

Conservation and sustainable use of genetic resources in agriculture

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Challenges of agriculture today

- Increasing of human population
 - Demand for energy
 - Demand for food

- Climate change
- Enough fresh water
- Soil desertification
- Biodiversity



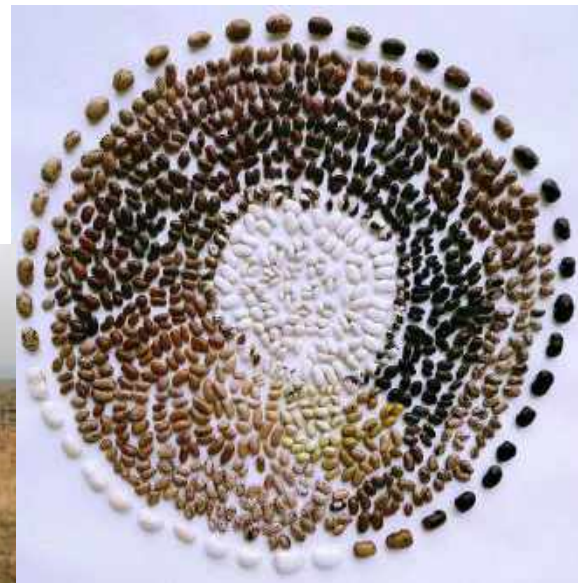
Biodiversity



- Earth different than other planets.
- All life beings on Earth
 - < 100,000 ecosystems
 - ~ 9M species
 - ∞ number of genes
- Agrobiodiversity is a part of Biodiversity

Dimensions of agrobiodiversity

- Genetic resources for food and agriculture
- Components of biodiversity that support ecosystem services
- Abiotic factors
- Socio-economic and cultural



Genetic resources

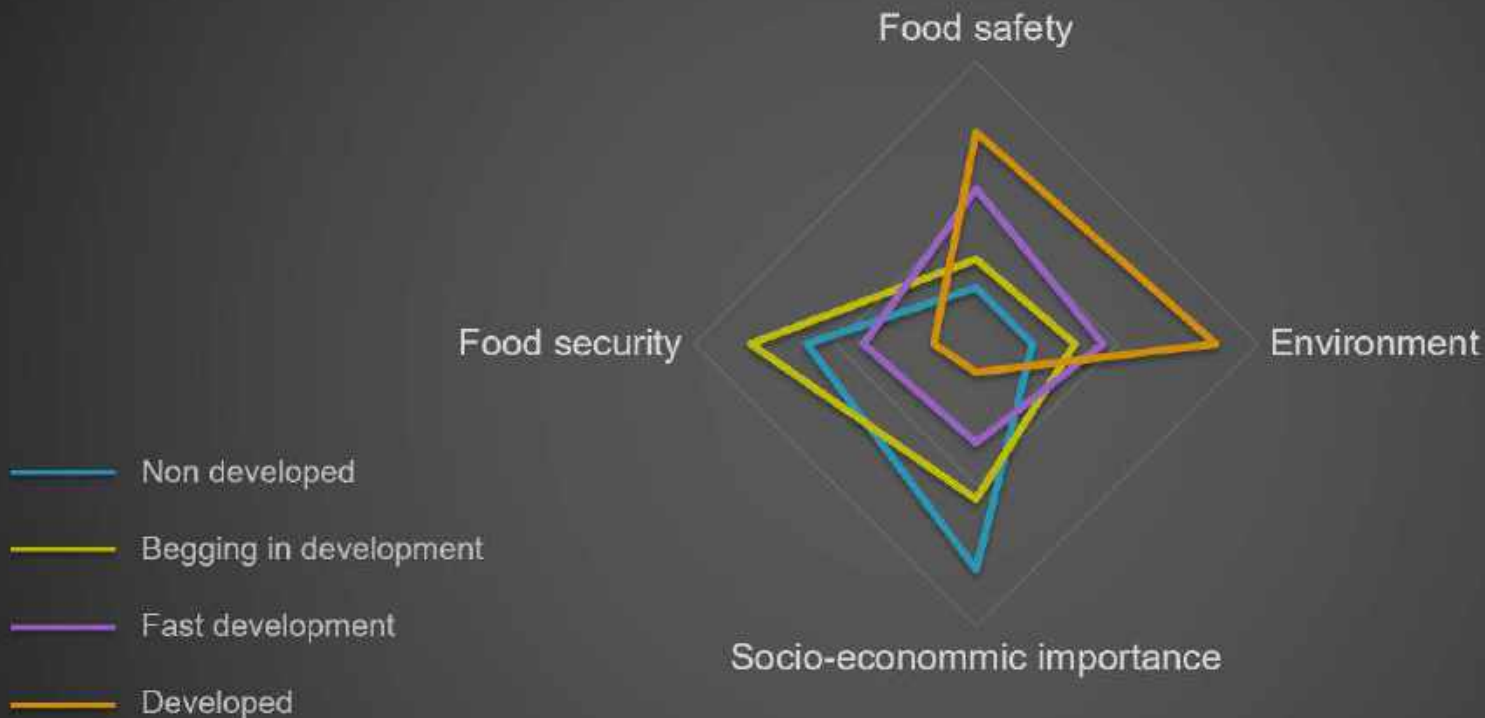
- Food production
 - Plants, animals & microorganisms
 - Cultivated/domesticated species
 - Wild plants & animals
- Sustainable production – environment friendly
- Research – food today, but also tomorrow!!!



What about genetic resources?

- Since the 1900s, 75% of plant genetic diversity has been lost.
- Intensive farming has favored genetically uniform crops and breeds
- Long and diverse crop rotations = diverse regional distribution of crops
- 30% of livestock breeds are at risk of extinction; 6 breeds gone monthly
- 75% of the world's food is generated from 12 plants & 5 animal species
- 4% of the ~300 000 known edible plants, (150 to 200 used by humans)
- Rice, maize and wheat ~ 60 % of plant food humans
- Animals: 30 - 40% of human requirements for food and agriculture.

Genetic resources and economic development



Genetic resources - challenges

- **The six targets covered by the EU Biodiversity Strategy to 2020 (EEA, 2015):** Increase the contribution of agriculture and forestry to maintaining and enhancing biodiversity;
- **EU Report Agricultural Genetic Resources - from conservation to sustainable use (2013):** priority areas in sustainable use of genetic resources together with scientific and technological developments.
- **Preparatory action on EU plant and animal genetic resources in agriculture (2013):** interlink between actions in conservation and sustainable use of genetic resources and the post 2020 rural development programs.

Activities coordination

- Coherency and consistency



CBD

Nagoya Protocol

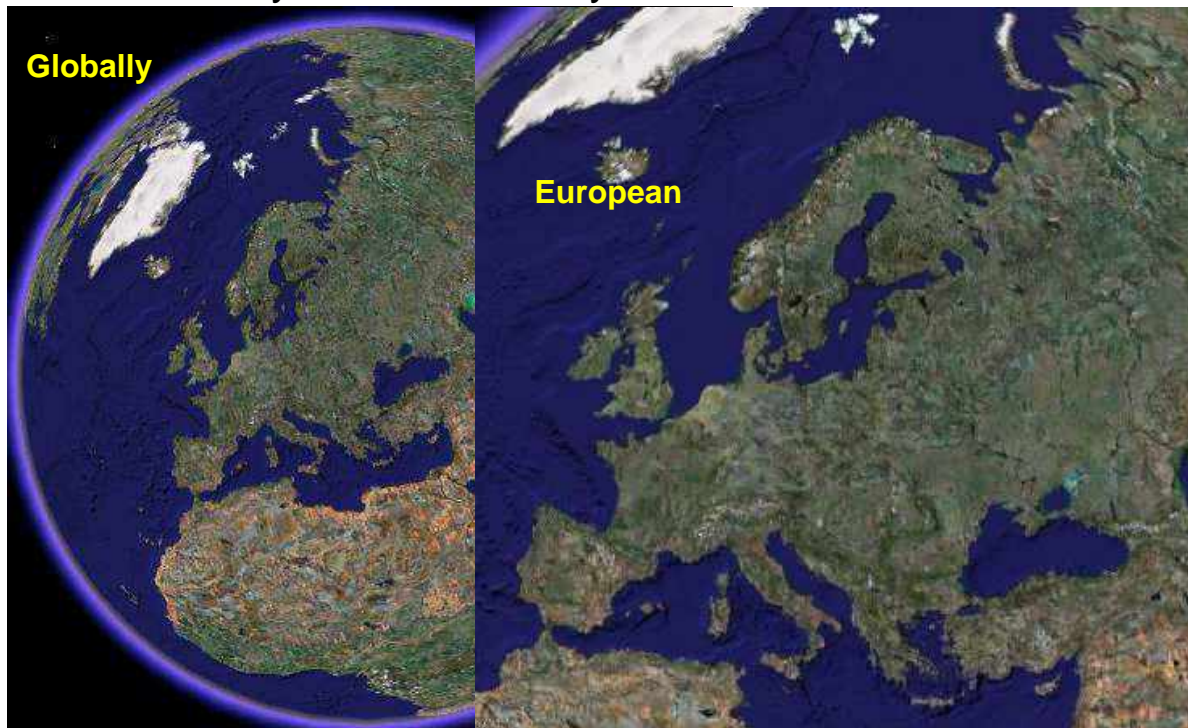
International Treaty on
Plant Genetic Resources for
Food and Agriculture

FAO

Global Plan of Action for
AnGR & Interlaken Declaration

Activities coordination

- Coherency and consistency



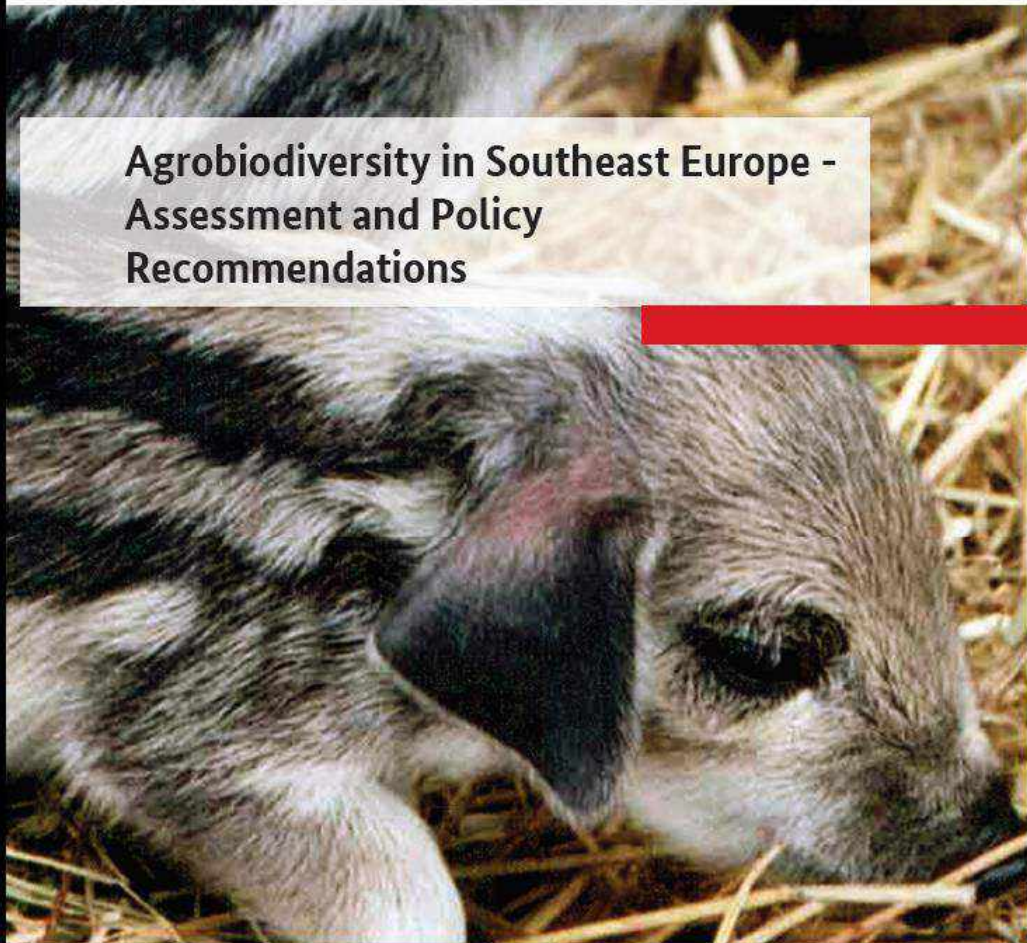
CAP,
IPARD

Activities coordination

- Coherency and consistency



Agrobiodiversity in Southeast Europe - Assessment and Policy Recommendations



REGIONAL SYNTHESIS REPORT

Genetic resources in the region

- Rich diversity
 - Crossroads Europe –Asia
 - Geography and topography
 - Diversity of people, culture, tradition
- Threats
 - Intensive agriculture
 - Population drift
 - Climate change
 - Lack of market opportunities



Genetic resources and agriculture policy

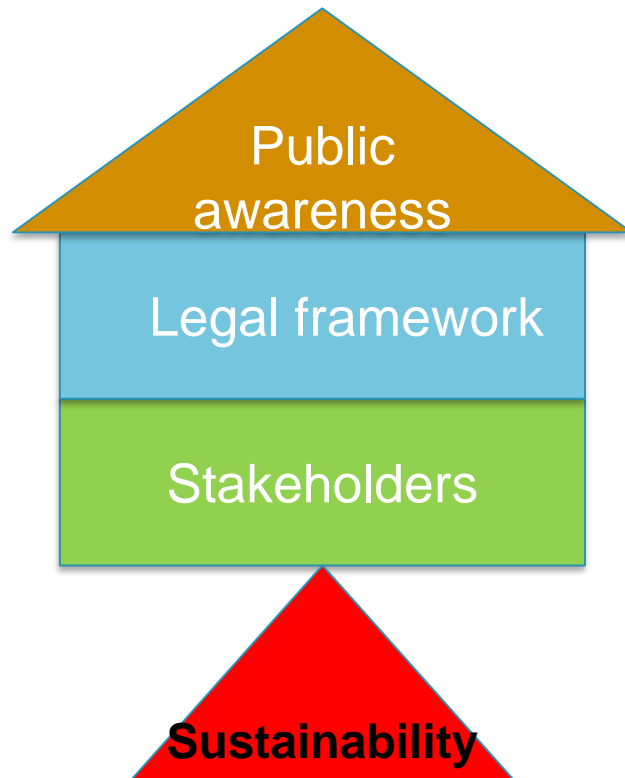
- Agriculture policy and market conditions main focus on varieties dominant on market
 - Commercial seed sector vs free exchange of selected seeds
 - Genetic resources are privatized (3 corporations control <50% of global seed market)



Conservation of genetic resources – Legal framework

	ALB	BIH		MNE	MKD	SRB	KOS*
		FBIH	RS				
Specific laws or regulations on agrobiodiversity conservation and use	X		X		X	X	X
Explicit inclusion of agrobiodiversity in other national laws/bylaws	X		X	X	X	X	X
Ratified Convention on Biological Diversity (CBD)	X	X		X	X	X	
Ratified Nagoya Protocol	X						
Ratified International Treaty on Plant Genetic Resources for Food and Agriculture	X			X	X ^S	X	

Conservation of genetic resources



Conservation of genetic resources – Stakeholders

- Someone has to do the conservation
 - In situ (on farm)
 - Farmers, companies and institutions
 - Coordination and mainstreaming
 - Ex situ (gene bank, bio bank)
 - In vivo collections
 - Cryo - conserved



Conservation of genetic resources – Stakeholders (In situ)

- PGR
 - Seeds are easier to keep and replant,
 - Fruit plants are more difficult (pests & diseases, fires)
- AnGR
 - Locally adapted breeds
 - Family farms with traditional production system



Conservation of genetic resources - PGR

	ALB	BIH		MNE	MKD	SRB	KOS*
		FBIH	RS				
Total number of accessions in the national inventories	4105	490	1182	1242	1579*	15000	384
Seed collections	3219	-	1015	334	1579	12000**	376
Field collections	886	88	251	828	0	3744	8
Number of plant species under conservation	147	32	120	30	81	249	26

Conservation of genetic resources – AnGR

	ALB	BiH		MNE	MKD	SRB	KOS*
		FBiH	RS				
Current number of locally adapted breeds	36	11	12	12	11	32	11
At risk	11	7	4	3	5	29	8
Already extinct	1	NA	2	1	1	3	1
Under conservation programs	7	0	5	6	6	20	0

Conservation of genetic resources – Public awareness

- Awareness in
 - Policy and decision makers;
 - Public servants;
 - Farmers;
 - Research and education;
 - Business in food value chain (tourism, gastronomy, retail);
 - Media;
 - NGO;
 - Consumers.



Some successful stories

- SEEDNet Project (All)
- Conservation of Agro Biodiversity in Rural Albania (CABRA), AL
- Plum products, BiH
- Institute for genetic resources, UNI–BL, RS
- Legal AnGR framework, MKD
- Regeneration and commercial production of local varieties by private companies, SER
- Mangalitza pig, SER
- Samborka e Dukagjinit ,KOS*



Conservation of genetic resources – Sustainability

- Financial support to small family farms with local varieties & breeds;
- Inclusion of agrobiodiversity in climate change adaptation strategies;
- Maintain genetic diversity of seeds, cultivated plants & livestock;
- Provide financing for a sustainable operation of gene banks, monitoring/inventorying of local varieties/breeds & research for in-situ and ex-situ conservation;
- Provide involvement of women in in situ conservation;
- Support traditional agricultural products within tourism strategies;
- Ensure a fair income for local farmers out of their economic activity;
- Improve and avoid gaps in all relevant laws and regulations.