



Sub-regional and
transboundary challenges
and opportunities
for gene banking

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Transboundary breeds



- ❑ Lipizzan horse (SI/AT/CRO and other)
- ❑ Posavje horse (CRO/SI)
- ❑ Noriker horse (AT/SI)
- ❑ Medžimurje horse (type of cold blooded horse in stud book in Slovenia) (CRO/SI)
- ❑ Istrian pramenka (CRO/SI)
- ❑ Bovška sheep (Krainer Steinschaf) (SI/AT)
- ❑ Jezersko-solčava sheep (Brillenschaf) (SI/AT/CRO)
- ❑ Turopolje pig (CRO/AT)
- ❑ Carniolian honeybee (SI/AT/CRO and other)

Medžimurje horse

- ❑ Murinsulaner, Muraközi, Muraközer Pferd
Medžimurski konj
- ❑ Mura river (Austria, Croatia, Hungary and Slovenia)
- ❑ A special type of cold blooded horse in Slovenia (considerable variability)
- ❑ Population size:
CRO: (HCK, 2010): 57; 21 ♀; 5 ♂
SI:
- ❑ Breeding program:
CRO: yes,
SI:
- ❑ State of risk:
CRO: critically endangered



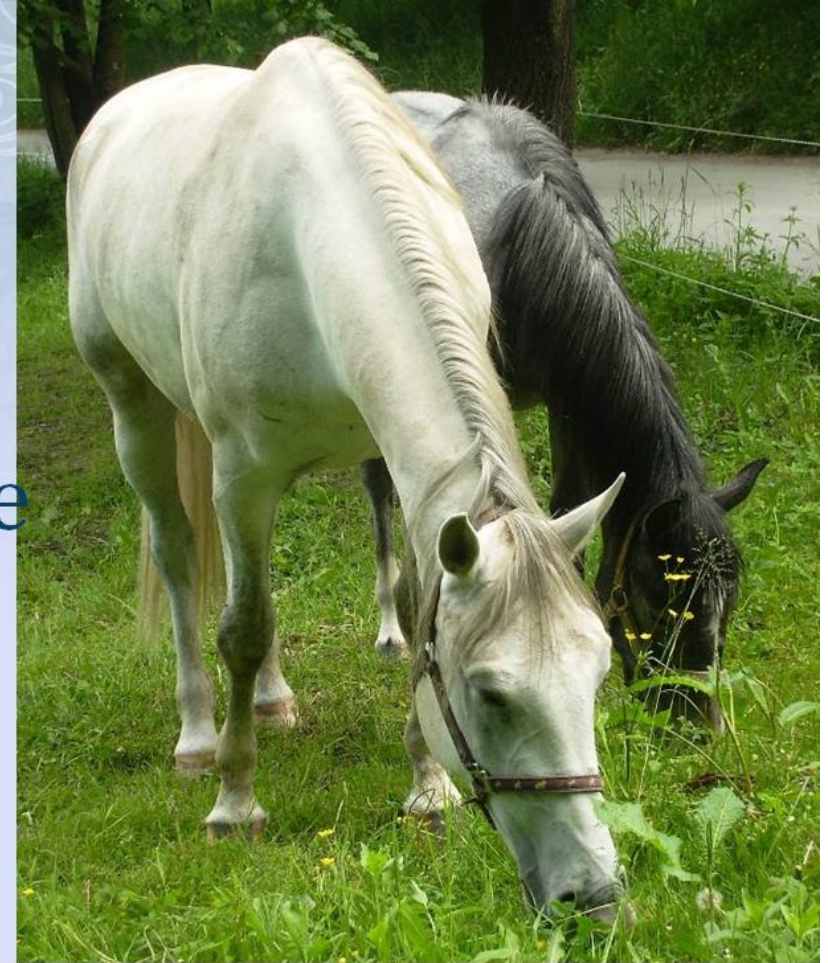
Posavje horse

- ❑ Formed in Croatia:
Croatian Posavac
- ❑ Sava river
- ❑ Population size:
SI: ~ 1260 ; 620 ♀; 91 ♂
CRO: ~ 4909 ; 2072 ♀; 124 ♂
- ❑ Breeding program: yes
- ❑ State of risk:
SI: endangered
CRO: potentially endangered



Lipizzan horse

- ❑ Origin in Slovenia
- ❑ Used mainly as dressage horse for Spanish riding school
- ❑ Population size:
SI: ~ 1130; 340 ♀; 50 ♂
CRO: ~ 1548; 462 ♀; 177 ♂
AT: ~ 500; 139 ♀; 50 ♂
- ❑ Breeding program: yes
- ❑ State of risk:
SI: endangered
CRO: potentially endangered
AT: critical



Noriker horse

- ❑ Origin in Austria (Salzburg)
- ❑ Heavy draught horse
- ❑ Now mainly used as pleasure driving horse
- ❑ Population size:
AT: ~ 4751 ♀, 194 ♂, Trend ↓
SI: ~ 300
- ❑ Breeding program: AT yes, SI (Included inside SI coldblooded horse)
- ❑ State of risk: AT vulnerable



Istrian Pramenka

- ❑ Istarska ovca, Istrijanka
- ❑ Istrian and Karst reagon
- ❑ Use: for milk production (cheese) and light lambs for slaughter
- ❑ Population size:
SI: ~ 1150; 920 ♀; 43 ♂
CRO: ~ 2314; 1769 ♀; 96 ♂
- ❑ Breeding program:
yes
- ❑ State of risk:
SI: vulnerable
CRO: potentially endangered



Jezersko-Solčava sheep



- ❑ Solčavka, Brillenschaf
- ❑ Alpine region-Charintia (Slovenia and Austria)
- ❑ Use: lamb meat production, wool
- ❑ Population size:
 - SI: ~ 17.200 ; 4.999 ♀, 203 ♂ in herd book
 - AT: ~ 6000; 4786 ♀, 235 ♂ in herd book
 - CRO: 3288; 2812 ♀, 235 ♂ in herd book
- ❑ Breeding and preservation program in all three counties
- ❑ State of risk: not at risk in SI, vulnerable in AT

Bovec sheep

- Bovška, Krainer Steinschaf
- Julian Alps, Soča valley
- Use: mainly milk production (cheese) and suckling lambs for slaughter, AT premium lamb meat program
- Population size:
Slovenia: 3500; 2526 ♀ , 148 ♂ in herd book
Austria: 3000; 1928 ♀ , 132 ♂ in herd book
- Breeding and preservation program: yes
- State of risk: at risk



Turopolje pig

- Use: Old type pasture pig
 - Austria traditional quality pork products
 - Croatia ??
- Population size:
 - AT: ~ 500; 189 ♀, 67 ♂ in herd book
 - CRO: ~ 400; 129 ♀, 30 ♂
- Preservation program: yes
- Breeding program: yes
- State of risk:
 - AT: highly endangered
 - CRO: critically endangered



Carniolian honeybee

- ❑ Siva pčela, Sivka, Kranjska čebela, Kranjska pčela, Carnica Biene
- ❑ Alpine, Mediterranean Adriatic Sea, dinaro-karstic region
- ❑ Population size:
SI: 161.500 families
CRO: 320.000 bee
- ❑ Breeding and preservation program:
 - Austria: Private organizations - subsidies for purebred queen bees
 - Croatia: breeding program since 1997, Breeding association of bee keepers
 - Slovenia: breeding program since 2006
- ❑ State of risk:
AT: vulnerable
CRO: not endangered
SI: vulnerable



GENE BANK STORAGES

- Slovenia 4 (BF, VF, IC Preska, IC Ptuj)
- Croatia (Gene bank - not yet established)
- Austria 2 (Thalheim, Hohenzell)

GENE BANK DATA

Breed	Country	Type	Animals	Samples	Doses
Noriker horse	SI				
	AT	semen	5	14	40
Istrian Pramenka	SI	semen	8	24	240
		blood	46	46	/
Jezersko-Solčava sheep	SI	semen	8	24	230
		blood	55	55	/
	AT	semen	40	420	13723

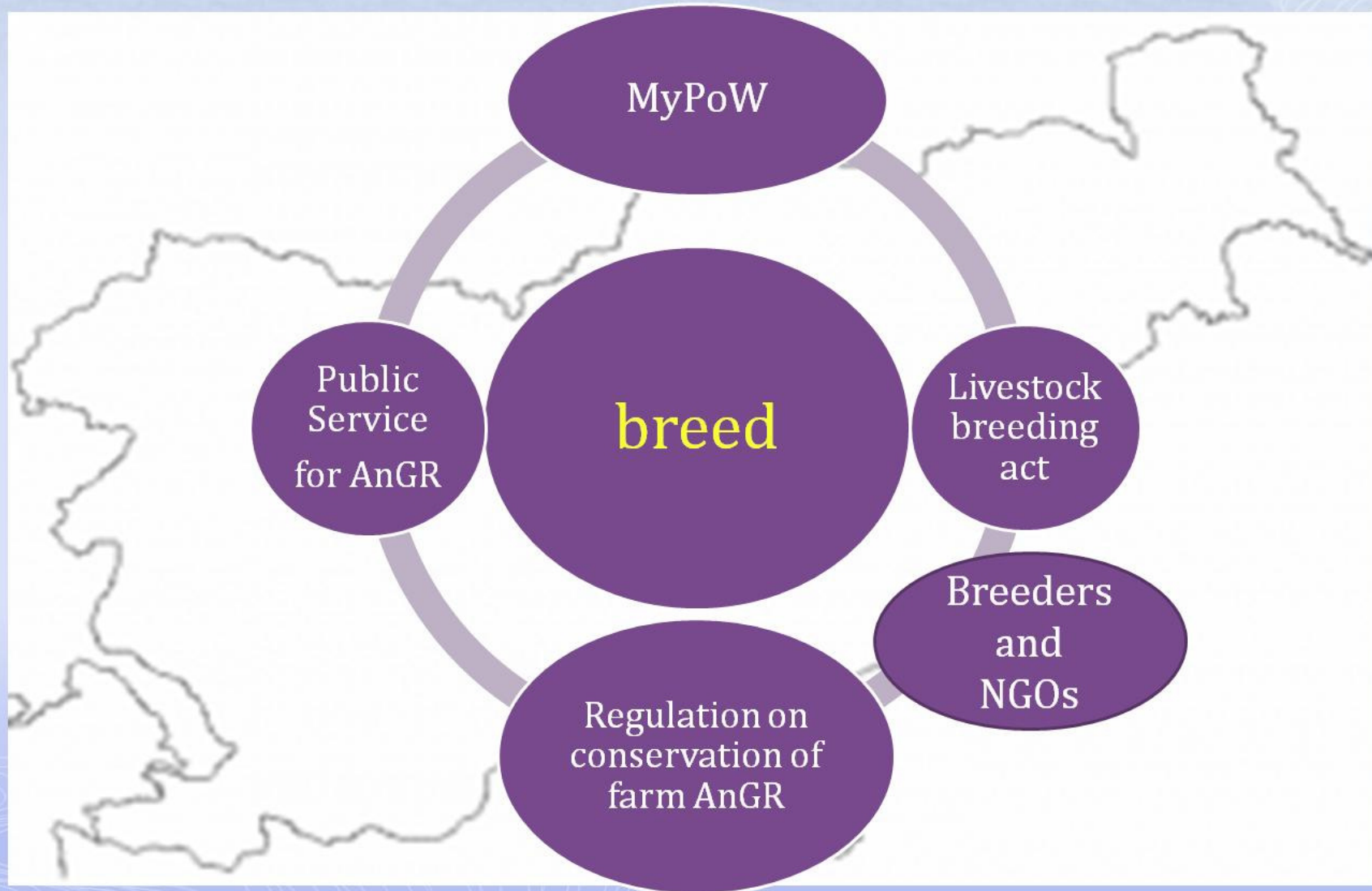
GENE BANK DATA

Breed	Country	Type	Animals	Samples	Doses
Medžimurje horse	SI	/	/	/	/
Posavje horse	SI	blood	64	64	/
Lipizzane horse	SI	tissue	1063	1063	/
	AT	?	?	?	?

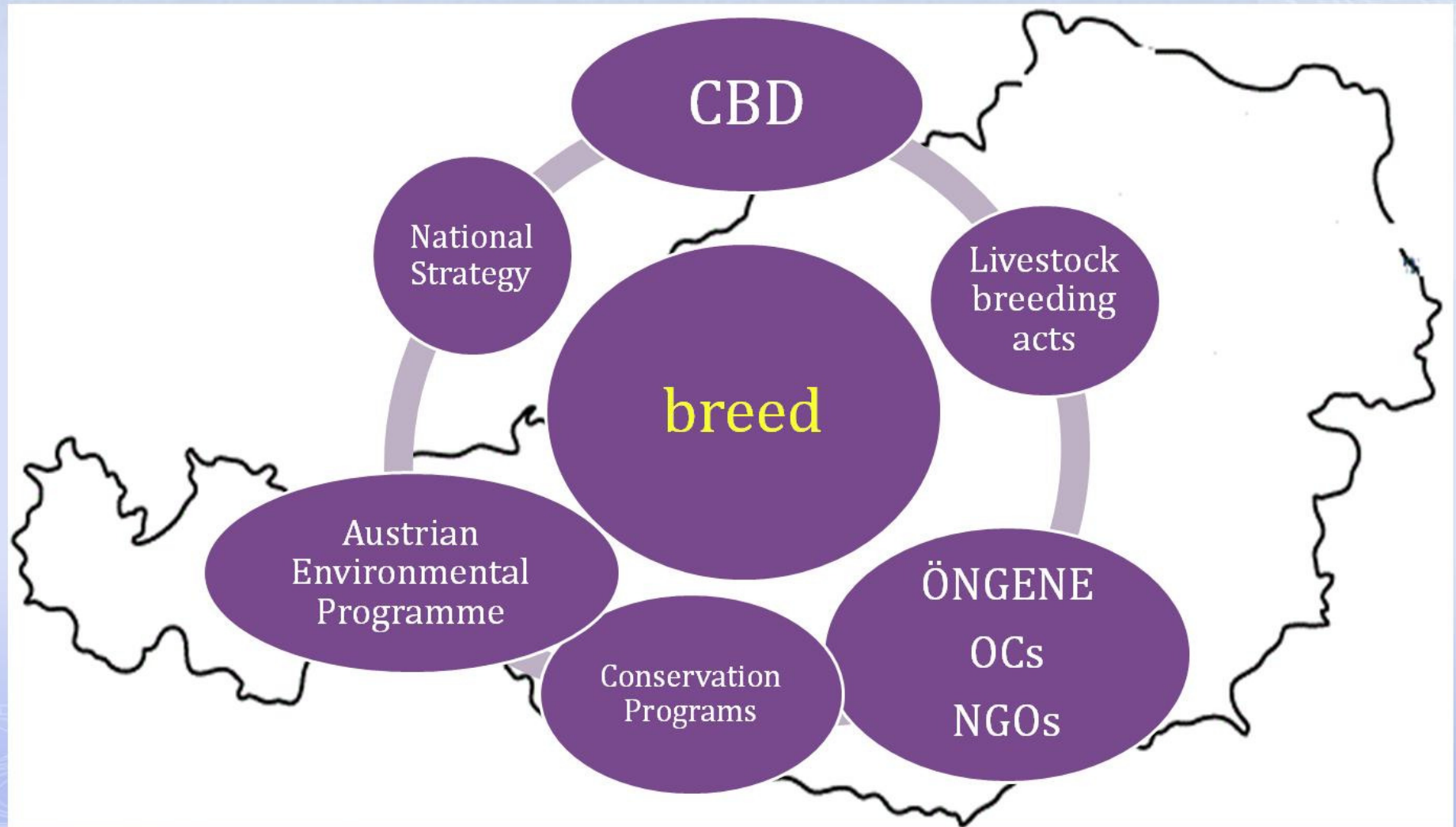
GENE BANK DATA

Breed	Country	Type	Animals	Samples	Doses
Bovška sheep	SI	semen	10	30	402
		blood	45	45	/
	AT	semen	15	158	5040
Turopolje	AT	semen	5	66	334

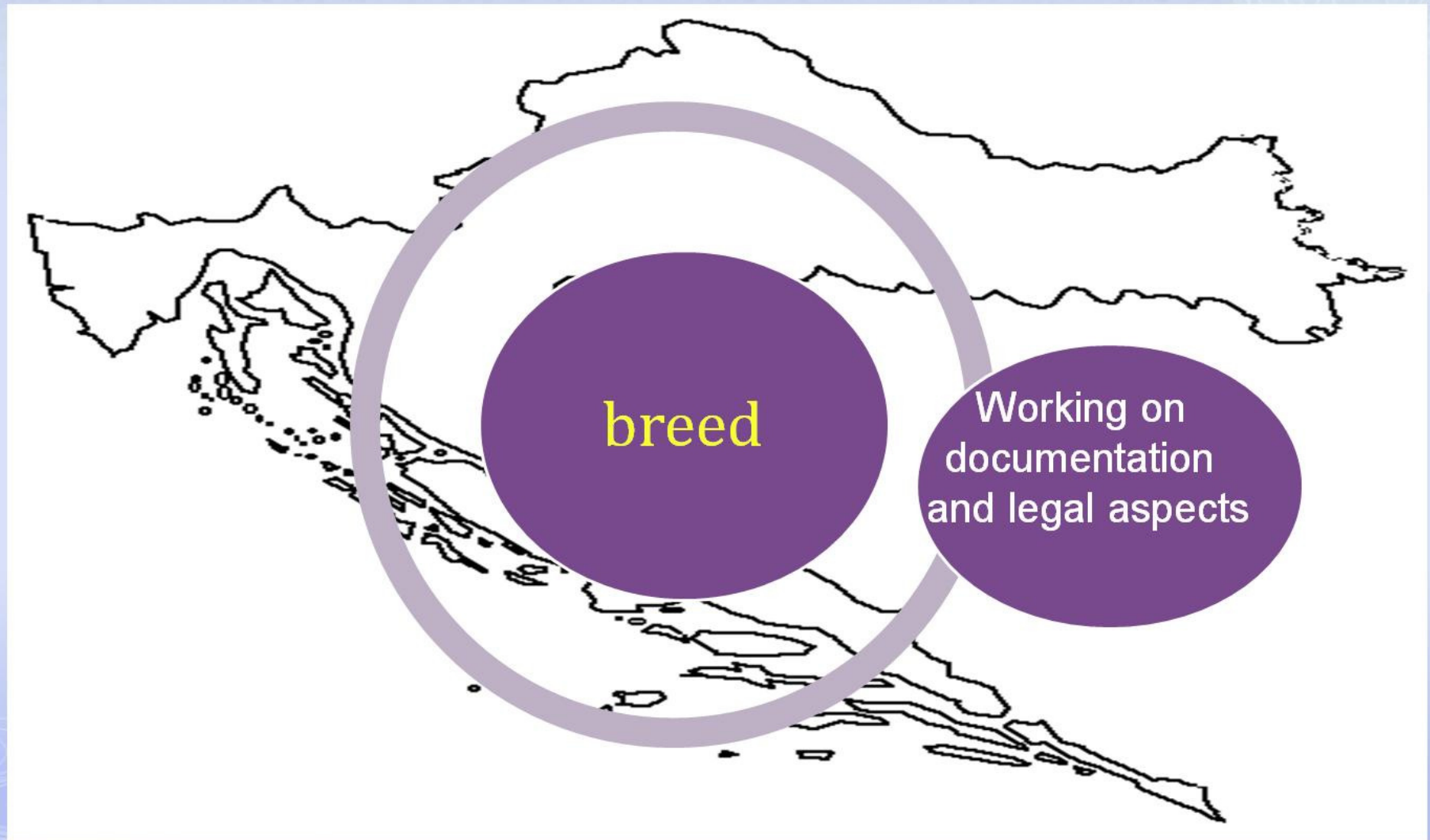
The legal framework (SI)



The legal framework (AT)



The legal framework (CRO)



Local and International Challenges

- ❑ Cross country preserving of cryo material (semen, ova,...)
- ❑ Import-export of cryo material and live animals to reduce inbreeding
- ❑ Different level of characterization
 - Phenotypic
 - Performance
 - Molecular level
- ❑ Historical review of origin of the breed
- ❑ Veterinary legislation

Institutional opportunities

- ❑ Security-long term-Implementation of duplicates
- ❑ Genetic distance research (istrian pramenka and jezersko-solčava sheep,...)
- ❑ Cooperation on the level of Breeding Organizations
- ❑ Cooperation between public and private institutions
- ❑ Cooperation between IC's

Opportunities for breeders

- ❑ Establishment of sub.-regional trade mark (brand)
- ❑ Agro tourism
- ❑ Promotion of traditional local rearing technology, production system in connection to quality of products
- ❑ Marketing (season, wether)
- ❑ Promotion of local breeds (International exhibitions and auctions)

Benefits and side effects

benefits:

- reduced inbreeding
 - higher level of genetic diversity, adaptation, and survival
 - there will be no more “extinct” breeds
- if good veterinarian /i.e no disease transfer/, legal issue are considered → no side-effects
 - prerequisite : molecular characterization



Thank you for your attention!

