completion of internal procedures:

- Mexico

■ Informed about upcoming completion of internal procedures :

- Egypt
- Kyrgyzstan
- Azerbaijan
- Cameroon



Country commitments in historical context

under UNFCCC

- Develop and implement national programmes on measures to mitigate climate change and to facilitate adequate adaptation to climate change
 - a number of state, regional and sectoral programmes
 - National Programme of Provisions for Climate Change Mitigation
- Perform and timely report GHG inventories
- Promote and cooperate in diffusion of appropriate technologies
- Promote sustainable management and cooperate in conservation and enhancement of sinks and reservoirs of GHG
- Research, education, training and public awareness
- National Communications
- Belarus has established all necessary UNFCCC components
 - Designated Focal Point
 - National GHG Inventory System



Country commitments in historical context

under Kyoto Protocol

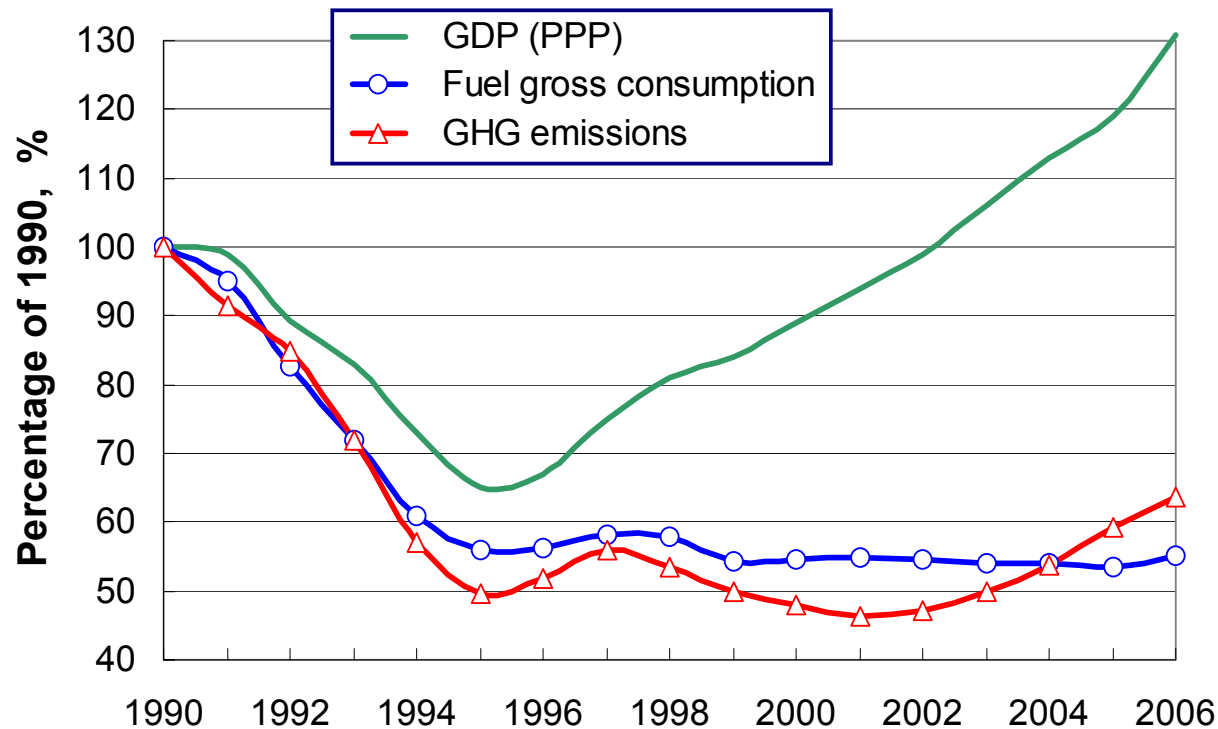
- Implement national policy and measures to reduce the GHG emissions and enhance GHG removals by sinks
 - National Kyoto Action Plan
 - National GHG Emission Abatement Strategy
- Meet GHG emission limitation and reduction commitments
- Be in compliance with methodological and reporting requirements
 - Report on Progress. Initial report. 1st Annual Report under Article 7.1
 - Annual reports on GHG Cadastre
- Meet Kyoto mechanisms eligibility requirements
- Belarus has established all necessary Kyoto components
 - Designated authority to approve JI projects
 - National Registry. JI Guidance and Procedure
- Belarus is establishing all other components for carbon financing (GIS and VER provisions)



Country commitments in historical context

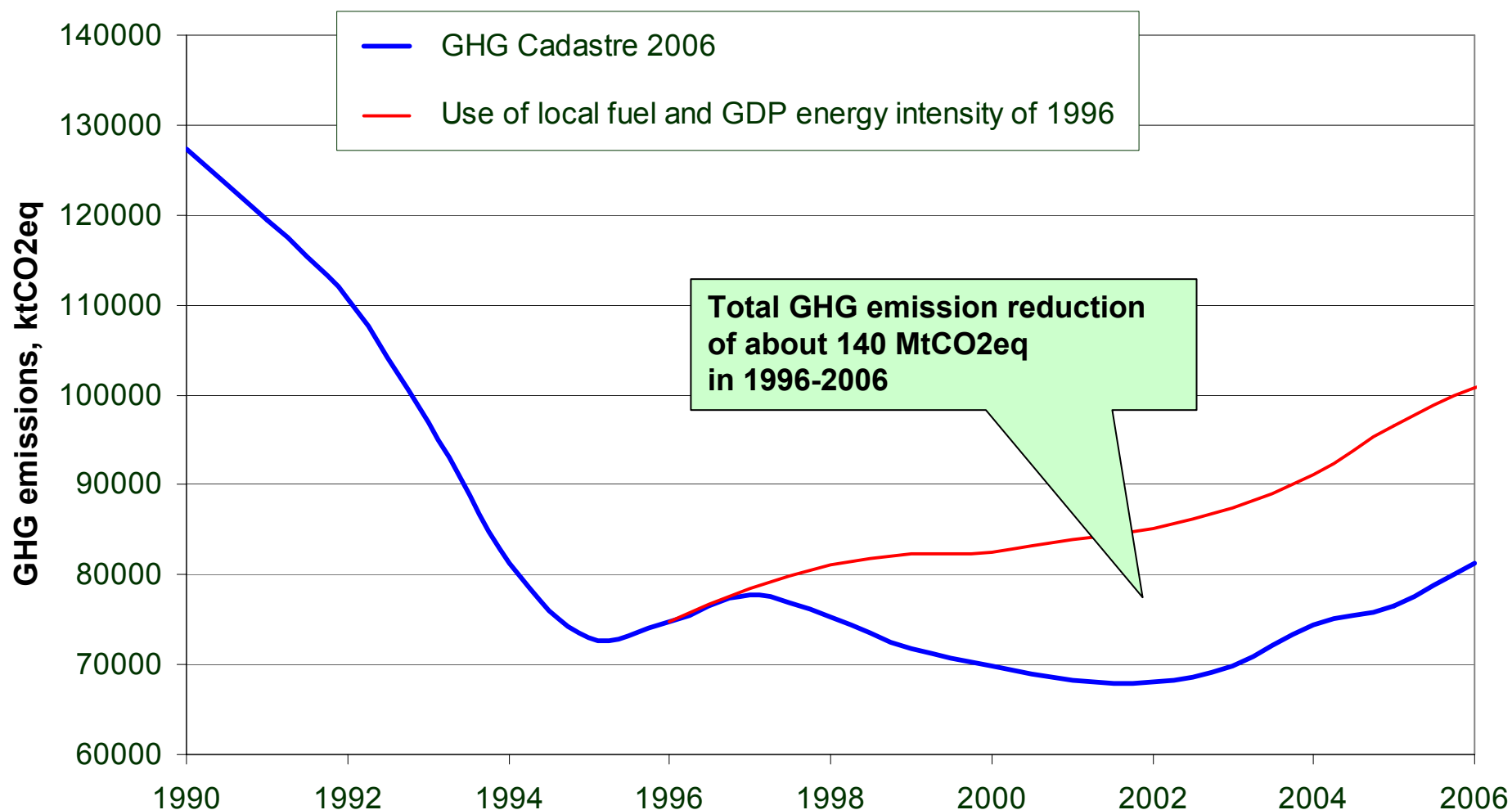
trends of major indices

- 1990-2006: net GHG emissions reduction of 750 MtCO₂eq
 - 1990-1995 – economic recession
 - 1995-2006 – change of fuel and energy mix and GDP structure
 - 1997-2006 – change of fuel and energy mix and GDP structure
 - 1997-present – rigorous energy efficiency and renewable energy use policies



Country commitments in historical context

historic background of “Hot Air”



Country commitments in historical context

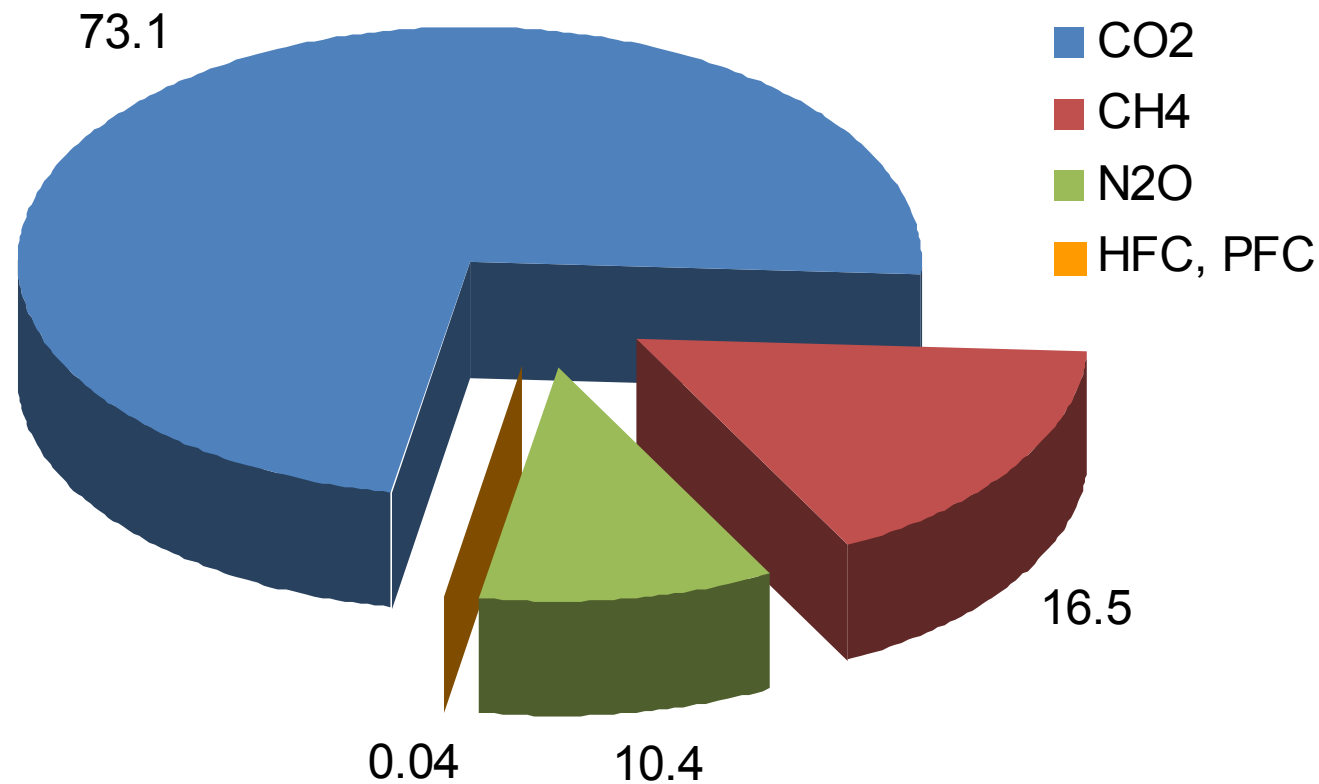
financial implication

- The integral contribution into GHG emission reduction is significant and associated with substantial costs encountered during 1990-2008
 - the economy recession was accompanied with considerable financial losses
 - the change of fuel and energy mix resulted in growing dependence on imported gas fuel
 - the extensive energy saving policy resulted in lack of resources to be accumulated for implementation of the post-Kyoto commitments
 - additional financial resources are questionable:
 - Kyoto mechanisms may not be available until 2012
 - global financial crises
- Recent trend is an evident increase of GHG emissions by approx. 5 MtCO₂eq per year
 - economic growth and delayed structural/technological reforms
 - increased fuel consumption
 - reduced share of gas *vis a vis* peat



National circumstances and GHG emission

2006 GHG emissions by gases, %



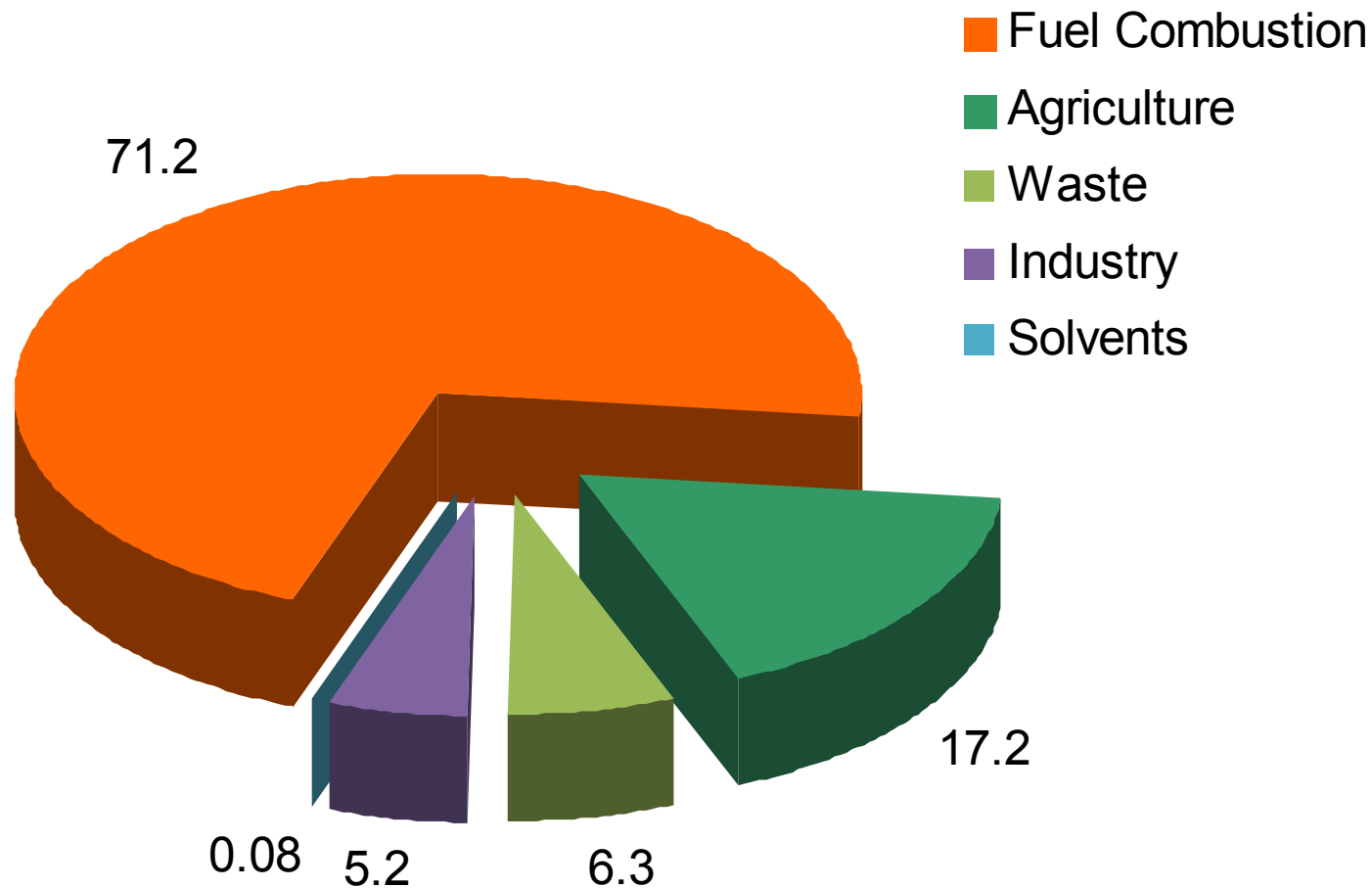
Total 81.29 MtCO₂eq (without LULUCF)



National circumstances and GHG emission

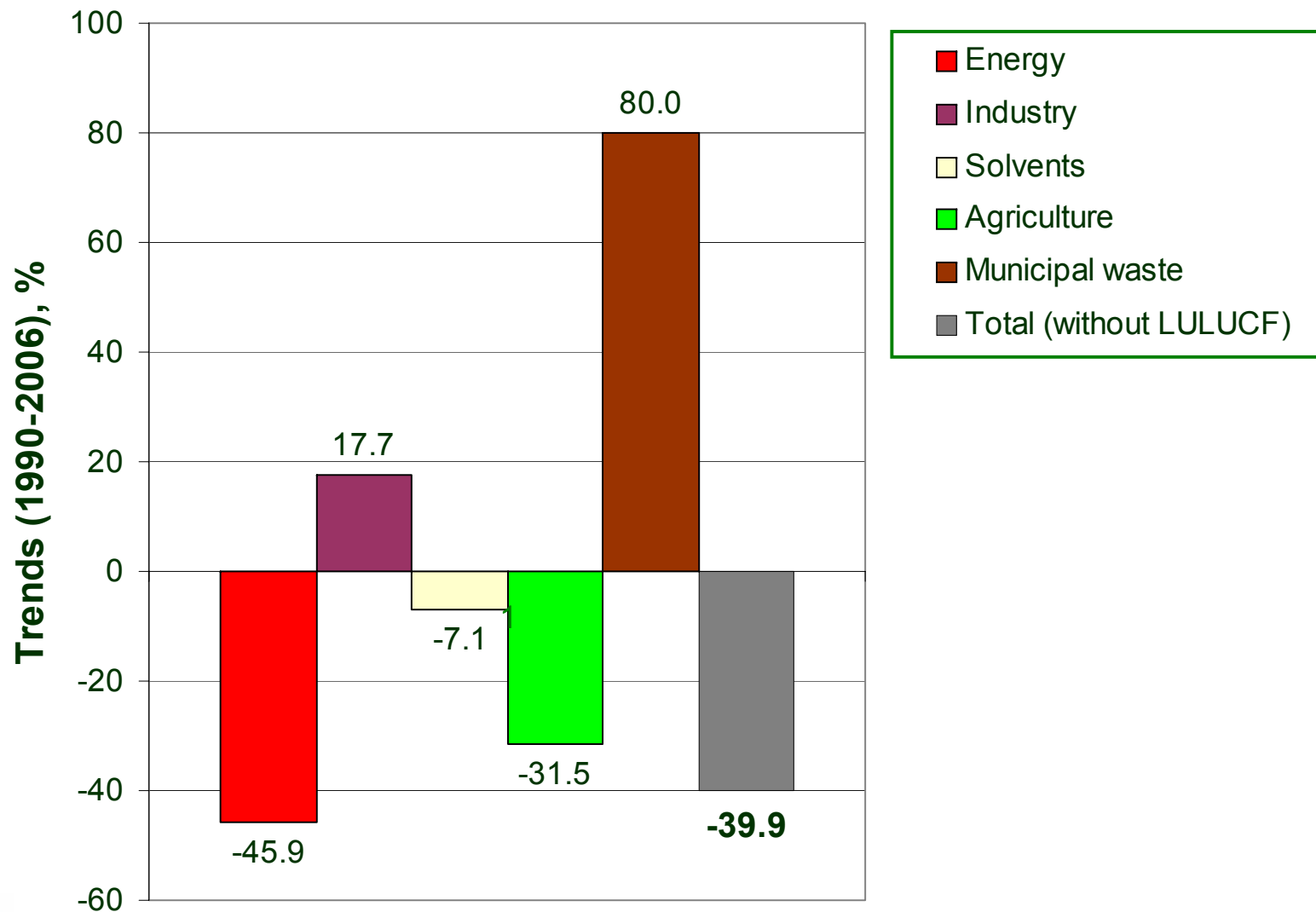
2006 GHG emissions by sectors, %

Total 81.29 MtCO₂eq (without LULUCF)



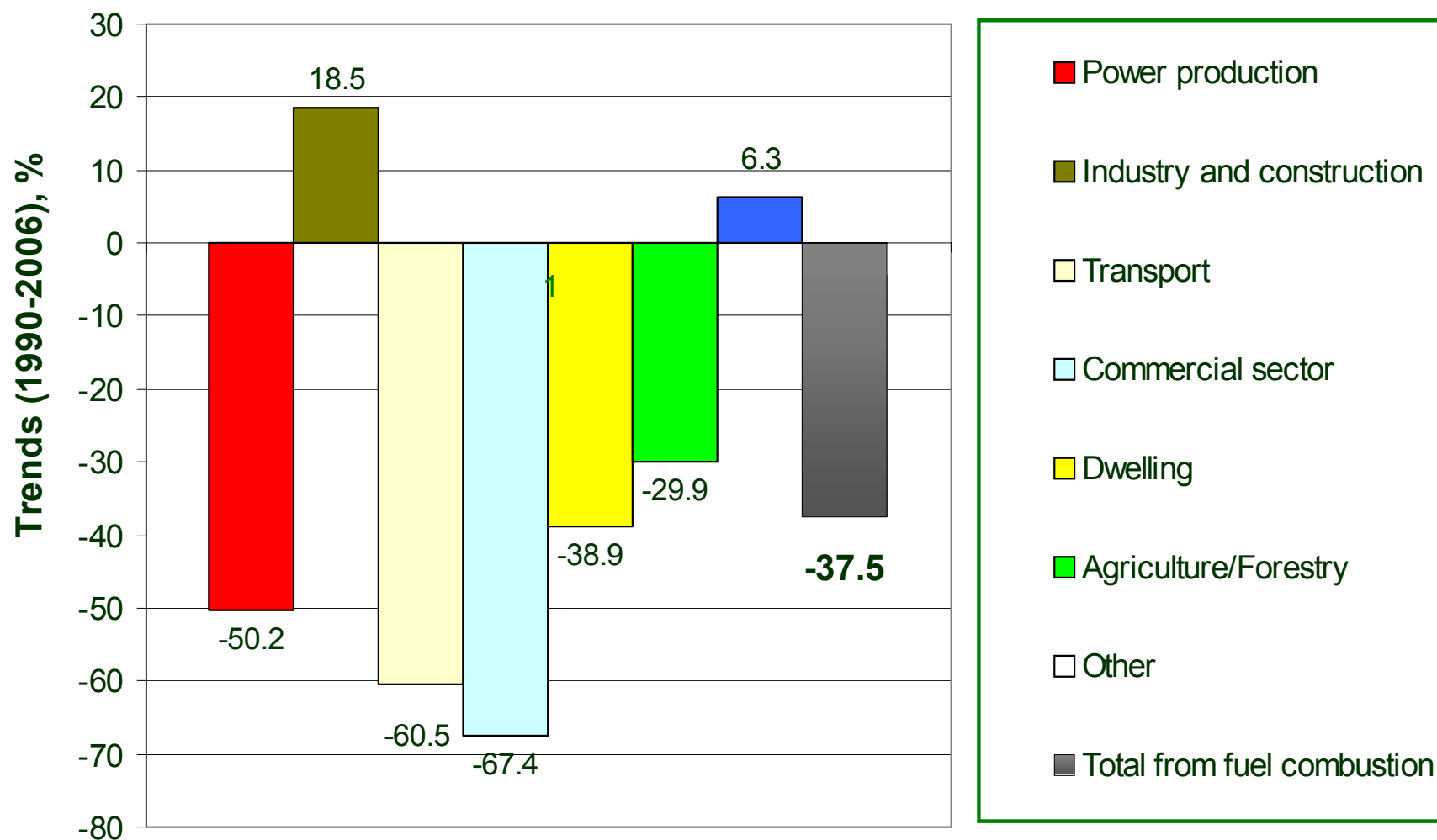
National circumstances and GHG emission

GHG emission trends by sectors, %



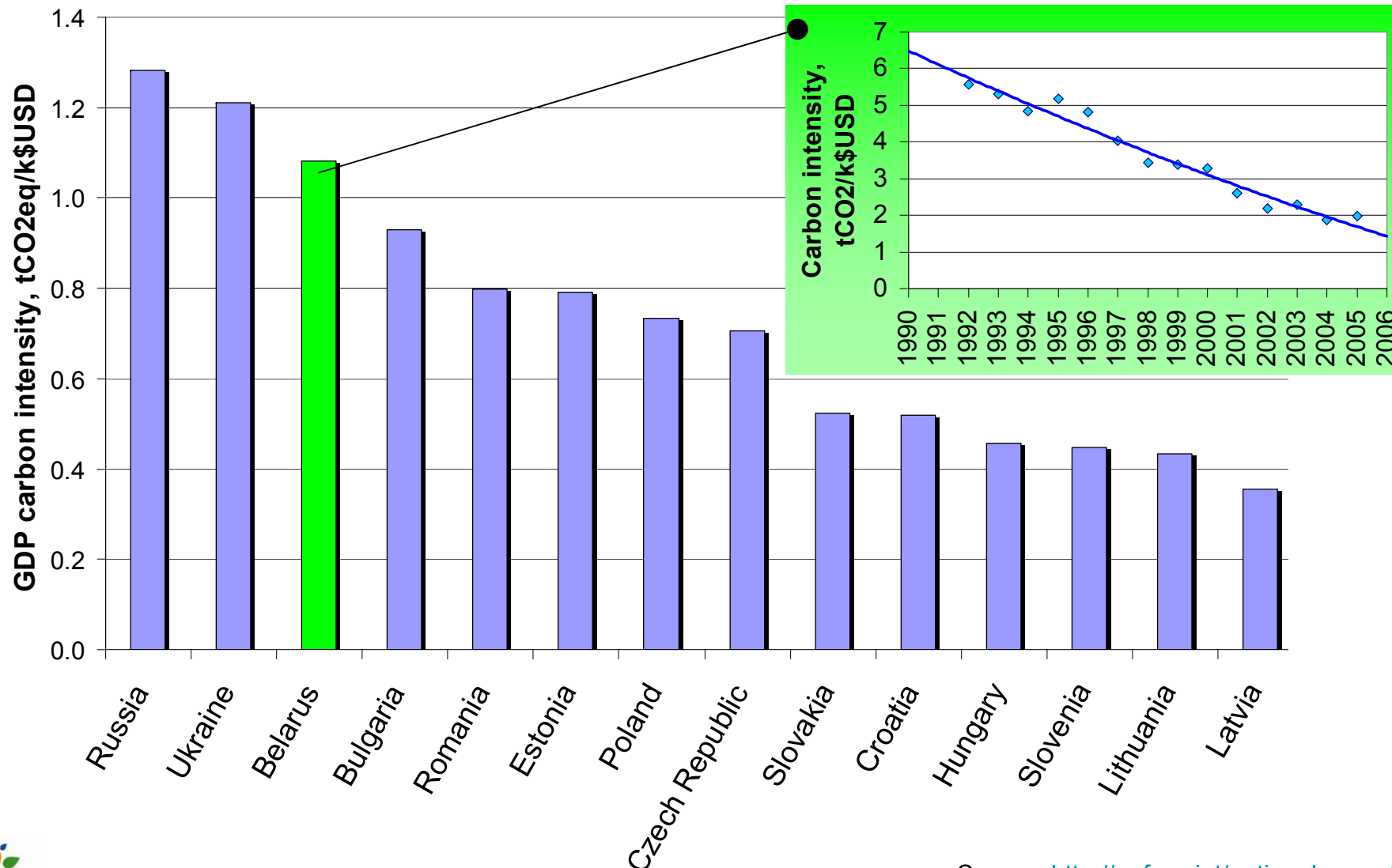
National circumstances and GHG emission

GHG emission trends in energy sector, %



National circumstances and GHG emission

Belarus and other countries in transition, 2006

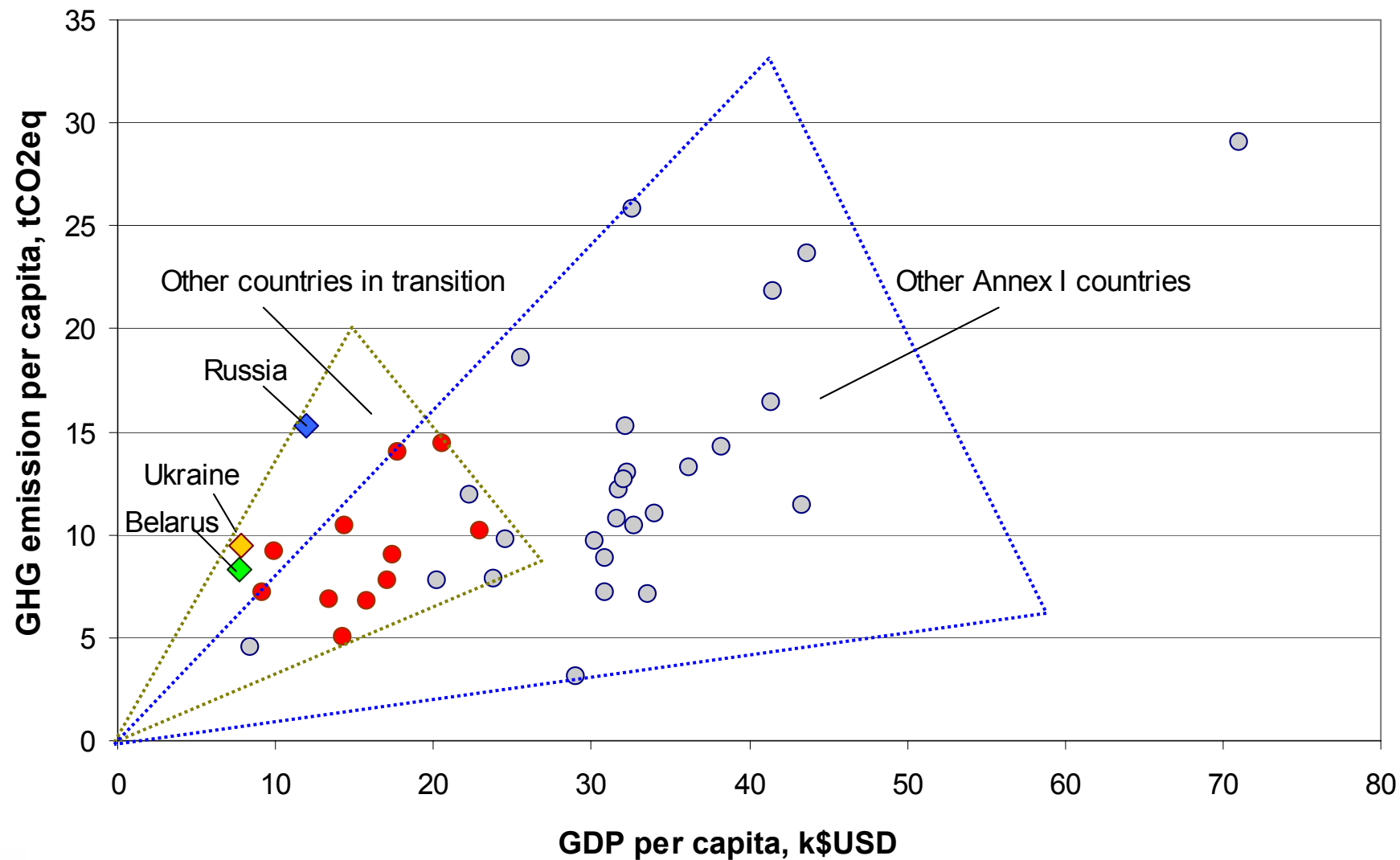


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Source: http://unfccc.int/national_reports/

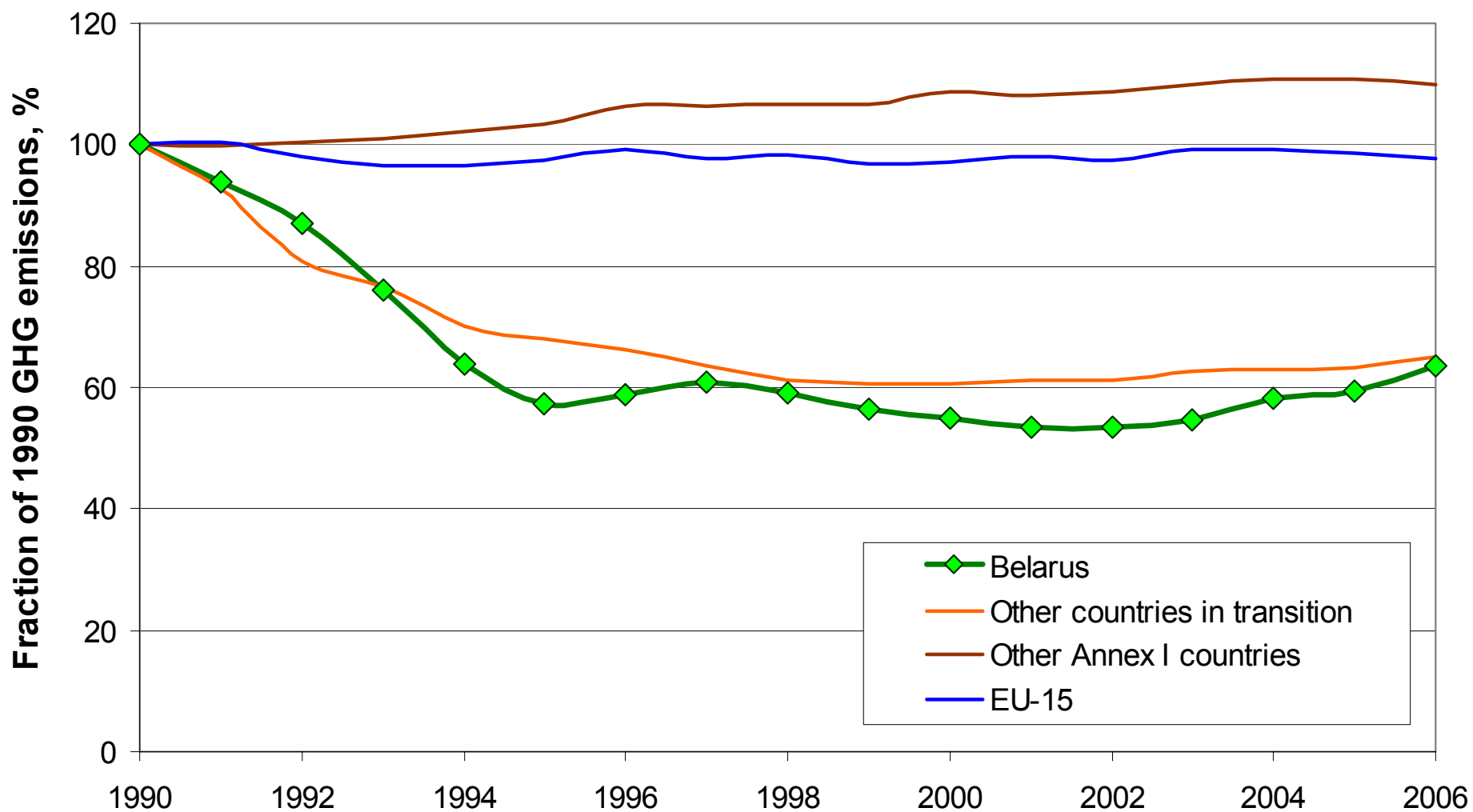
National circumstances and GHG emission

2006 GDP carbon intensity triangles, Annex I countries



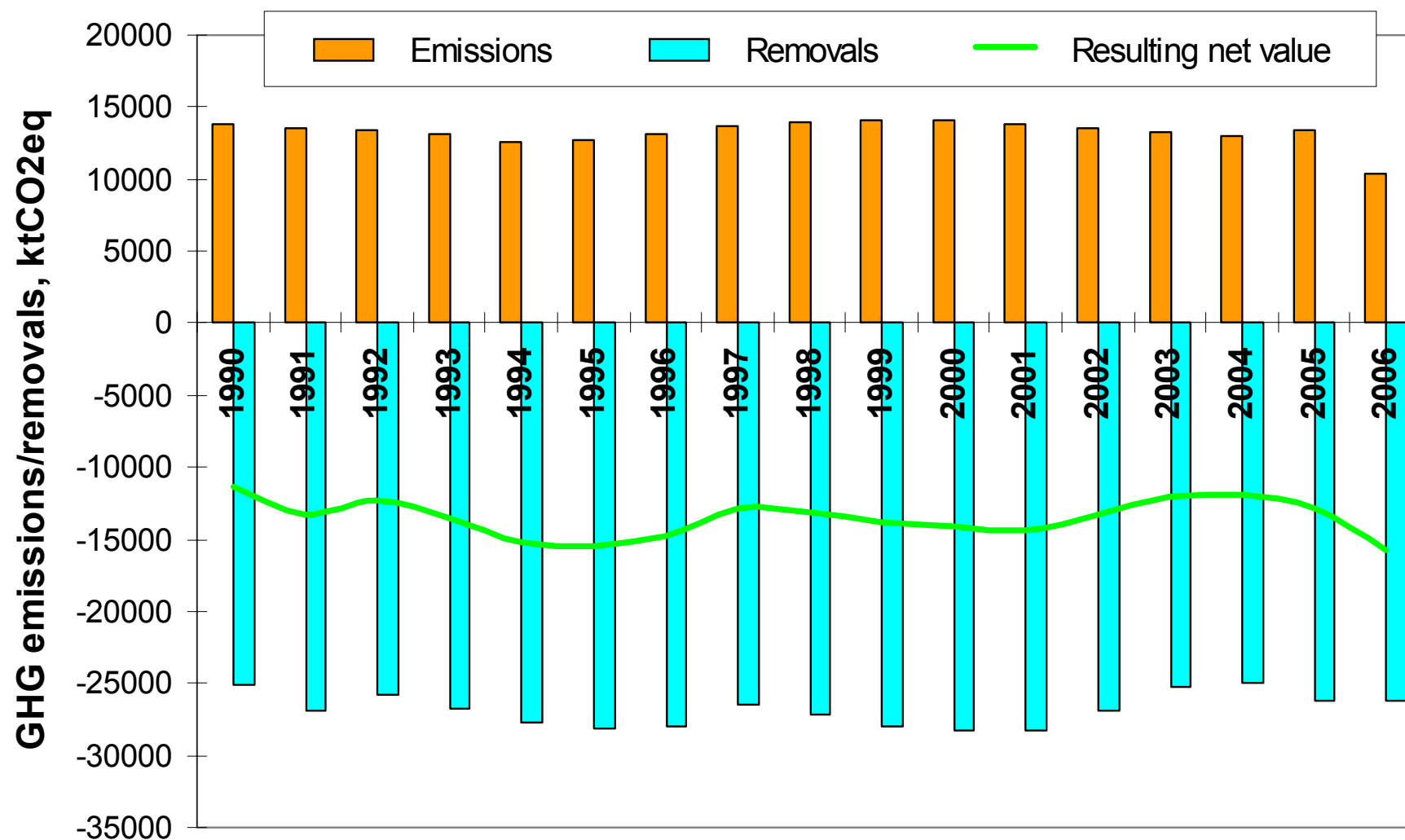
National circumstances and GHG emission

Belarus and other Annex I countries



GHG sink effect: peatlands and forests

emissions / removals in LULUCF



GHG sink effect: peatlands and forests

importance of LULUCF

- LULUCF is the only sector, which provides carbon absorption
- Removals account for 26 011 ktCO₂eq. (in 2006)
- GHG emissions account for 13 376 ktCO₂eq. (in 2006); this is 14.17% of total emissions in Belarus
- The biggest contribution (92.2%) to GHG emissions in LULUCF is caused by drained organic soils
- LULUCF is characterized with the largest uncertainties in GHG estimations



Restoration of degraded peatlands

why peatlands?



Yelnia raised bog, Belarus

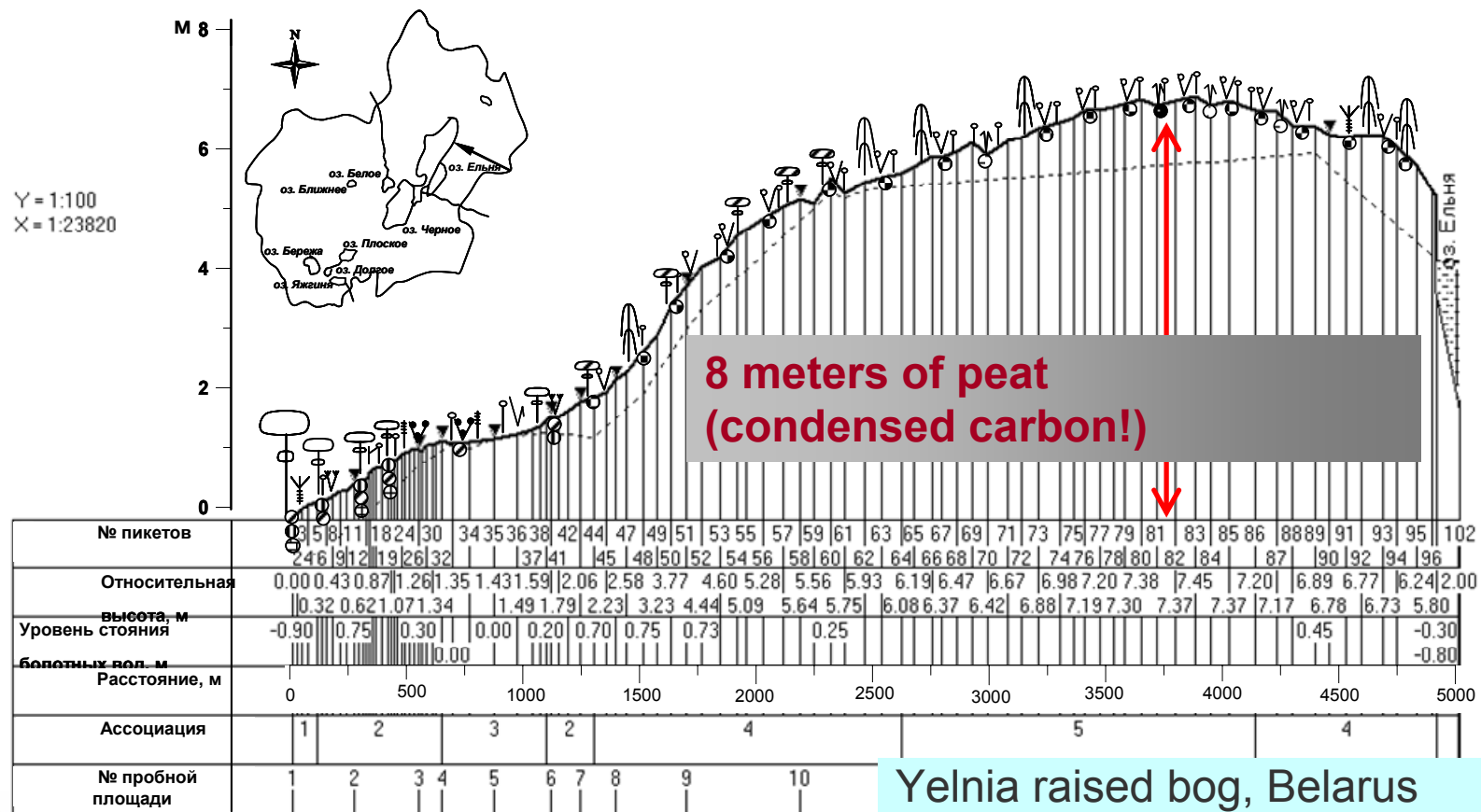
- Peatlands are the most space-effective carbon stocks of all terrestrial ecosystems



Restoration of degraded peatlands

peat retains carbon

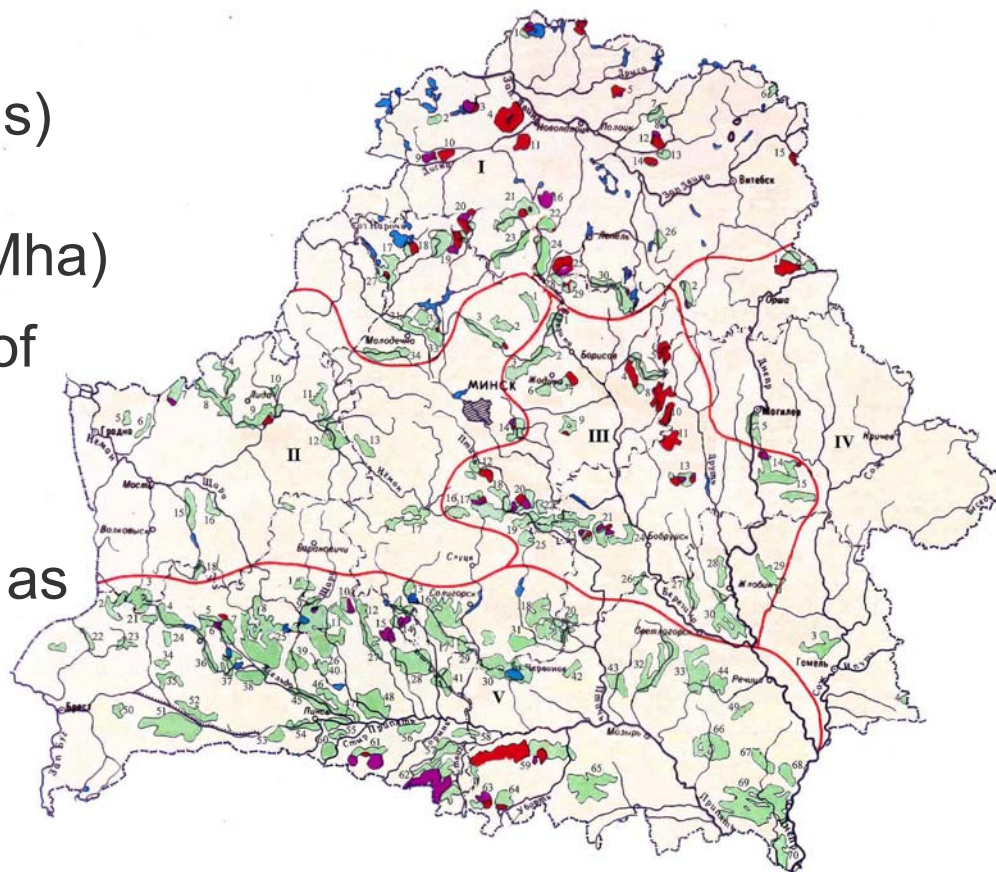
- In the boreal zone, peatlands retain 7 times more carbon per ha than any other ecosystem



Restoration of degraded peatlands

why Belarus?

- Belarus is the country of peatlands
- 1960's – mires (peatlands) covered 14.2% of the territory of Belarus (2,9 Mha)
- In 1960-1990 over 50% of mires were drained.
- Up to 600 thousand hectares are considered as degraded peatlands



Restoration of degraded peatlands

what happens on drained peatlands?

- Peat mineralizes
- Peat emits approx. 15 tC/ha and above
- Mismanagement of peatlands (tillage) leads to even higher emissions



Restoration of degraded peatlands

what happens on drained peatlands?

- Peat fires lead to massive CO₂ emissions
- ...and emissions of radioactive elements stored in peat



Restoration of degraded peatlands

how much is available for restoration?



Abandoned peat extraction sites: 228 600 ha



Restoration of degraded peatlands

how much is available for restoration?

Degraded peatlands ineffectively
used for forestry: **24 000 ha**



Degraded peat soils ineffectively
used for agriculture: **224 000 ha**



Restoration of degraded peatlands

is restoration feasible?



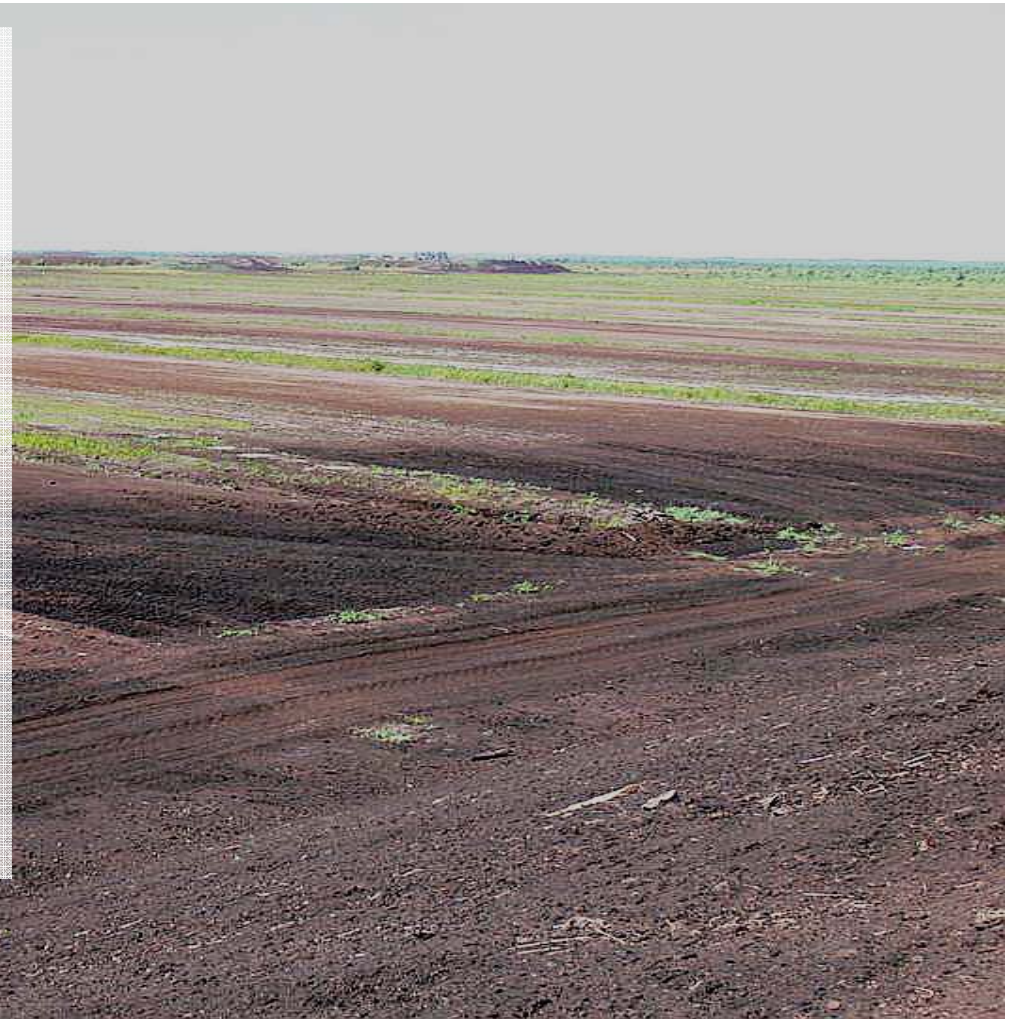
- UNDP-GEF project on restoration of 42 thousand ha of degraded peatlands (2007-2010)
- Various methods of restoration have been tested



Restoration of degraded peatlands

how effective is restoration for climate?

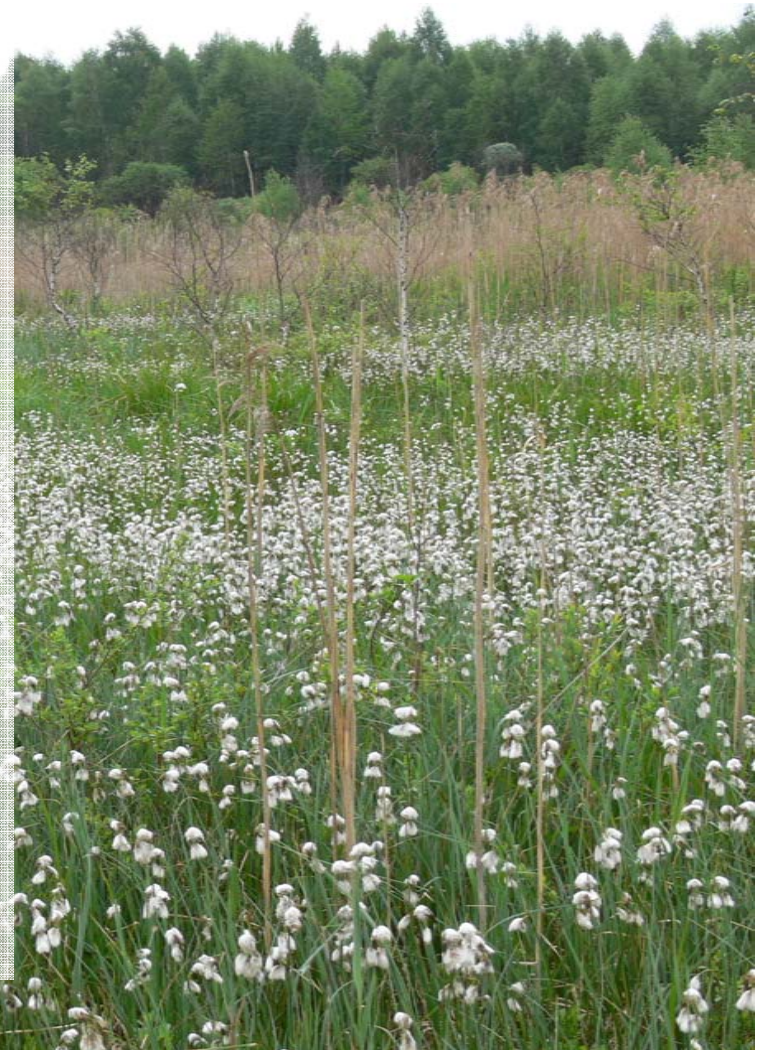
- Rewetting is always beneficial and carbon neutral in long term:
 - GHG emission abatement effect:
 - minimum >0 t CO₂-eq./ha
 - average effect: ~15 t/ha
 - maximum result: 30 t/ha
- Although GHG net emissions are positive in near term



Restoration of degraded peatlands

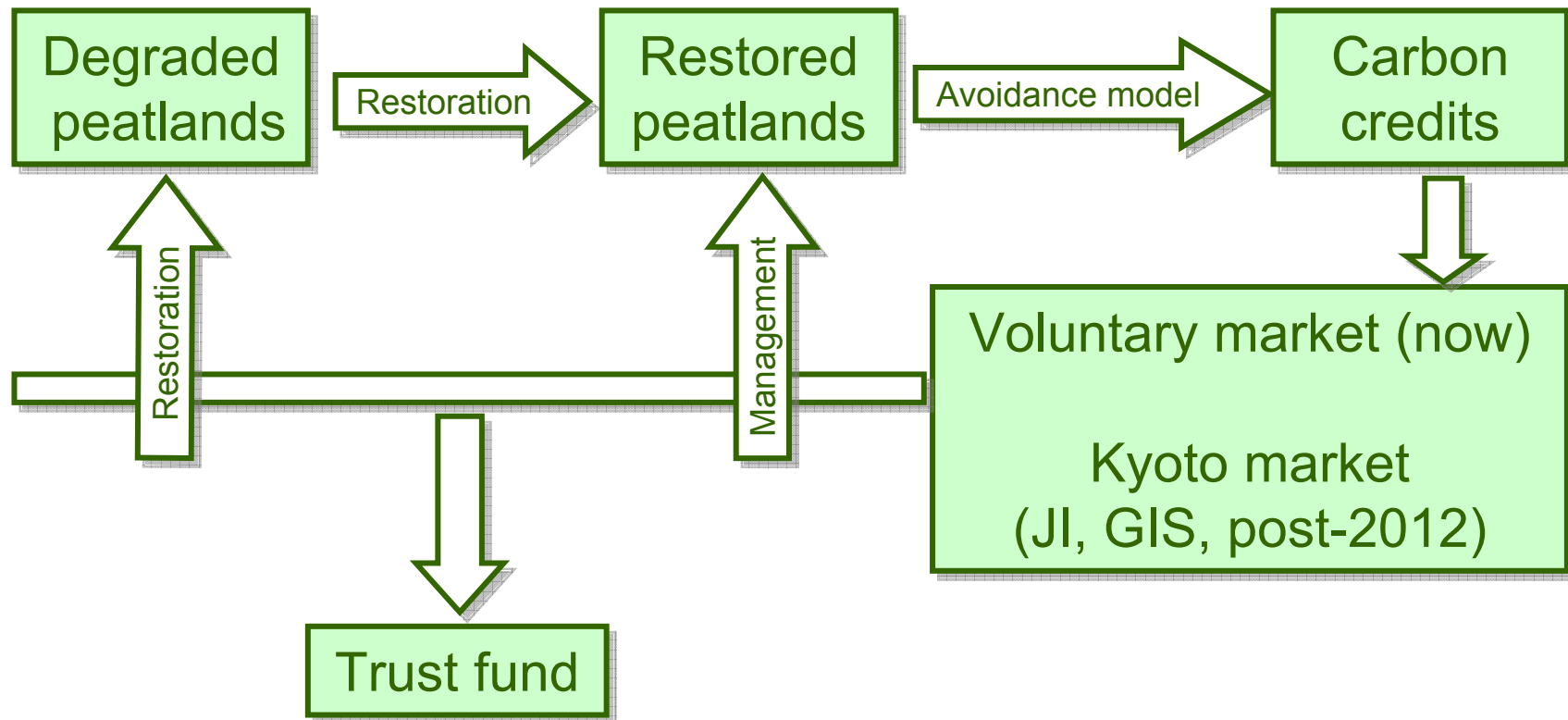
KfW-BMU-RSPB-MSF-APB Climate and Biodiversity Project

- Work out sustainable financial mechanisms for peatland restoration and management
- Work out measures to maximize climate and biodiversity impact of the process of rewetting
- Conduct large scale peatland restoration in Belarus
 - Long term target: 500 000 ha
- Extend peatland restoration programme to other countries in the region, e.g. Ukraine, Russia



Restoration of degraded peatlands

restoration of peatland and carbon market



GHG emission forecast until 2020

methodological approach

- Analysis of national economy development programmes
 - GDP growth rate
- Scale and structure of consumption of fuel and energy resources in energy and transport sectors
 - primary energy consumption
 - fuel balance
 - energy efficiency
 - power & fuel supply safety (diversification)
- LEAP (Long-range Energy Alternatives Planning)
 - developed by Stockholm Environment Institute, Boston, USA
- Determining the dynamics of baseline emissions in other sectors (or emission reductions in case of lowering economic output)
- GHG reductions are a baseline reduction if “business as usual” is applicable



GHG emission forecast until 2020

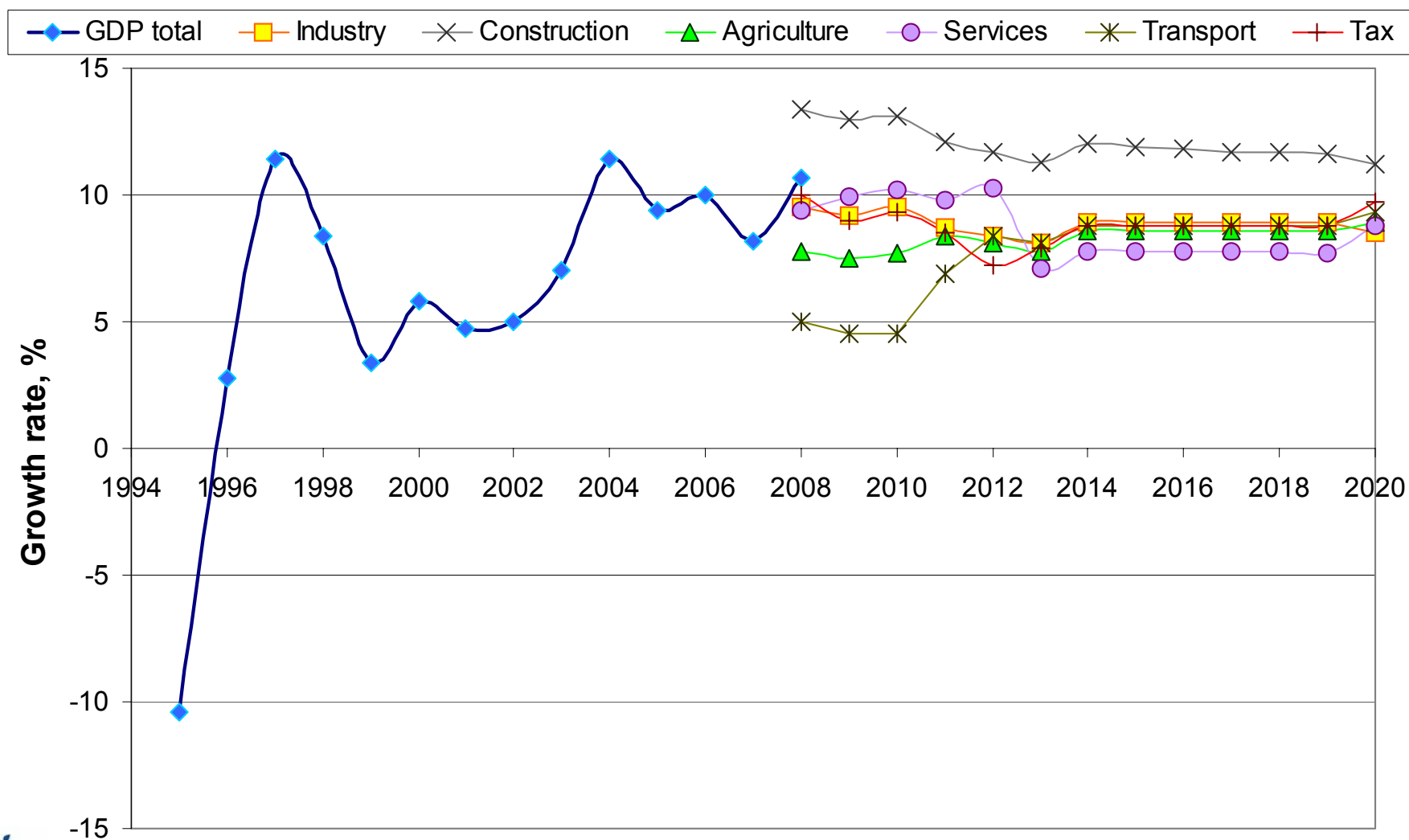
source data and rationale

- Socio-Economic Development Programme of the Republic of Belarus for 2006-2010
(President's Decree No.384 of June 12, 2006)
- National Action Plan for Rational Use of Natural Resources and Environmental Protection in the Republic of Belarus for 2006-2010
(President's Decree of May 5, 2006. No.302)
- State Complex Programme for Modernization of Principal Assets of Belarusian Energy Sector, Energy Saving and Increased Use of Local Fuel Resources 2006-2010
(President's Decree of Nov 15, 2007. No.575)
- Energy Safety Concept
(President's Decree of Sep 17, 2007. No.433)
- Other relevant development programmes and documents
(e.g., National Strategy of Sustainable Socio-Economic Development up to 2020)



GHG emission forecast until 2020

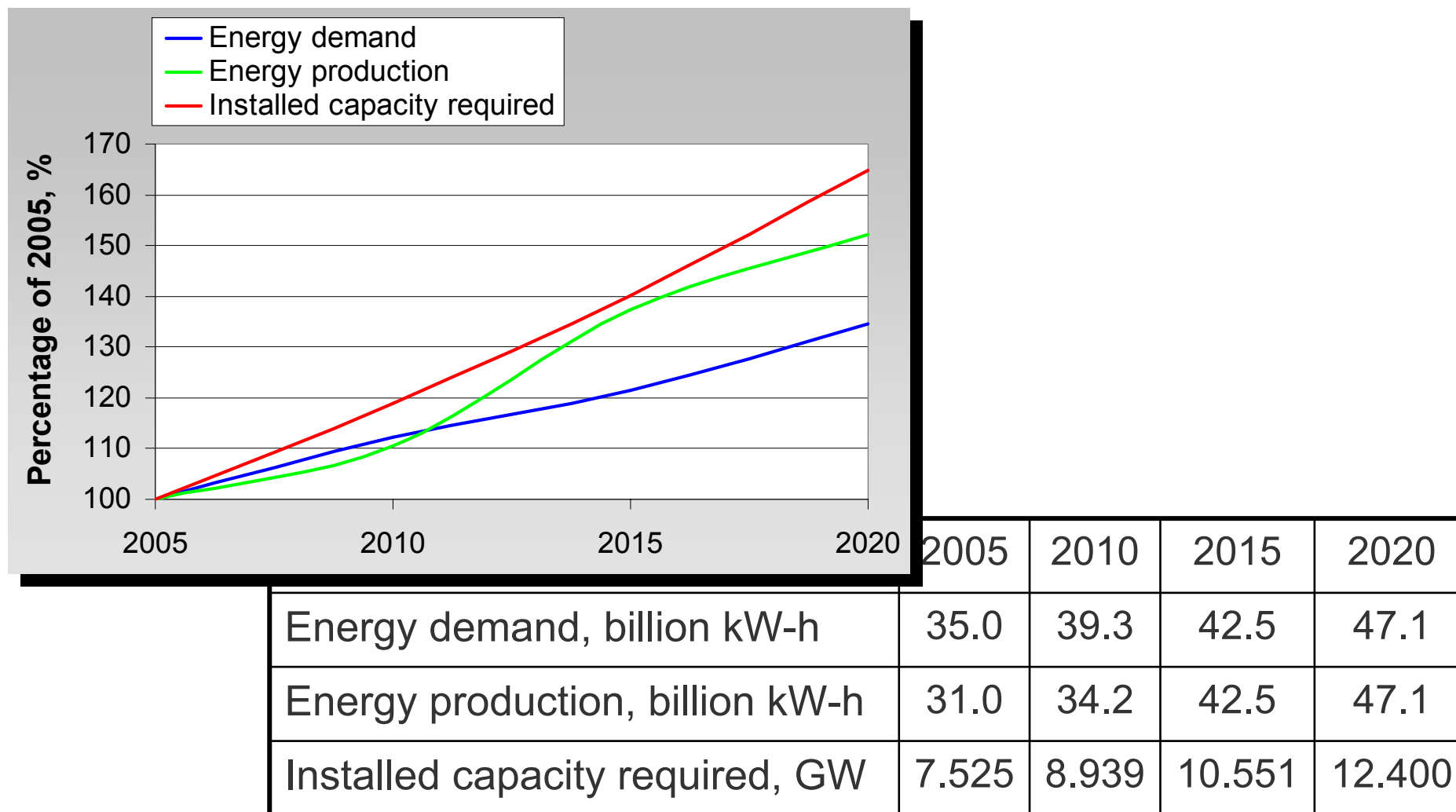
trend and prognoses of GDP growth rate



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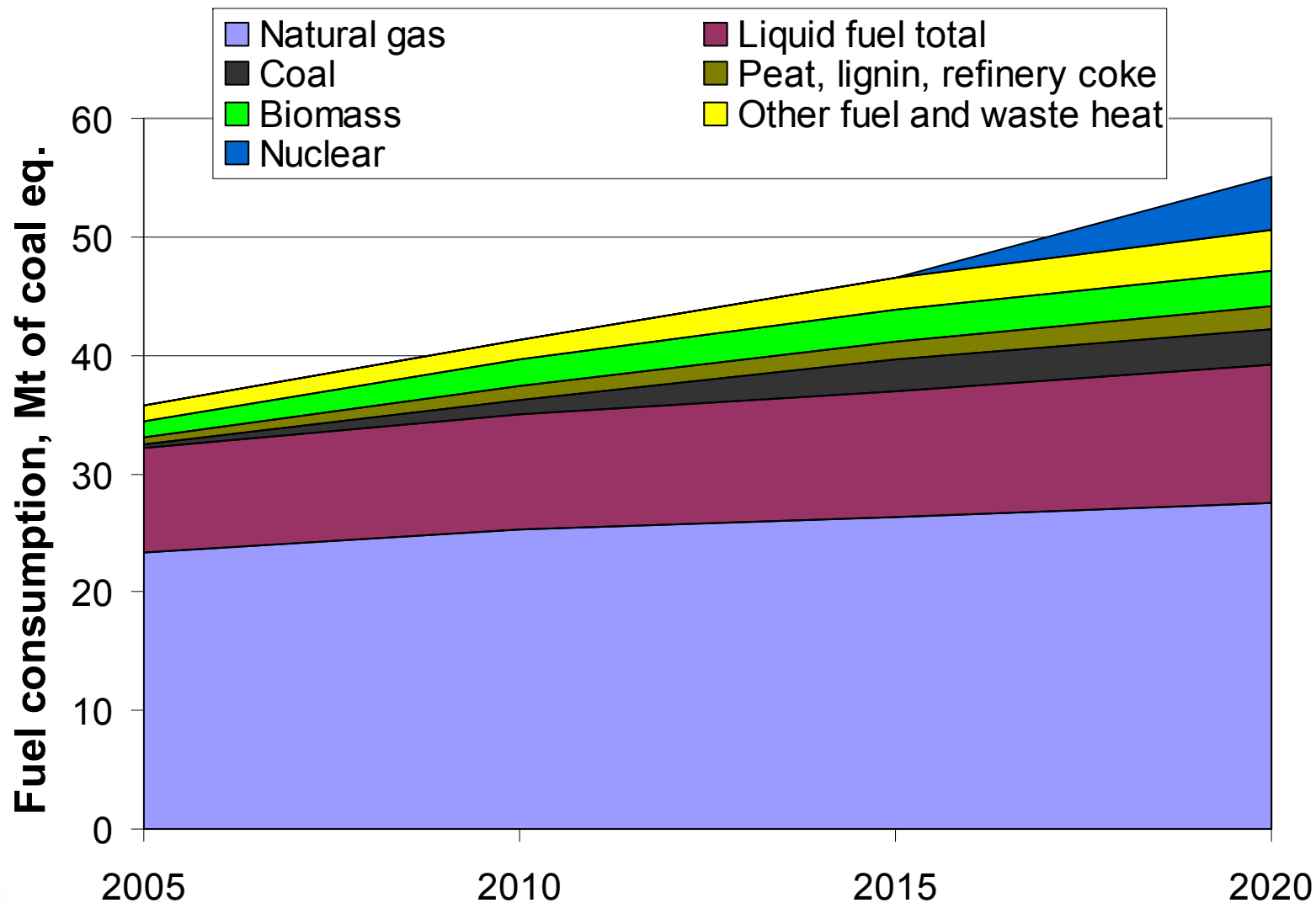
GHG emission forecast until 2020

prognoses of energy consumption



GHG emission forecast until 2020

dynamic of fuel balance



GHG emission forecast until 2020

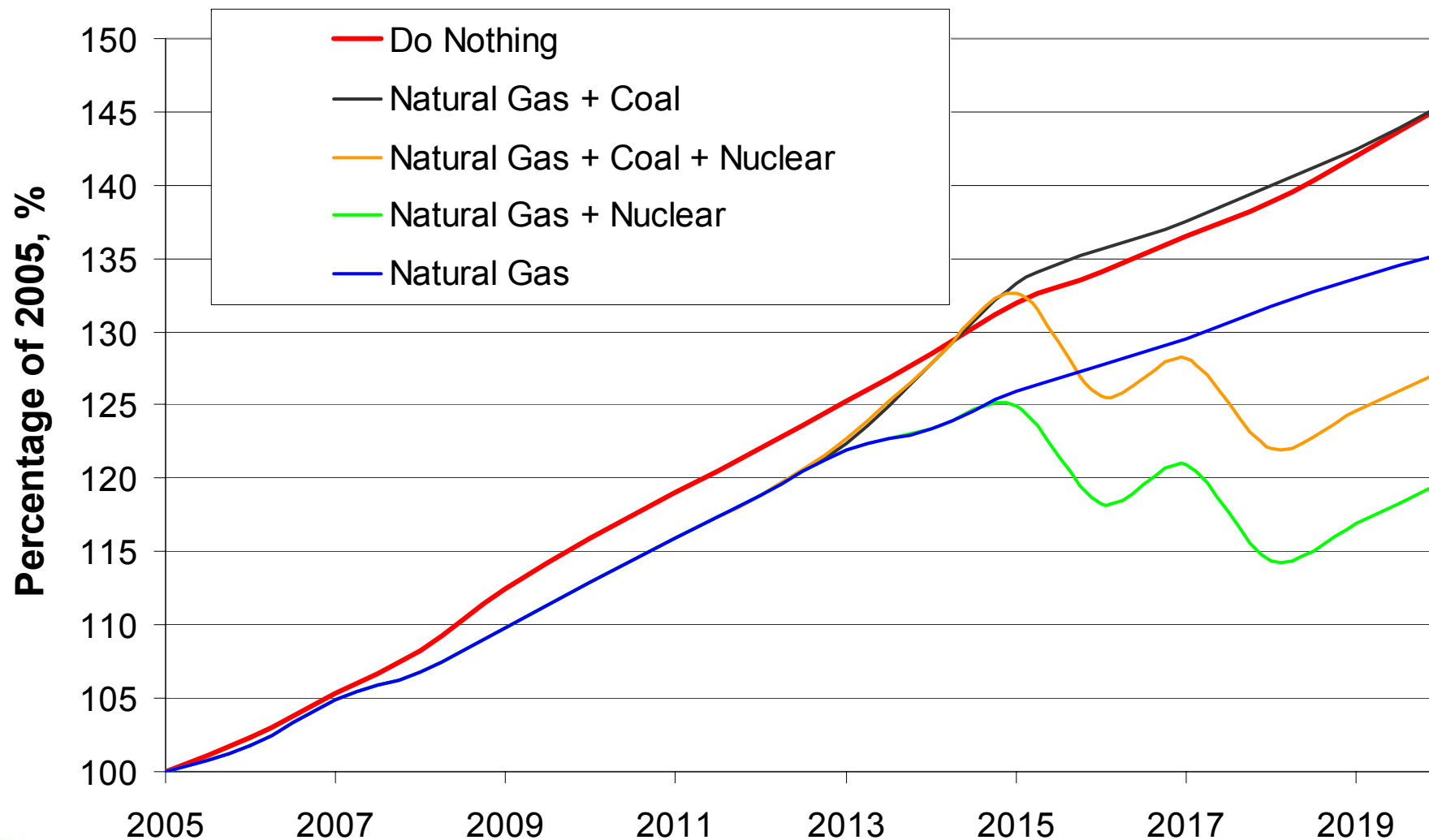
scenarios in energy sector

- Scenario “Do nothing”
 - power and heat generating facilities are not upgraded and the entire structure is as it was in 2005
- Scenario “Natural gas”
 - power and heat generating facilities are upgraded
 - gas turbine cycle and cogeneration scheme of 1.3 GW
 - renewable energy of 0.35 GW
- Scenario “Natural gas + Nuclear”
 - the same as “Natural gas”
 - NPP of 2 GW
- Scenario “Natural gas + Nuclear + Coal”
 - the same as “Natural gas + Nuclear”
 - coal-fired CHP of 0.7 GW
- Scenario “Natural gas + Coal”
 - the same as “Natural gas”
 - coal-fired CHP of 0.7 GW



GHG emission forecast until 2020

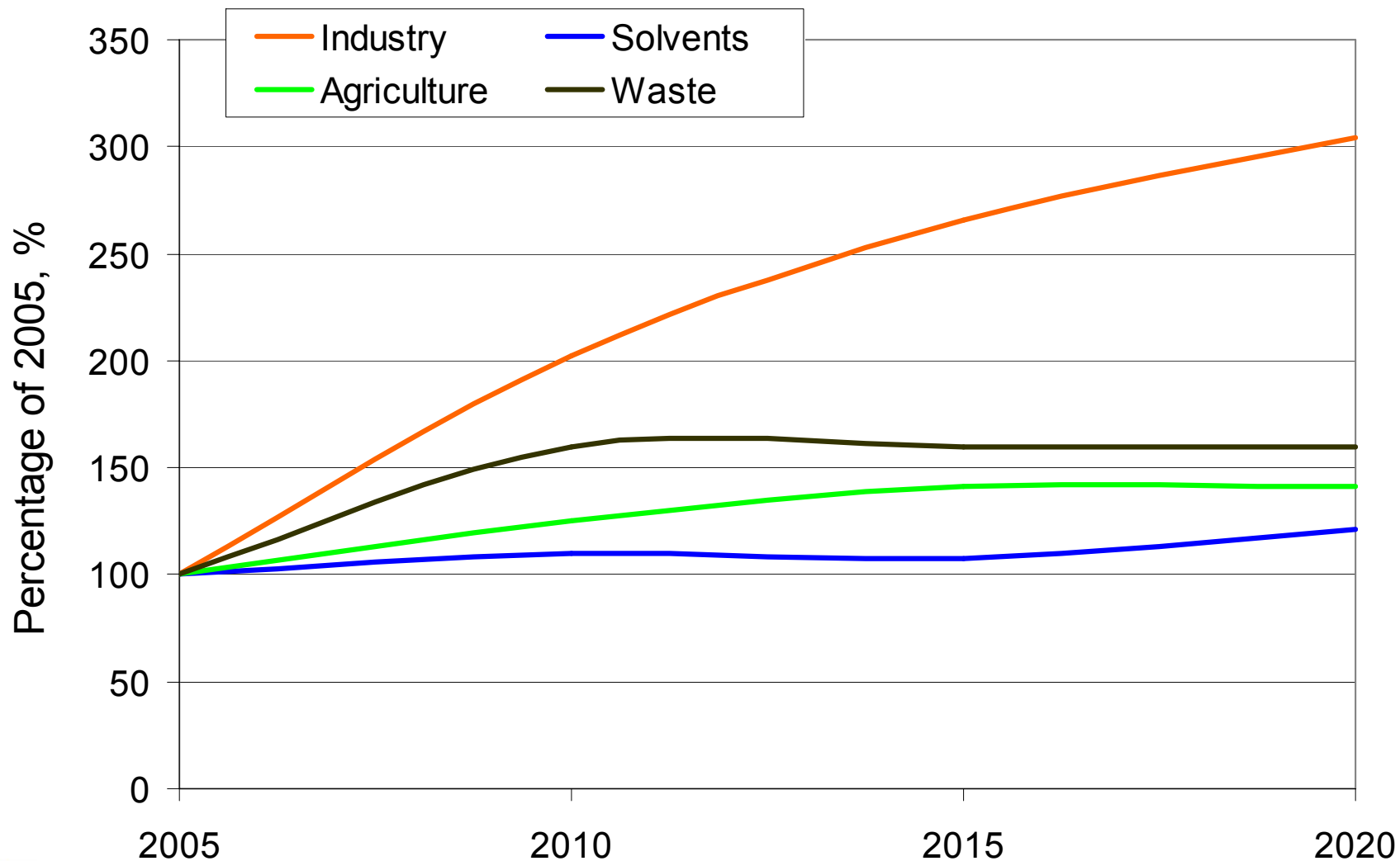
emissions from energy and heat production



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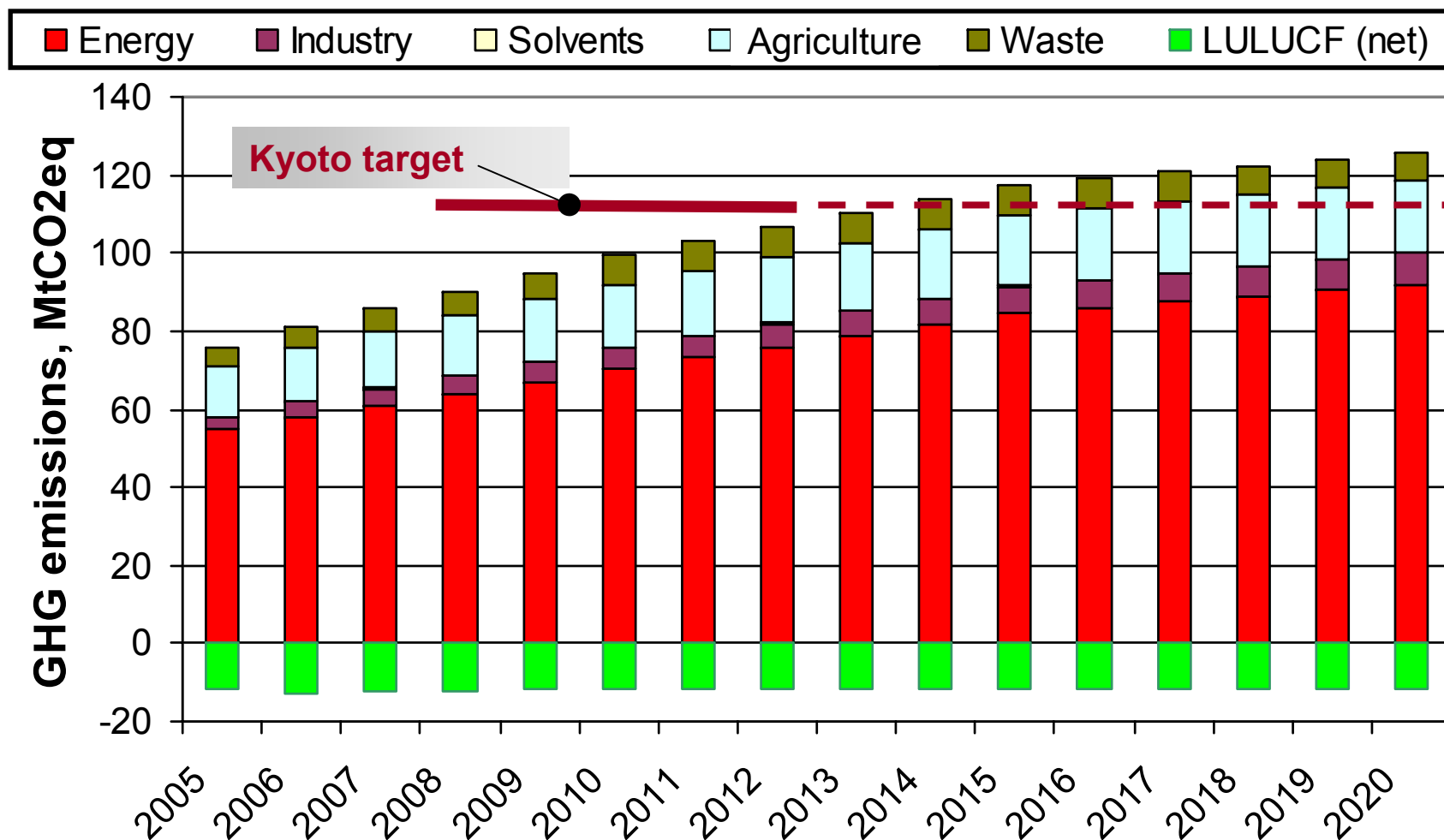
GHG emission forecast until 2020

emissions from other sectors



GHG emission forecast until 2020

total aggregated GHG emissions



Climate change mitigation potential

methodological approach

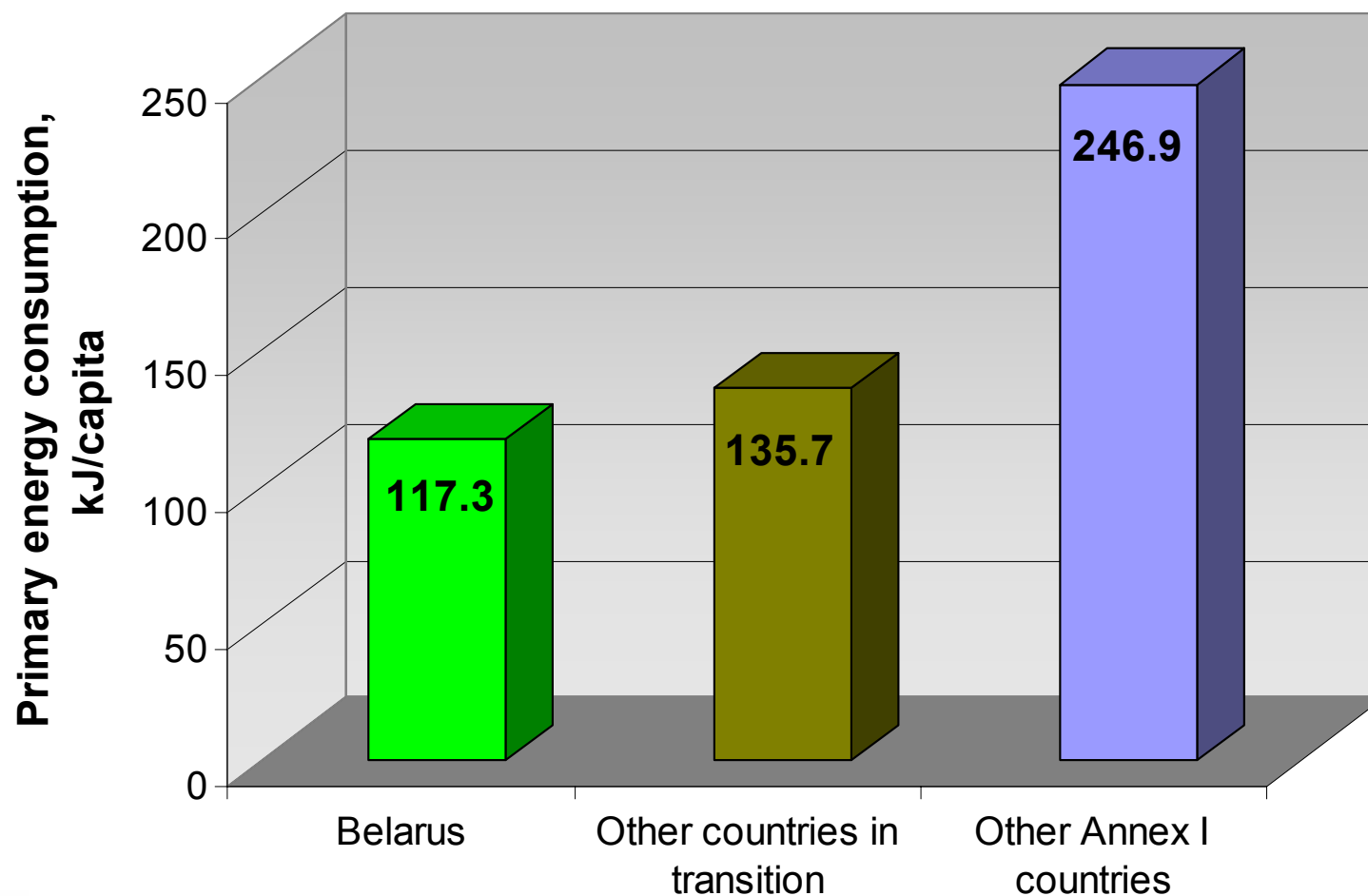
- Desired scale of emission limitation
 - at least equal to the Kyoto target
- Due account of priorities
- Analysis of availability of financial resources
 - determining the scope of activity planned for emission limitation under available funding
- Analysis of diffusion rate of corresponding best available technologies
 - productivity and expansion rate of the BAT
 - spillover socio-economic effect
- Analysis of barriers and available means for their removal, e.g., through carbon financing mechanisms



Climate change mitigation potential

priority: increase quality of life

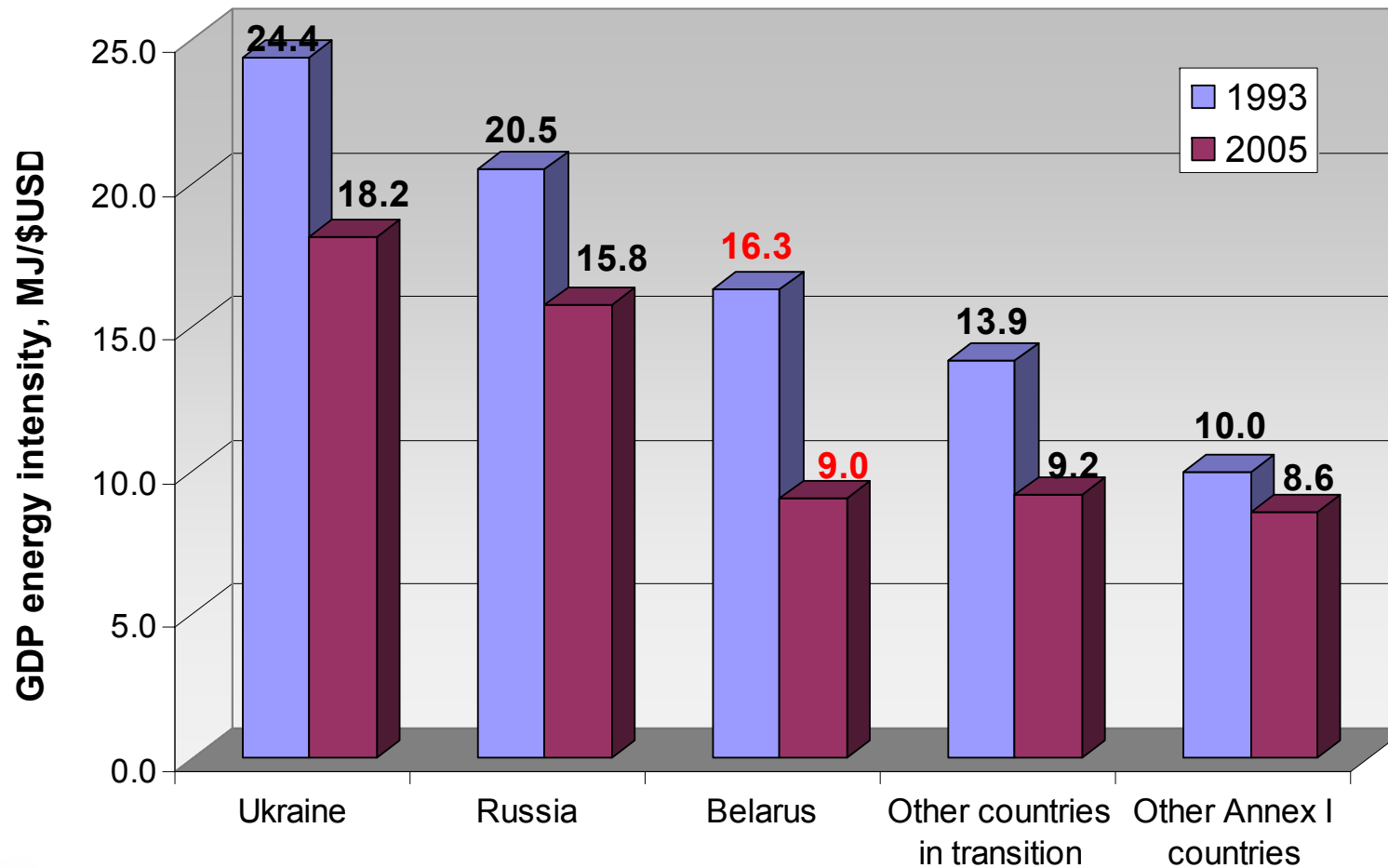
Primary energy consumption in 2005



Climate change mitigation potential

priority: improve efficiency to extent possible

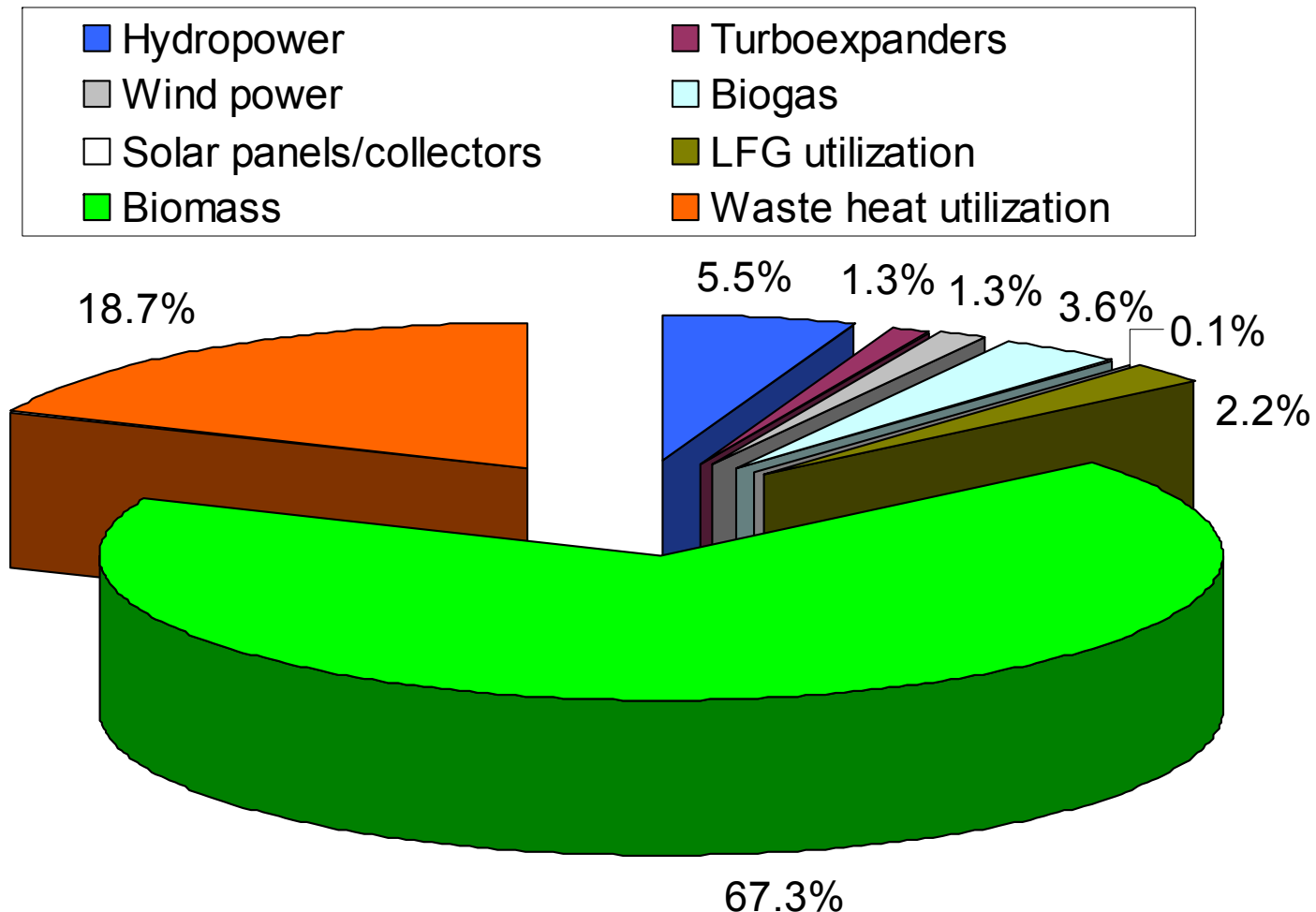
● GDP energy intensity in 1993-2005



Climate change mitigation potential

use of renewable energy and energy saving

● Mitigation potential of renewable energy = **55.4** MtCO₂eq in 2005-2020



Climate change mitigation potential

financial potential

- The economy recession was accompanied with considerable financial losses
- The extensive energy saving policy resulted in lack of resources accumulated for the post-Kyoto
- Relatively high marginal cost for GHG emission reduction through energy efficiency improvement and use of renewable resources
- Other priority
 - remediation of the Chernobyl affected regions
 - safeguarding of foodstuff supply and power supply security
 - increased use of local fuels, including peat
- Additional financial resources are questionable:
 - Kyoto mechanisms may not be available until 2012
 - global financial crises



Carbon market mechanisms in Belarus

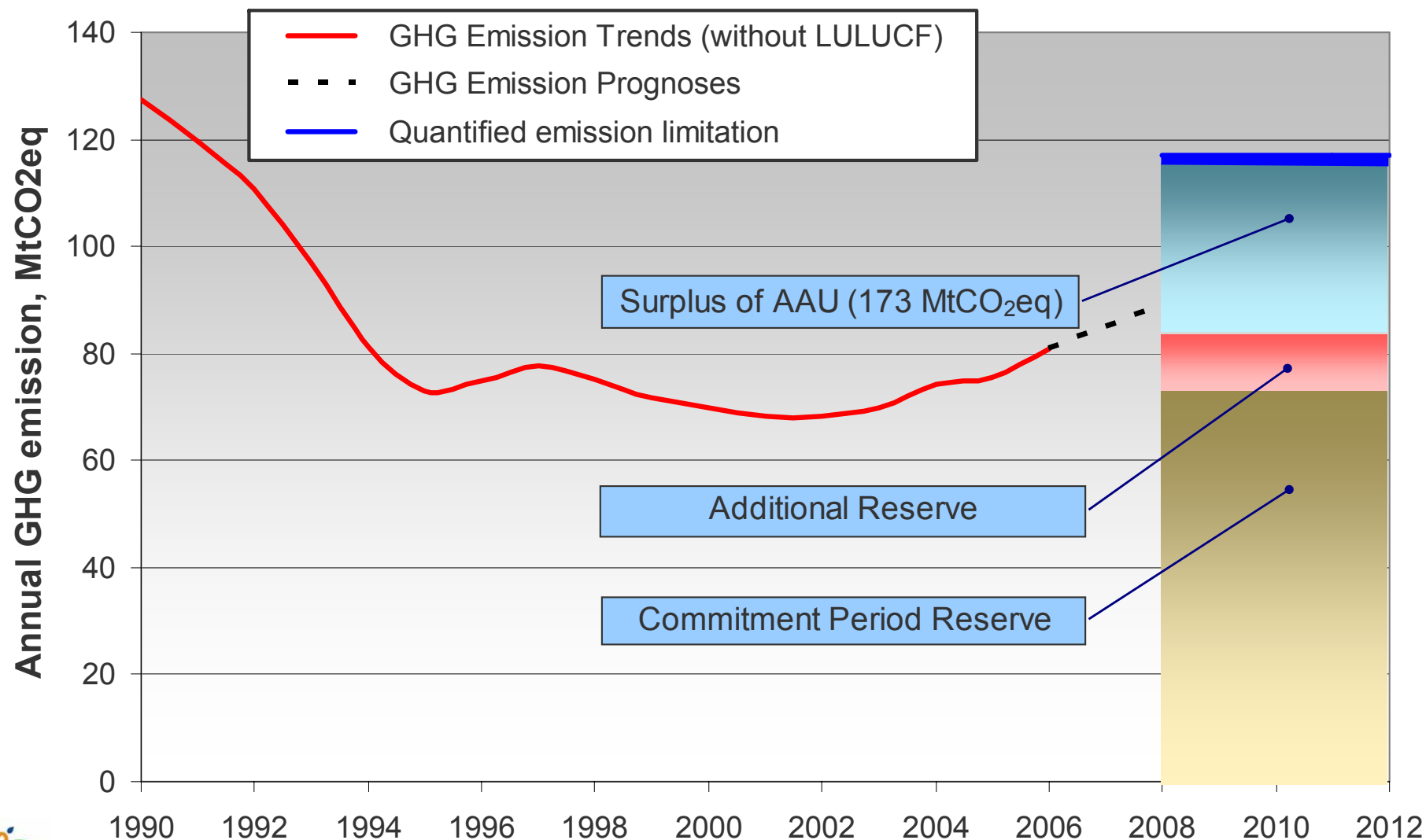
need for additional financing

- Need of energy efficiency systemic improvement
 - reduction of GDP energy intensity
 - increase of energy consumption per capita
- Counterbalance of drift of fuel mix towards fuels with higher GWP
- Significant potential to further reduce GHG emissions in almost all sectors
- Need to preserve and increase the GHG mitigation potential in order to meet more strict post-Kyoto commitments
- Lack of investment resources
- Need of transfer of best available technologies
- Need of change of established inefficient practice



Carbon market mechanisms in Belarus

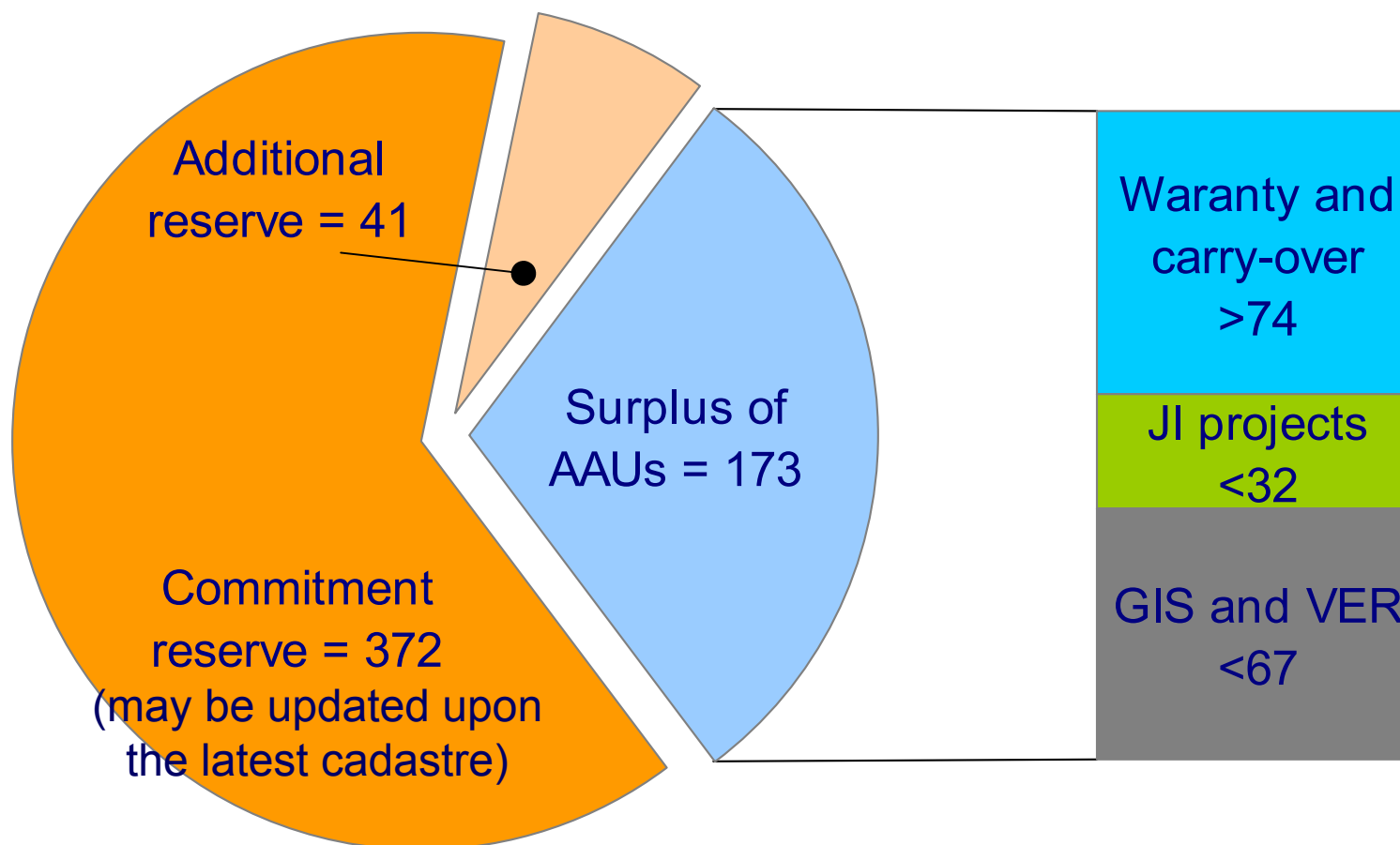
carbon credits



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Carbon market mechanisms in Belarus

quantified GHG emission limit = 586 MtCO₂eq



Carbon market mechanisms in Belarus

major principals of JI / VER / GIS

- For GIS, large projects and bundled projects (National Climate Change Mitigation Programme)
- For JI, Track II to be switched to Track I (still Track II remaining available)
- VER projects can be easily converted into JI projects and *vice versa*
- Peer expertise by respective authorities / ministries:
 - responsibility and professional review
 - review, control, and audit of project development and implementation
 - review, control, and audit of financing facility
 - underlying co-investment into key assets



Carbon market mechanisms in Belarus

the 6 eligibility requirements

Annex B,
when?

a) Should be a party to the Kyoto Protocol	V
b) Should set and register the quantified emission limitation	
c) Should create a national GHG inventory system	V
d) Should install a national registry of carbon units	V
e) Should annually submit the latest required GHG inventory	V
f) Should submit additional information on assigned amounts	V

The National authority responsible for approval of JI projects	V
National guidelines and procedures for JI projects approval	V



Carbon market mechanisms in Belarus

project pipeline

- Priority areas: energy efficiency, renewable energy, fuel switch, methane capture and landfill gas flaring
- In the pipeline today, there are ca. 150 projects
- Short descriptions available for ca. 60 projects
- PIN prepared – 33
- Letter of Endorsement – 14
- PDD prepared – 3
- Emission reduction by approx. 18 MtCO₂eq (with current project pipeline)



Post-Kyoto targets of Belarus

general assumptions

- Mitigation measures are identified, evaluated and suggested
 - National Programme of Provisions for Climate Change Mitigation stipulates GHG emission reduction potential of about 3% of the Kyoto target
 - estimated entire GHG emission reduction potential is about 10% of the Kyoto target
- Resources are limited
- Use of carbon financing mechanisms is questionable
 - GIS under IET is unavailable
 - JI is unavailable
 - voluntary carbon market is partly available (AAU retirement is not applicable)
- The Amendment ratification failure poses a threat to achieving even a minimum emission reduction target



Post-Kyoto targets of Belarus

targets for negotiation

- The Republic of Belarus will consider an option of assuming the commitment to meet the target of 90-95% of 1990 emission level in the case of availability of the Kyoto mechanisms
- Otherwise, the Republic of Belarus will refrain from voluntary commitments for the post-Kyoto period that would establish the target lower than 100% of 1990 emission level
- Tipping Point is predicted to be in year 2023

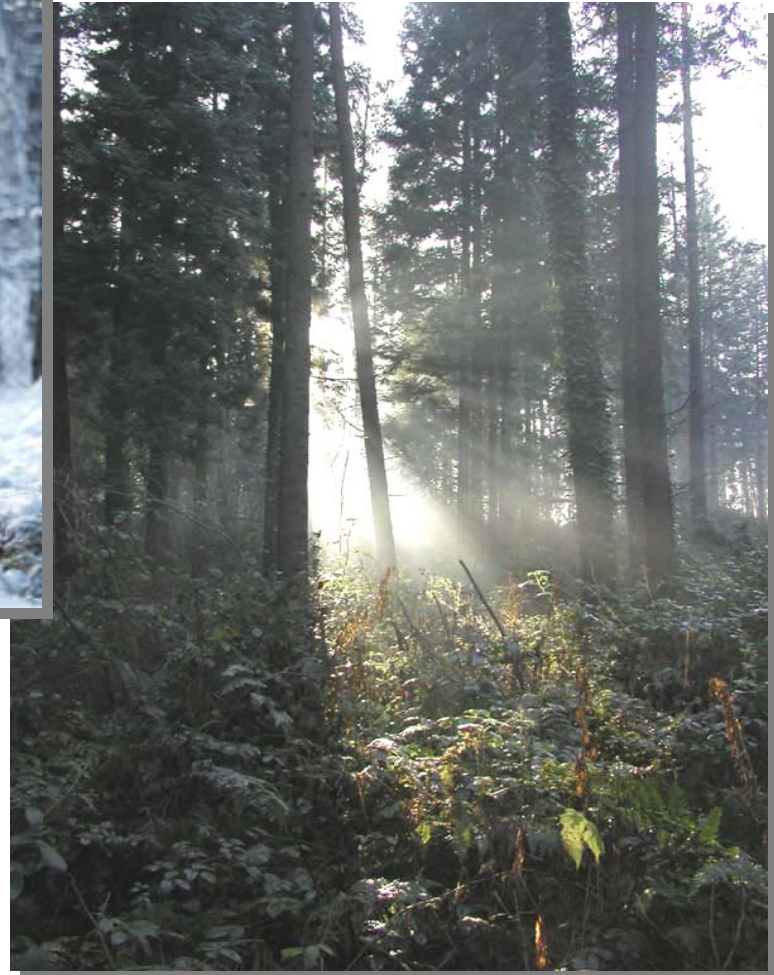


Conclusion

welcome to Belarus



to combat together for saving the Earth, to help realize the GHG mitigation potential, and to pick up the projects...



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THANK YOU !

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