



# **BIODIVERSITY - trends, drivers of change, and policy options:**

outcomes of the IPBES Regional Assessment  
for Europe and Central Asia

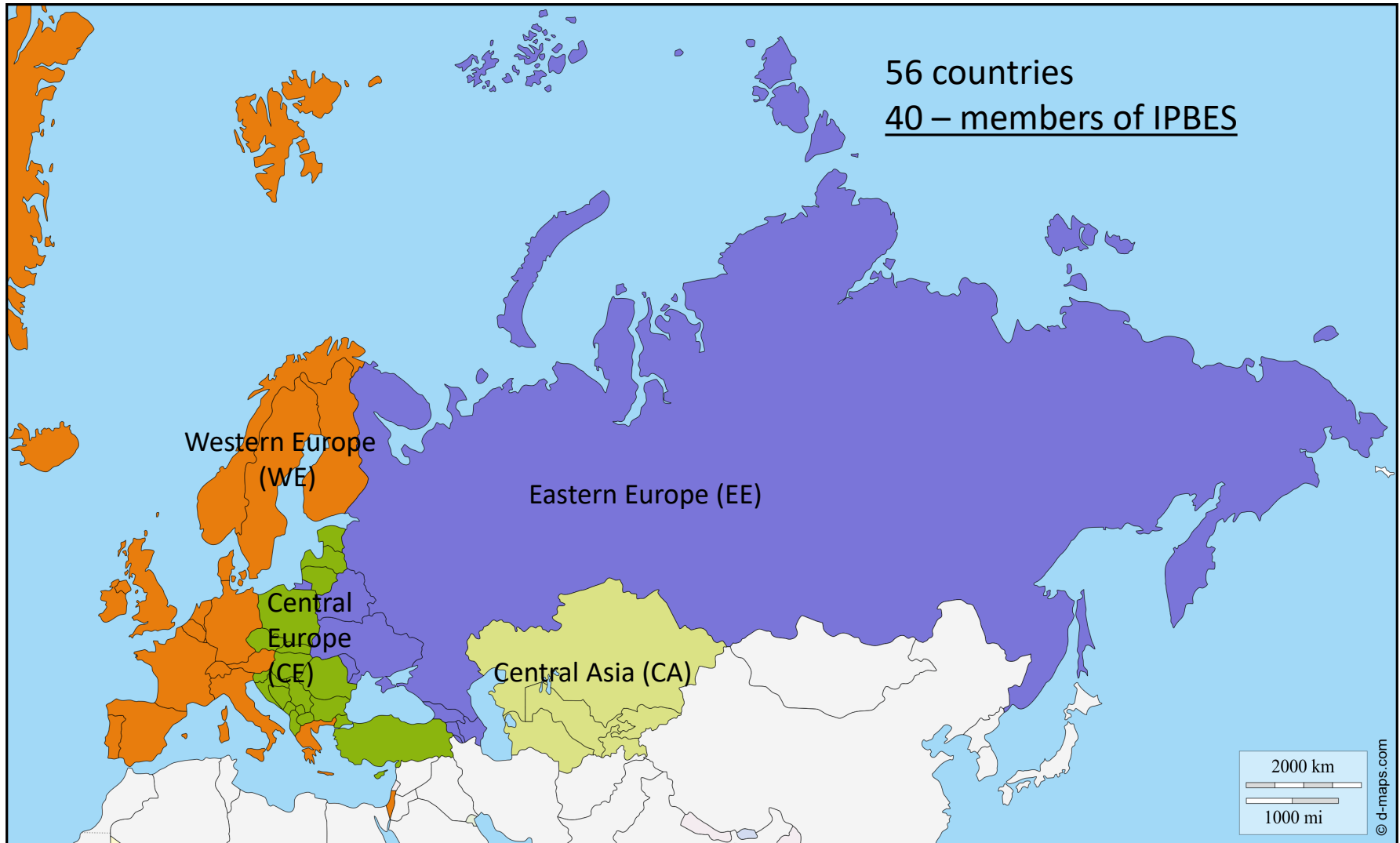
*Marine Elbakidze, Swedish University of Agricultural Sciences*



# Setting the scene

- Biodiversity continues dangerous decline
- Biodiversity is key to human wellbeing
- The decline is due to multiple interacting drivers, which undermine efforts to achieve the Aichi Targets and the SDGs
- We need more and better scientific information
- IPBES regional assessment

# Europe and Central Asia



# Biodiversity: Marine/freshwater habitats and species

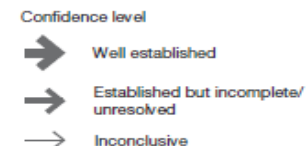
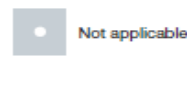
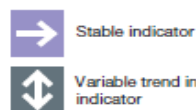
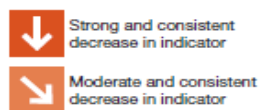
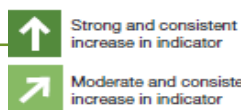
- The abundance, range and habitat size of many marine species is shrinking:
    - *48% of marine animal and plant species have been declining in the last decade*
  - Freshwater species and inland surface water habitats are particularly threatened across ECA
    - *75% of catchment areas in ECA are heavily modified*
    - *37% of freshwater fish and 23% of amphibians are currently threatened with extinction in CE and EE*
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# Biodiversity: Terrestrial species

- Terrestrial species and habitats have long-term declining trends in population size, range, habitat intactness and functioning:
    - *42% of terrestrial animal and plant species have been declined in population size*
    - *75% of local bird breeds and 58% of local mammal breeds are threatened with extinction.*
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# Past (1950-2000) and current (2001-2017) trends

		PAST				PRESENT					
		WE	CE	EE	CA	ECA	WE	CE	EE	CA	ECA
TERRESTRIAL	Agroecosystems	↘	↘	↘	↘	↘	↘	↘	↕	↕	↘
	Alpine and subalpine systems	↘	↘	↘	↘	↘	↘	↘	↘	↘	↘
	Boreal peatlands	↘	•	↓	•	↘	↘	•	↘	•	↘
	Deserts	↘	•	↘	↘	↘	↘	•	↘	↘	↘
	Forest-steppe, steppe and other southern peatlands	↓	↓	↓	↓	↓	↘	↘	↘	↘	↘
	Mediterranean forests and scrubs	↘	↘	↘	↘	↘	↘	↘	↘	↘	↘
	Permafrost peatlands	→	•	→	•	→	↘	•	↘	•	↘
	Snow and ice-dominated systems	↘	↘	↘	↘	↘	↘	↘	↘	↘	↘
	Subterranean habitats	↘	↘	↘	↘	↘	↘	↓	↓	↓	↓
	Temperate and boreal forests and woodlands	↘	↘	↘	↘	↘	↘	↘	↘	↘	↘
	Temperate grasslands	↘	↓	↓	↓	↓	↓	↘	↕	↕	↕
	Temperate peatlands	↘	↘	↘	•	↘	→	→	→	•	→
	Tropical and subtropical dry and humid forests	↘	↓	↓	↓	↓	↕	↕	↕	↕	↕
	Tundra	↘	•	↘	•	↘	↘	•	↘	•	↘
	Urban ecosystems	↘	↓	↓	↓	↓	↘	↘	↓	↓	↘
INLAND SURFACE WATER	Aral Sea	•	•	•	↓	↓	•	•	•	↘	↘
	Caspian Sea	•	•	↘	↘	↘	•	•	↘	↘	↘
	Inland surface water	↓	↓	↓	↓	↓	↘	↕	↓	↓	↘
	Saline lakes	↘	↘	↘	↘	↘	↘	↘	↘	↘	↘
MARINE		Northeast Atlantic	Baltic Sea	Sea	Seas	Azov	Arctic Ocean	Pacific Ocean	deep-sea		
PAST		↘	↘	↓	↓		↕	↘	↕		
PRESENT		↘	↓	↓	↘		↘	↘	↘		



# Trends in nature's contributions to people

		WE	CE	EE	CA	ECA
REGULATING NATURE'S CONTRIBUTIONS TO PEOPLE	Habitat maintenance	↘	↘	↘		↘
	Pollination	↘	↘	↘		↘
	Regulation of air quality	↕	↗	↗	↕	↗
	Regulation of climate	↗	↕	↗	↕	↕
	Regulation of ocean acidification					↕
	Regulation of freshwater quantity	↘	↕	↘	↘	↘
	Regulation of freshwater quality	↘	↘	↘		↘
	Formation and protection of soils	↘	↘	↘	↘	↘
	Regulation of coastal and fluvial floods	↕	↘	↘	↕	↘
	Regulation of organisms (removal of carcasses)	↗	↕	↗	↗	↗
MATERIAL NATURE'S CONTRIBUTIONS TO PEOPLE	Food	↗	↗	↗	↗	↗
	Biomass-based fuels	↗	→	→		↗
	Materials (wood and cotton)	→	→	→	→	→
NON-MATERIAL NATURE'S CONTRIBUTIONS TO PEOPLE	Learning derived from indigenous and local knowledge	↘	↘	↘	↘	↘
	Physical and psychological experiences	↕	↘	↘		↕
	Supporting identities					↕



Increase



Decrease



Stable



Variable



Lack of evidence

Confidence level



Well established

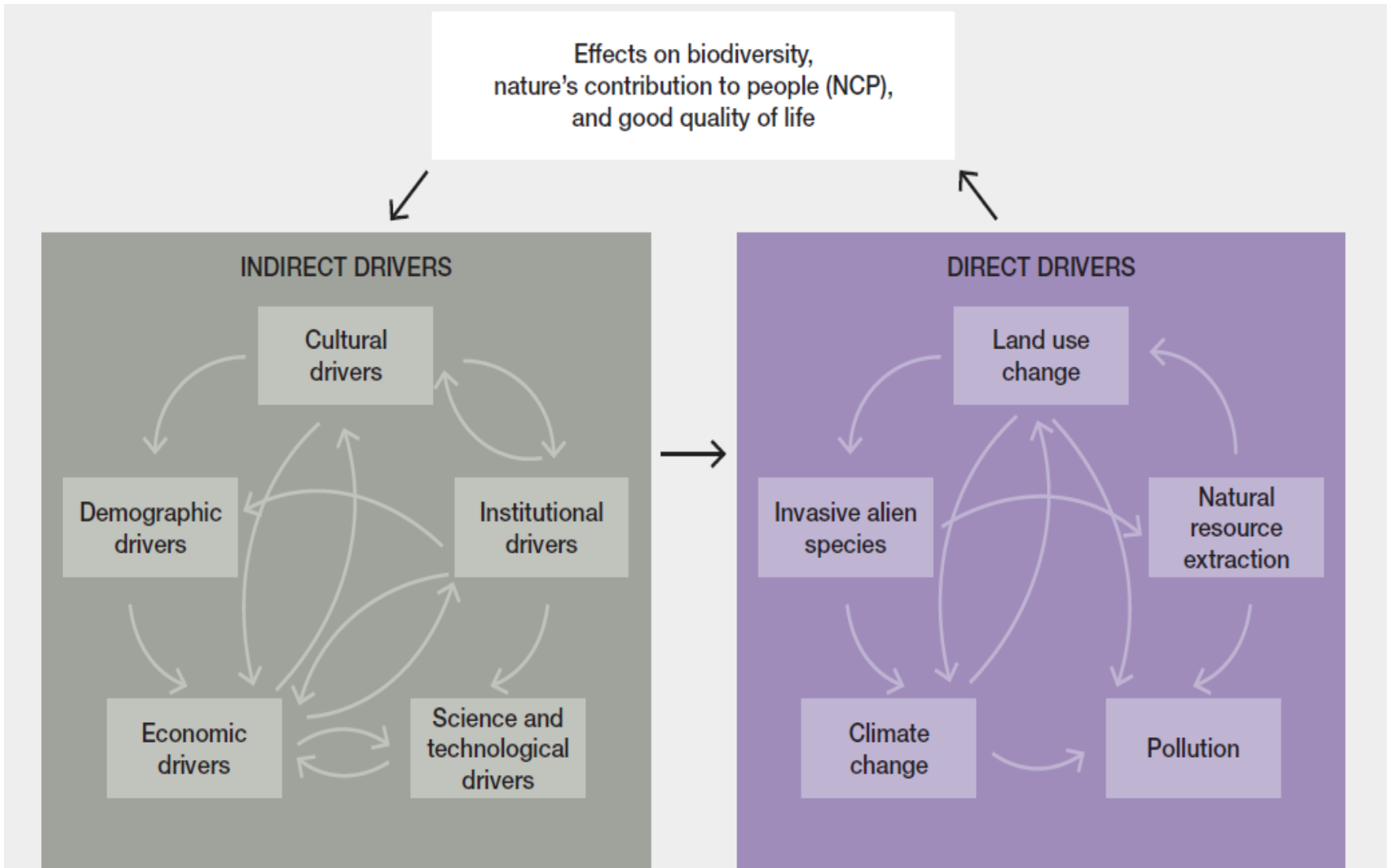


Established but incomplete/  
unresolved



Inconclusive

## II. Biodiversity: Driver of change



# Land use change: Forestry

**Trend 1:** Increasing intensity of management on forested land:

- increasing extraction of bioenergy resources
- increasing area of forest plantations
- intensification of forest management

**Trend 2:** Continuous logging of intact forest landscapes

- Russia is among three countries that comprise 52% of the total reduction of intact forest landscapes

## **Effects on biodiversity and NCP:**

Loss of structural components; Simplified spatial structure;  
Simplification of natural processes; Fragmentation of forest habitats

# Land use change: Agriculture

Intensification of conventional agriculture:

- Large-scale monocultures
- High level of agrochemical inputs
- Irrigation
- High level of mechanization
- Genetically modified crops

# Land use change: Agriculture

Effects of conventional agriculture intensification:

- Transformation and modification of natural and semi-natural habitats physically, biologically and chemically
- Reductions in species richness and diversity of plants, wild bees and birds
- Introduction of genetically modified crops
- Erosion of natural capital (e.g. pollinators, natural enemies of pest, soil biodiversity)

# Other drivers of change in biodiversity

- Extraction of abiotic and biotic resources:

- Overfishing
- Extraction of mineral resources (e.g., CA and EE)

- Pollution:

- Have decreased across the ECA, but due to time-lag effects and organic pollution/pesticides - still threaten biodiversity

- Invasive alien species:

- Have increased for all taxonomic groups

# Impact of indirect drivers on direct drivers



# Biodiversity: Policy options

THREE major directions:

1. ***Mainstreaming*** the conservation and sustainable use of biodiversity and the sustained provision of NCPs into policies, plans, programmes, strategies and practices of public and private actors:
    - Raising awareness of the dependence of good quality of life on nature
    - Defining policy objectives concerning all sustainability dimensions
    - Designing policy instruments and policy mix to support policy implementation
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# Biodiversity: Policy options

## 2. Developing *integrated approaches across sectors*:

- Coordination between sectors and sustainable management practices within each sector
  - Measure national welfare beyond current economic indicators, taking into account of the diversity values of nature
  - Introduction of ecological fiscal reforms
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# Biodiversity: Policy options

**3. *Participation*** of a wide range actors and stakeholders in governance process:

- Development of public-private partnership, co-management arrangements or even private governance involving many stakeholders
  - Increasing funding from both public and private sources, together with innovative financial mechanism (e.g. ecological fiscal transfers)
  - Education and training
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# Conclusions

- Biodiversity loss is due to a complex systems of multiple interacting drivers
- The major trend is increasing intensity of land use and climate change that lead to biodiversity loss which is posing substantial risks for human well-being
- Single-driver and single-sector approaches are likely to misrepresent the direction, magnitude or spatial pattern of impacts on biodiversity, leading to poor management or policy decisions
- Future impacts on biodiversity are underestimated because most decisions/scenarios consider only one or few drivers, and largely ignore interaction between drivers and important feedbacks

