Description of production environments

a new module in the Domestic Animal Diversity Information System

Beate Scherf & Mateusz Wieczorek
Animal Genetic Resources Branch, Food and Agriculture Organization

in collaboration with:
Dario Dentale, Francesca Vigetti, Luigi Simeone, Tatiana Woźnicka & EFABISnet steering committee & team

Content

- Description of production environments & GPA
- Why describe production environments?
- For whom?
- Framework for describing production environments
- Implementation in FABISnet/DAD-IS
- Functionality
- Way-forward

Description of production environments & GPA

Strategic Priority Area 1

Characterization, Inventory and Monitoring of Trends and Associated Risks

Strategic Priority 1

Inventory and characterize animal genetic resources, monitor trends and risks associated with them, and establish country-based early-warning and response systems

Strategic Priority 2

Develop international technical standards and protocols for characterization, inventory, and monitoring of trends and associated risks

Why describe production environments ?

- facilitate meaningful comparisons and evaluation of breed performance
- obtain data that can serve as proxies for adaptedness
- contribute to evidence-based approach to decision-making
- complement other sources of breed-related information
- allow comparison of internationally standardized data
- allow analysis of AnGR in relation to other domains such as disease outbreaks, poverty levels ...
- prerequisite for modeling the impact of climate change on AnGR

For whom?

- National Coordinators for the Management of Animal Genetic Resources (NCs)
  - plan & implement AnGR-related measures at national level
  - require well-structured & relevant information
  - require clear definitions and standards
  - require user-friendly tools for reporting & analysis

- Scientists
  - understand relationships between geographic location & characteristics of the production environment
  - analyse evolution of agricultural production systems
  - analyse breed distribution & utilization over time
  - develop prioritization frameworks for conservation & breed development

For whom?

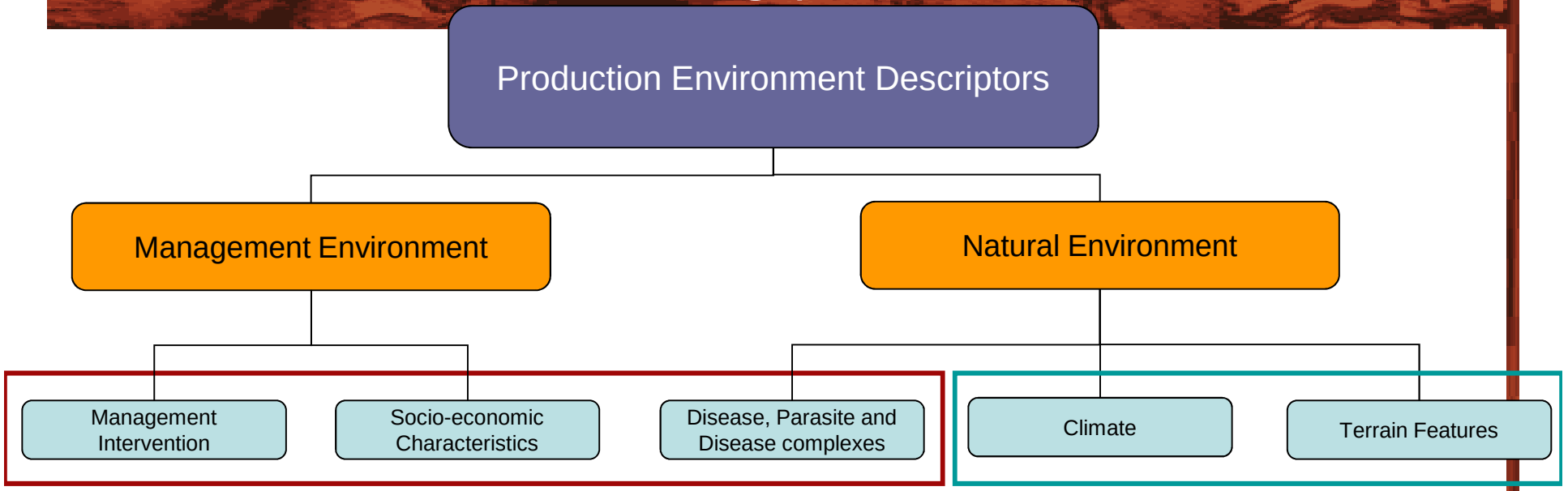
- Development practitioners
  (NGOs, technical cooperation agencies & extension services)
  - disseminate or promote particular breeds/species in a given PE
  - identify new marketing opportunities
  - require info on socio-economic factors & specific products

- Livestock keepers
  - decide on breed substitution or changes to management environment
  - evaluate capacities of non-local breeds to withstand locally specific sets of stressors
  - face problem to access information!

For whom?

- Policy-makers
  - improve national & household food security
  - promote rural development & poverty alleviation
  - maintain biodiversity & other natural resources
  - determine how available AnGR & existing PEs can be matched & developed to meet demands for livestock products & services
  - prioritize for conservation
  - plan genetic improvement programmes at national level
  - avoid interventions that cause economic harm or impact livelihoods
  - evaluate suitability of breeds for introduction into a new PE
  - facilitate exchange & access required to cope with change

Framework for describing production environments

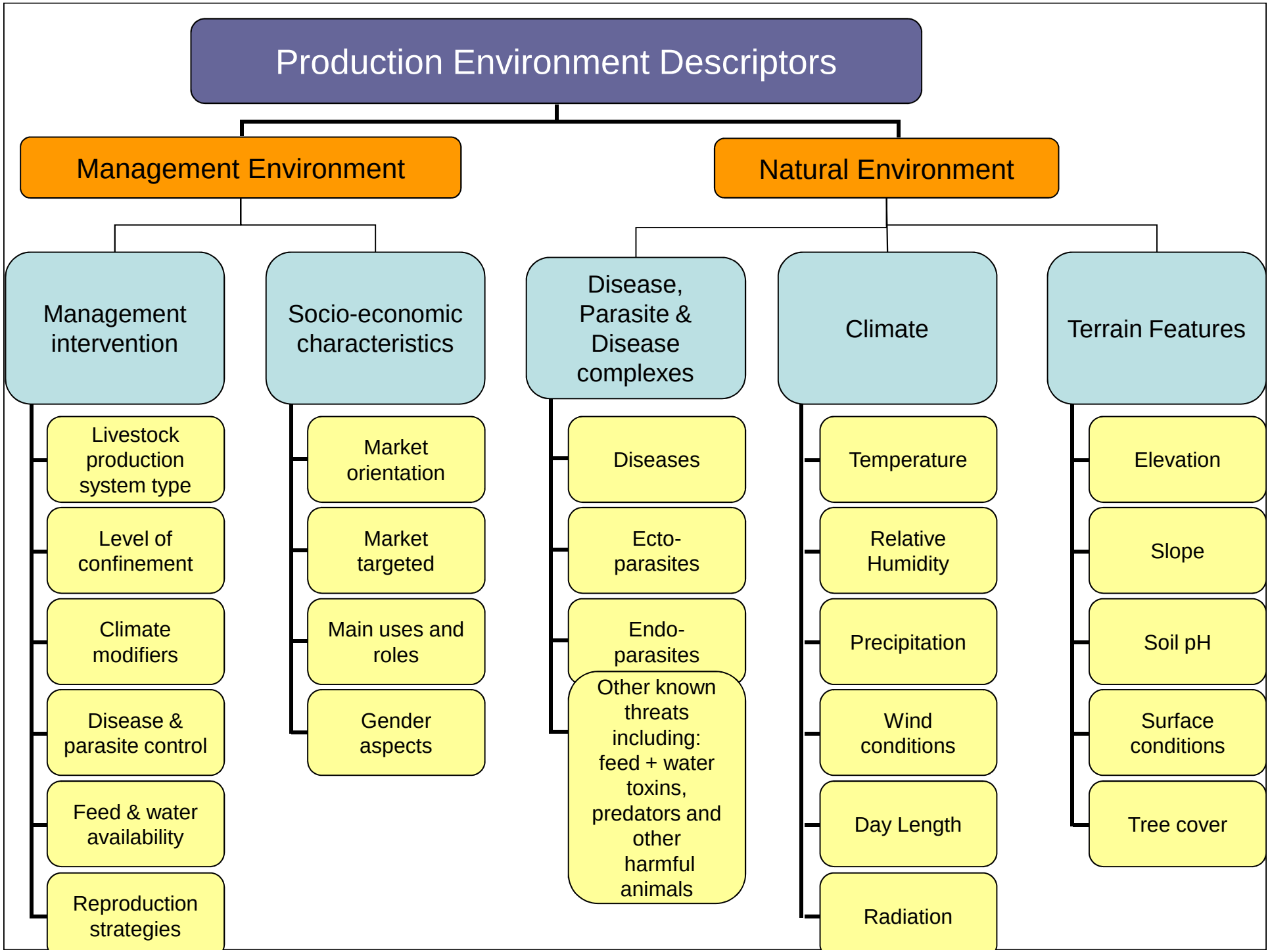


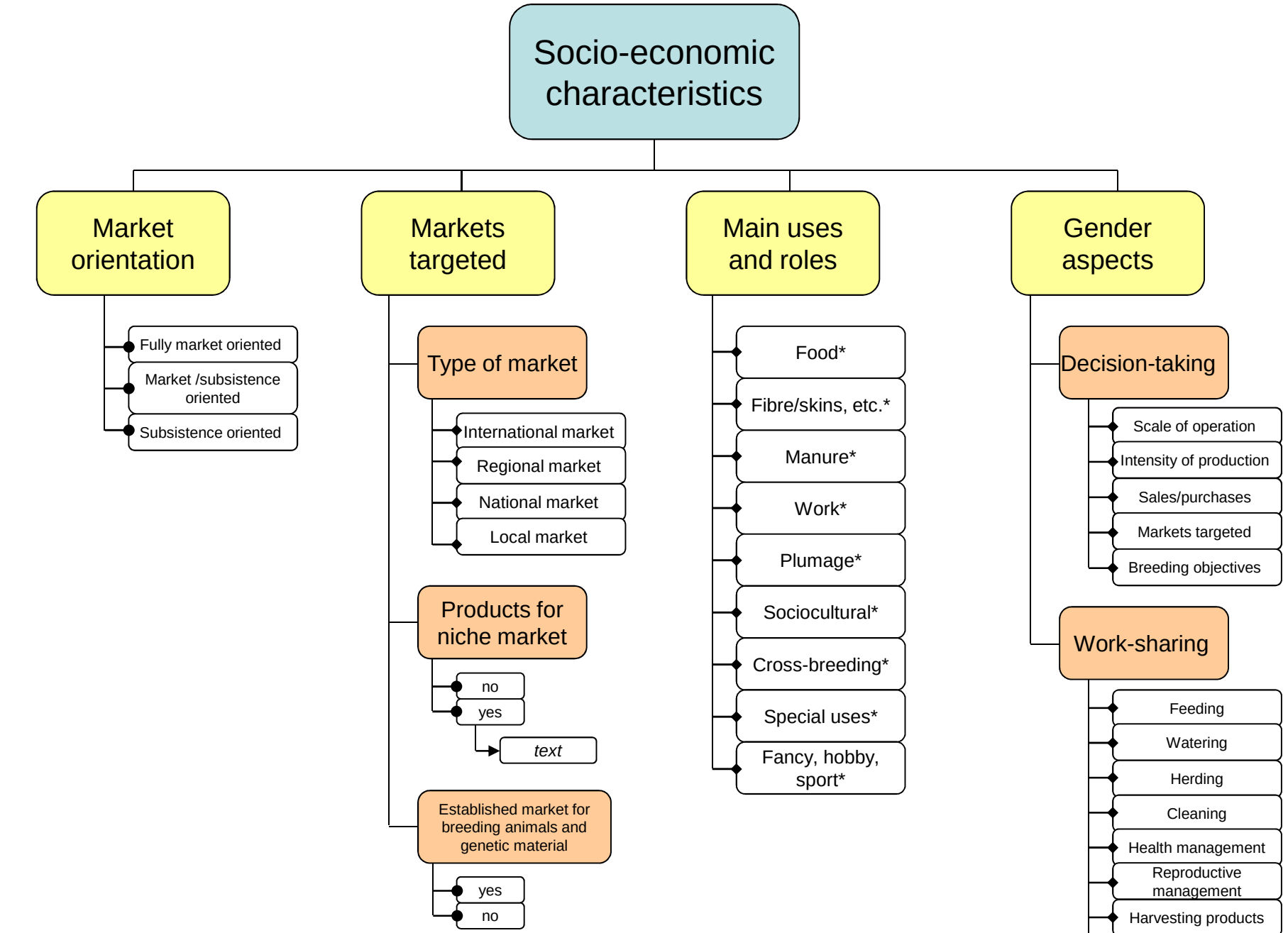
1998: development of framework by Expert Group (WCGALP Australia)

1998: National Coordinators of Asia and Europe tested questionnaire:
- too complex & difficult to complete all information
- when to describe more than one production environment?
- proposed that FAO uses other global datasets where they exist

1999: DAD-IS review WS discussed approach administrative level vs breed distribution

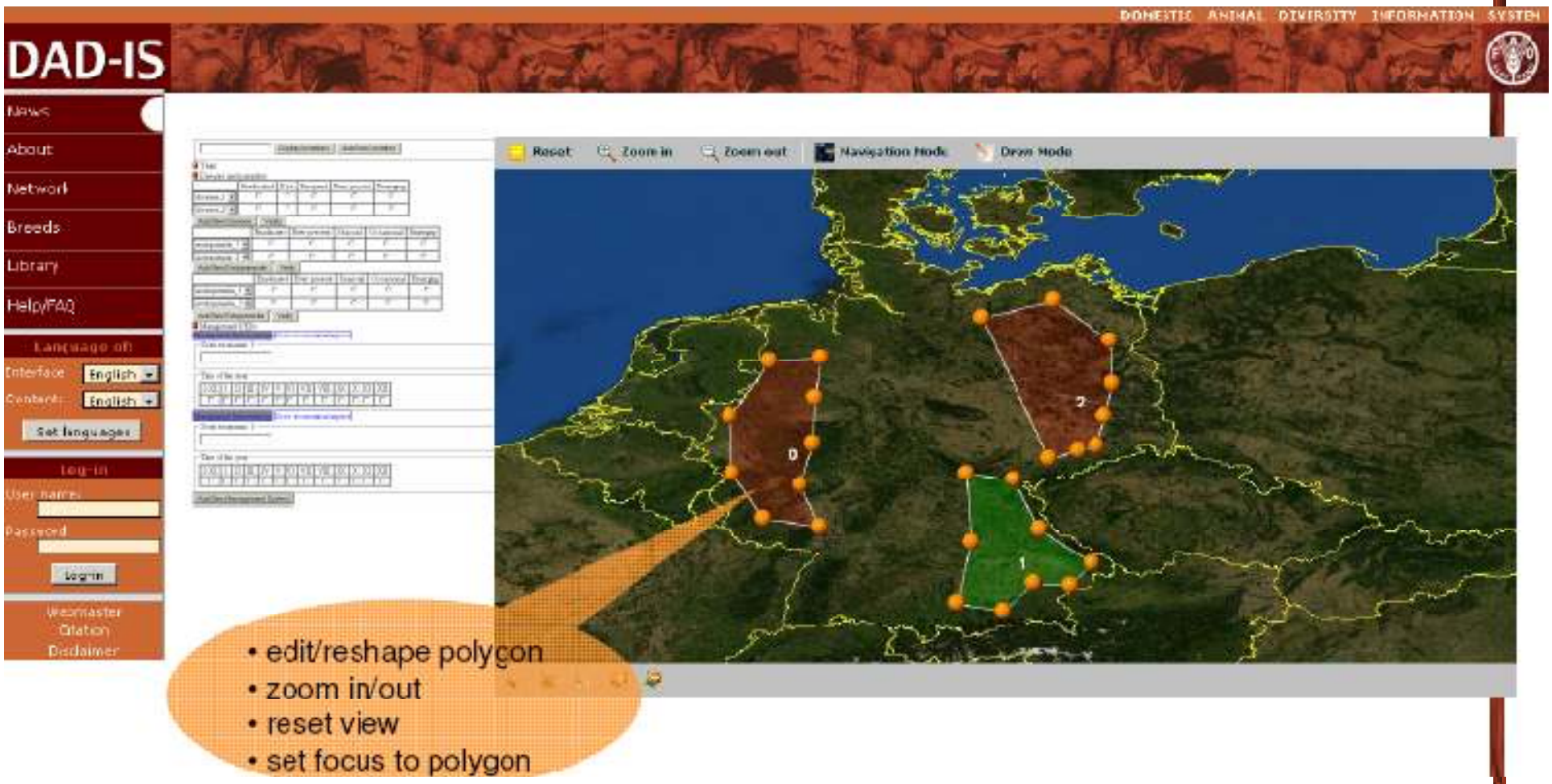
2008: Expert Group developed approach further for implementation - EFABISnet WP


Production Environment Descriptors
Management Environment
Natural Environment
Management intervention
Socio-economic characteristics
Disease, Parasite & Disease complexes
Climate
Terrain Features
Livestock production system type
Level of confinement
Climate modifiers
Disease & parasite control
Feed & water availability
Reproduction strategies
Market orientation
Market targeted
Main uses and roles
Gender aspects
Diseases
Ecto-parasites
Endo-parasites
Other known threats including: feed + water toxins, predators and other harmful animals
Temperature
Relative Humidity
Precipitation
Wind conditions
Day Length
Radiation
Elevation
Slope
Soil pH
Surface conditions
Tree cover



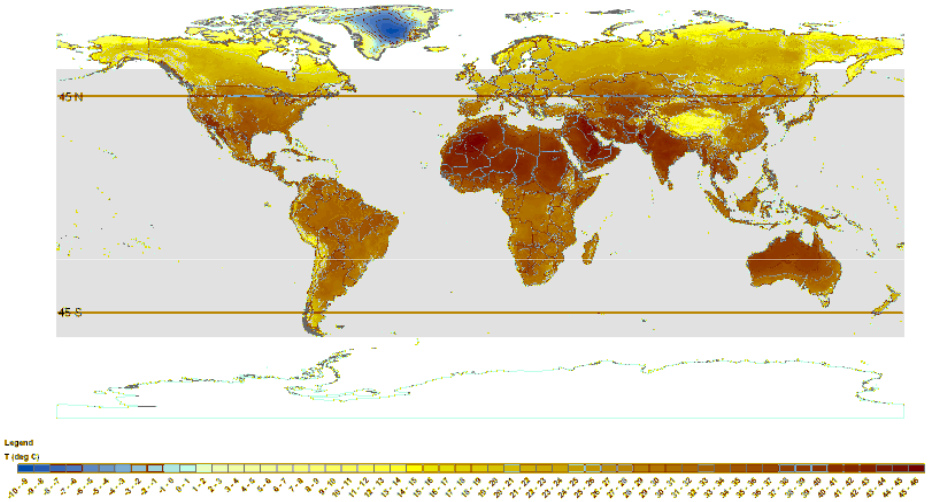
* for detailed lists within level of these categories, please see questionnaire

Implementation in FABISnet/DAD-IS

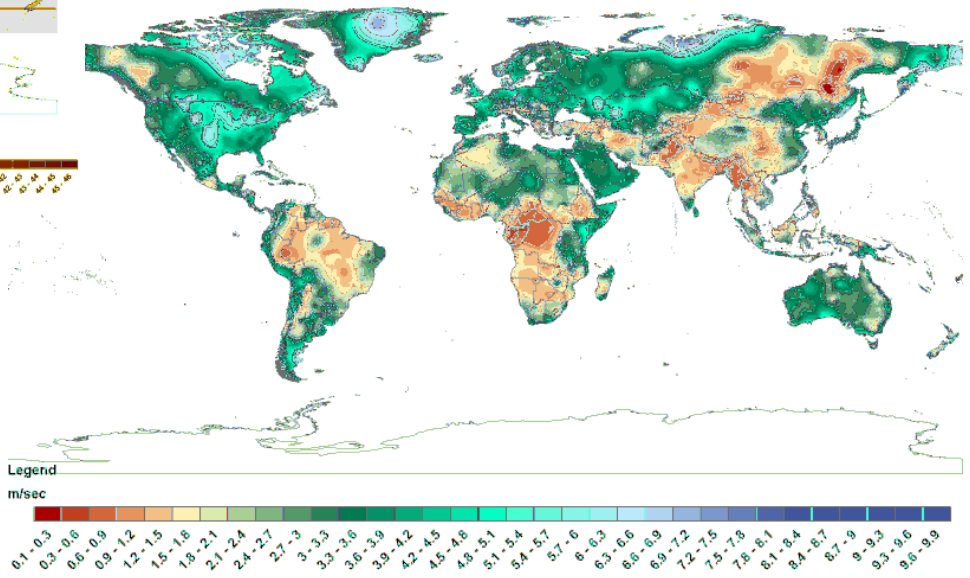


Implementation in FABISnet/DAD-IS: GIS layers

Mean Daily Maximum Temperatures of the Hottest Month (deg C)
(Temperature increment: 1 deg)



Wind Speed :
Average Wind Speed of the Coldest Month (m/sec)



Functionality

Anonymous user

- browse single breed distribution
- browse/list suitable breeds
- browse breeds with given criteria on the map

National coordinator

- enter distribution of breed
    - link management PEDs to distribution
    - link diseases
    - enter performance data, etc. for combination of above
- define country specific management PEDs
- select country relevant diseases

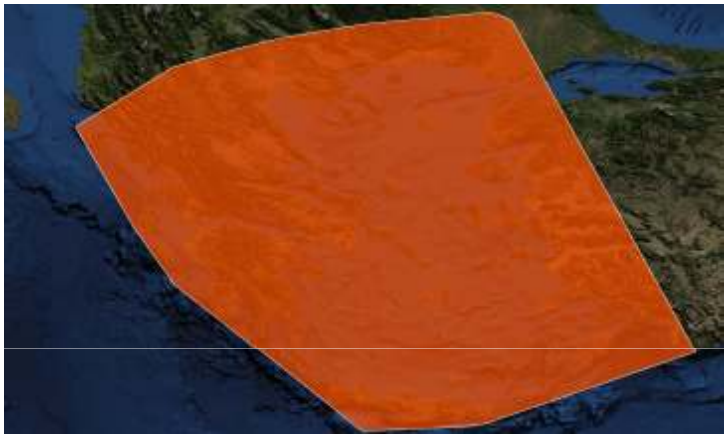
Functionality

Anonymous user

- browse single breed distribution
- *browse/list suitable breeds**
- *browse breeds with given criteria on the map**

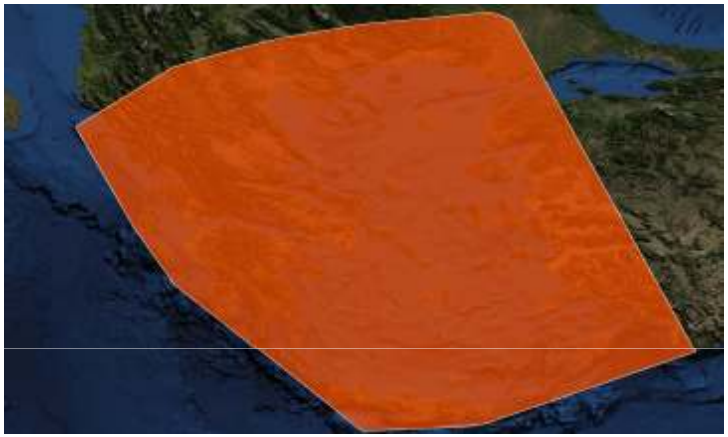
Functionality: browse single breed distribution

national breed distribution – example Chios sheep in Greece

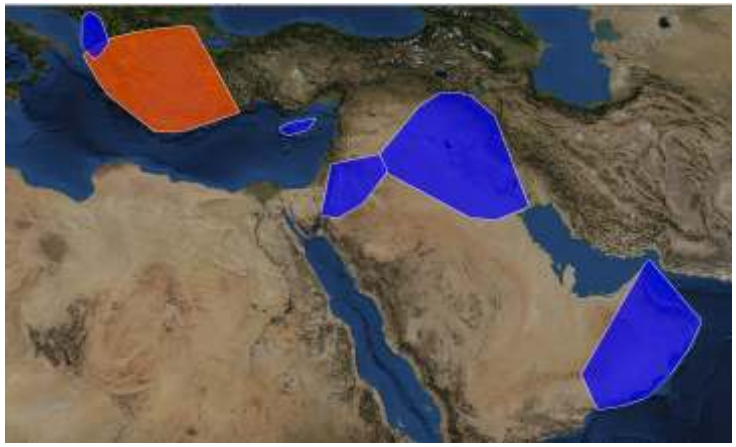


Functionality: browse single breed distribution

national breed distribution



transboundary breed distribution



Transboundary breed:	**Chios**
Number of countries reporting the breed:	**6**
Number of countries reporting the population data:	**3**
Estimated population size:	**232669**

Most common name	Country	National risk status	Risk index	Total population size - lower limit
Chios	Albania	unknown		
Chios	Cyprus	not at risk		180739
Chios	Greece	not at risk		51860
Chios	Iraq	unknown		
Chios	Jordan	critical		70
Chios	Oman	unknown		

Functionality

National coordinator

- enter distribution of breed
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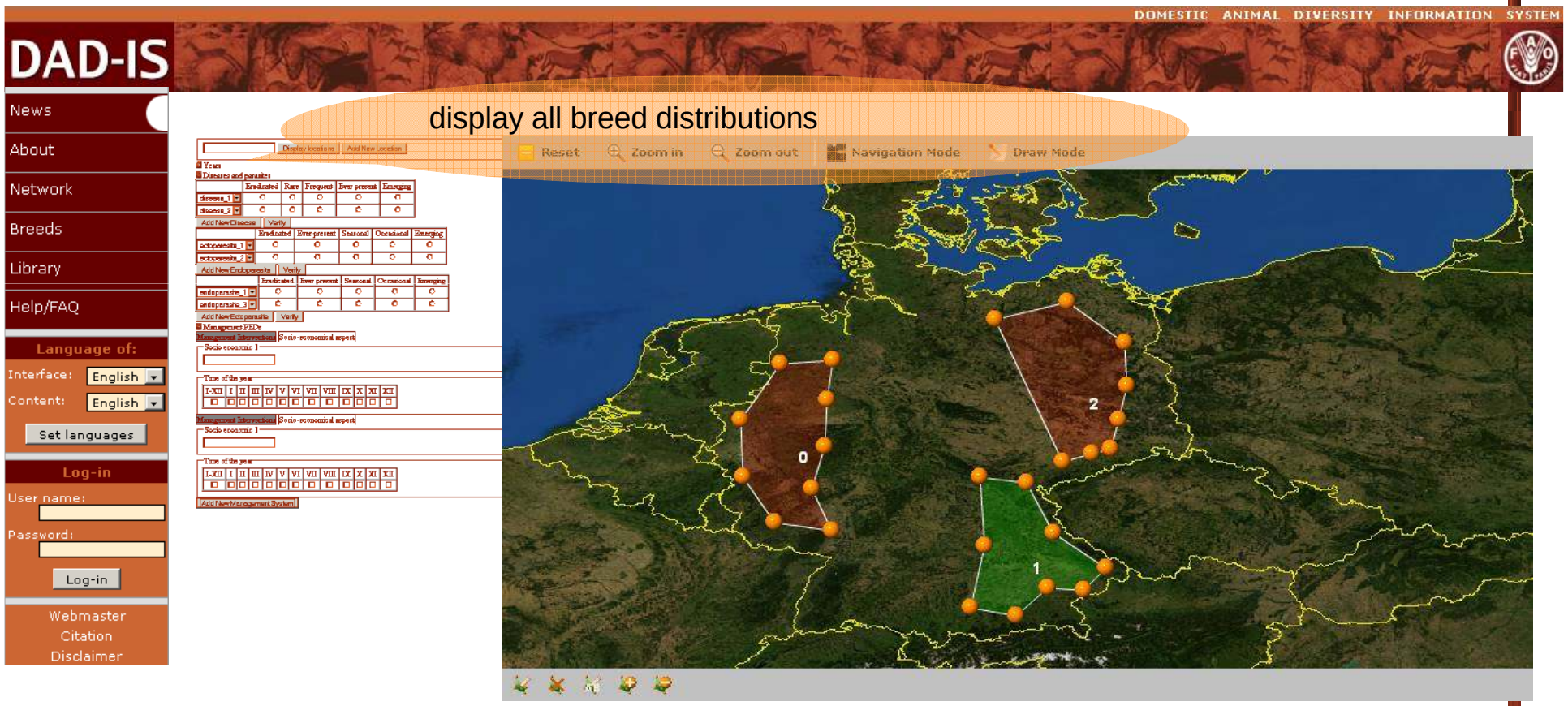
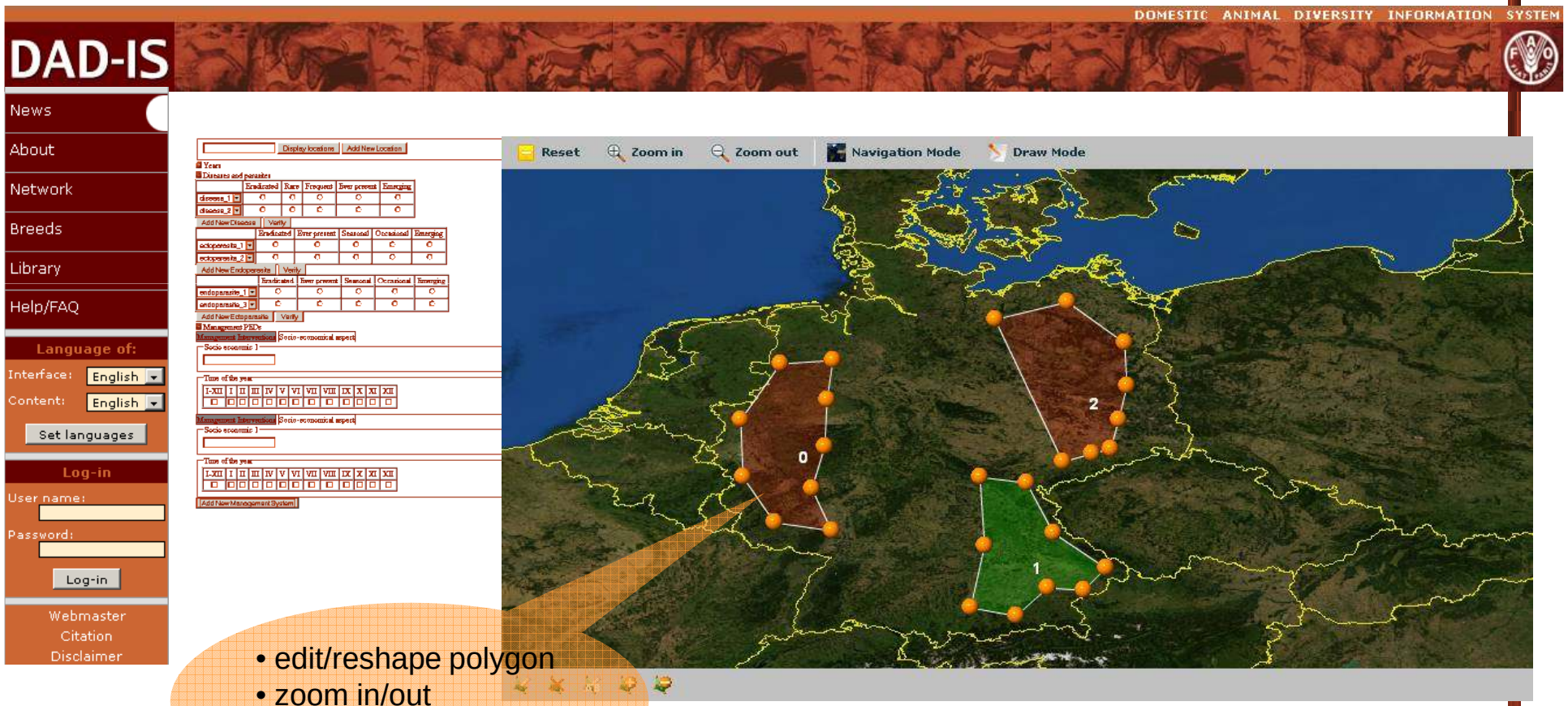
- select country relevant diseases

Functionality: enter distribution of breed

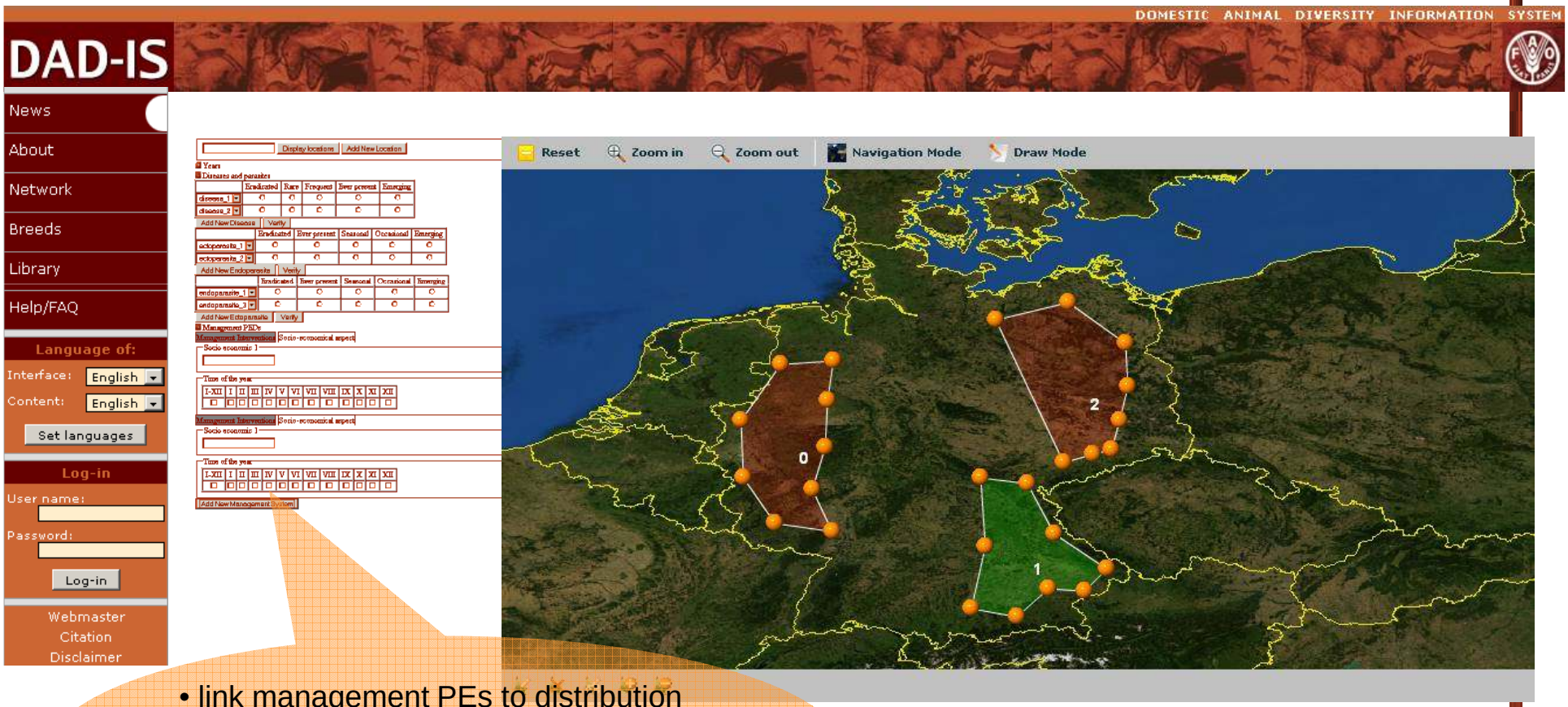


Functionality: enter distribution of breed



- edit/reshape polygon
- zoom in/out
- reset view
- set focus to polygon

Functionality: enter distribution of breed



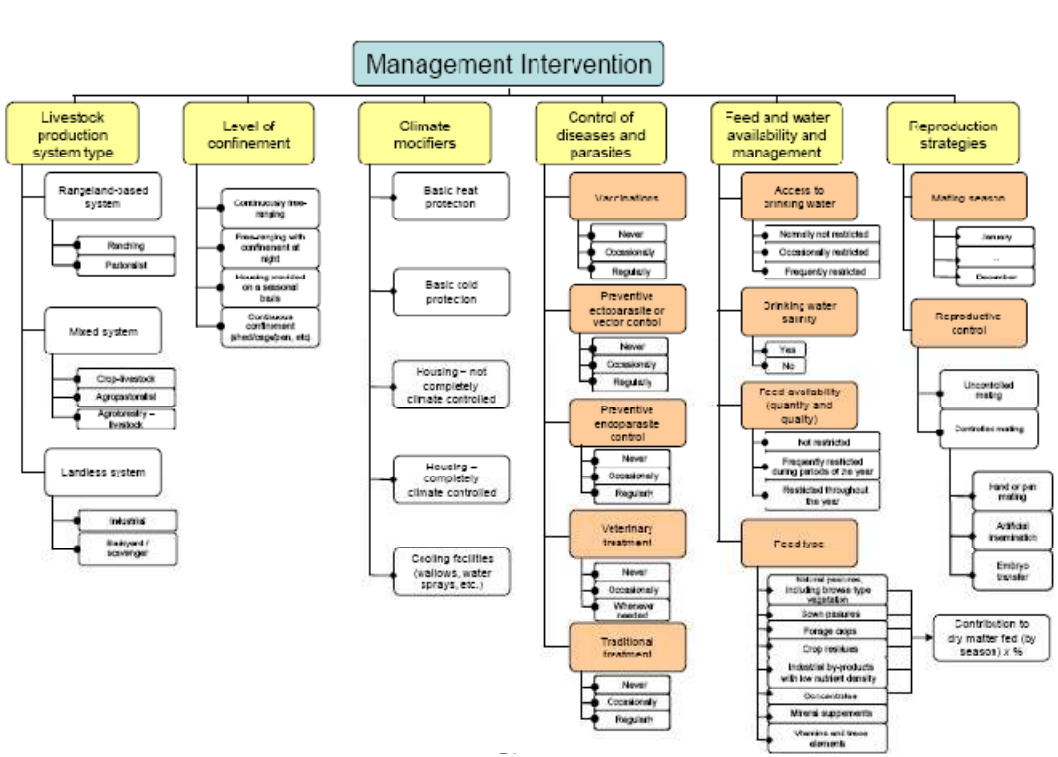
- link management PEs to distribution
- link diseases
- enter performance data, etc. for combination of above

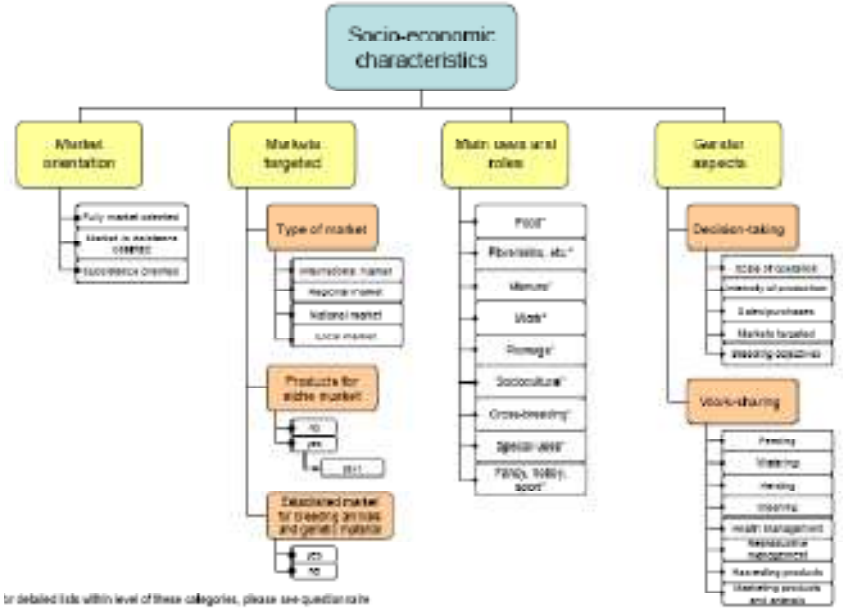
Functionality

National coordinator

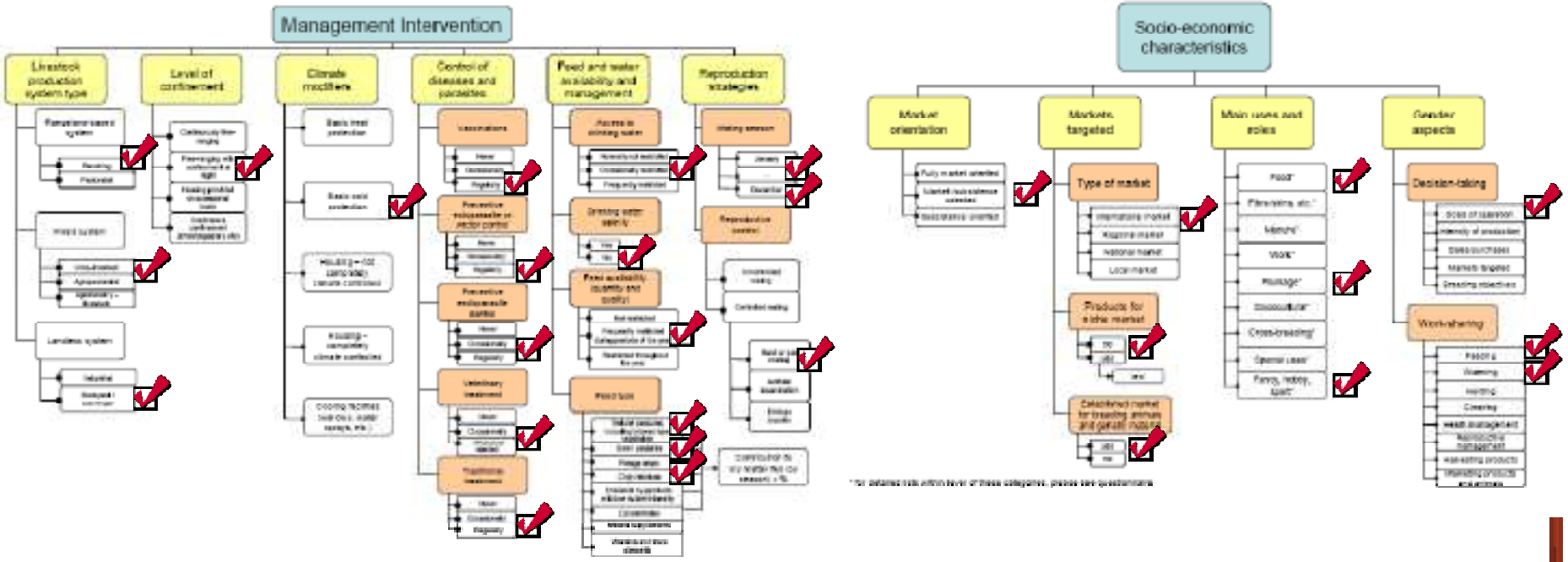
- define country specific management PEDs
- select country relevant diseases

Functionality: define country specific management PEDs





Functionality: define country specific management PEDs



Functionality: select country relevant diseases

Name	Species affected	Causative agent(s)	Notifiable to OIE yes/no
Actinobacillosis	She Goa Cat Pig Hor Ass Buf	*Actinobacillus* spp.	No
Actinomycosis	Dee She Goa Cat Buf	*Actinomyces bovis*	No
Anthrax	Buf Cat Yak Goa She Pig Ass Hor Bac Dro Alp Lla Gua Vic Dee Rab Gpg	*Bacillus anthracis*	Yes
Arizona infection (avian arizoniosis)	Tu Ch	*Salmonella arizonae*	No
Avian chlamydiosis (*Psittacosis, ornithosis*)	Chi Duc Tur Goo Mus Gfl Par Phe Qua Pea Pgn Swa Cas Emu Nan Ost	*Chlamyaia and Chlamyaophila* spp.	Yes
Bolo disease	She	*Corynebacterium* spp.	No
Chlamydial pneumonia	Cat She Pig Hor Dee Goa Buf	*Chlamyaophila (Chlamydia) psittaci*	No
Chlamydial conjunctivitis	Goa She Gpg Cat Buf Yak	*Chlamyaophila psittaci, Chlamyaia pecorum*	No
Chlamydial abortions	Cat Yak Goa Lla Alp Gua Vic Hor Ass Buf Pig She	*Chlamyaophila abortus*	No
Escherchia coli infections	Cat She Dro Lla Alp Chi Goa Pig Tur Gfl Par Phe Buf	*Escherchia coli*	No
Enzootic abortion of ewes (ovine chlamydiosis)	She	*Chlamyaophila pabortus*	Yes
Avian mycoplasmosis, (chronic respiratory disease of chicken, Infectious sinusitis of turkeys)	Chi Duc Tur Goo Mus Gfl Par Phe Qua Pea Pgn Swa Cas Emu Nan Ost	*Mycoplasma gallisepticum*	Yes
Avian mycoplasmosis (mycoplasma synoviae infection)	Chi Duc Tur Goo Mus Gfl Par Phe Qua Pea Pgn Swa Cas Emu Nan Ost	*Mycoplasma synoviae*	Yes
Enzootic pneumonia	Pig	*Mycoplasma hyopneumoniae*	No
Mycoplasma hyosynoviae arthritis of swine	Pig	*Mycoplasma hyosynoviae*	No
Contagious agalactia	She Goa	*Mycoplasma agalactiae*	Yes
Contagious bovine pleuro-pneumonia (CBPP)	Cat Buf Yak	*Mycoplasma mycoides* subsp. mycoides SC (MmmSC; SC = small colonies)	Yes
Contagious caprine pleuropneumonia (CCPP)	She Goa	*Mycoplasma capricolum* subspecies capripneumoniae (Mccp)	Yes
Contagious skin necrosis	Dro	*Staphylococcus* spp. *Streptococcus* spp.	No
Big head	She	*Clostridium novyi* , *C. sordellii* , or rarely *C. chauvoei*	No
Black-leg	Cat She Dee Pig Buf Goa Yak Dro Bac Ost	*Clostridium (fezeri) chauvoei*	No
Botulism	Buf Cat Yak Goa She Pig Ass Hor Bac Dro Alp Lla Gua Vic Dee Rab Gpg Dog Chi Duc Tur Goo Mus Gfl Par Phe Qua Pea Pgn Swa Cas Emu Nan Ost	*Clostridium botulinum*	No
Enterotoxaemia	Buf Cat Yak Goa She Pig Ass Hor Bac Dro Alp Lla Gua Vic Dee Rab Gpg Dog Chi Duc Tur Goo Mus Gfl Par Phe Qua Pea Pgn Swa Cas Emu Nan Ost	*Clostridium perfringens, Clostridium difficile* (GPGs)	No

Name	Species affected	Causative agent(s)	Notifiable to OIE yes/no
Tetanus	Buf Cat Yak Goa She Pig Ass Hor Bac Dro Alp Lla Gua Vic Dee Rab Gpg Dog Chi Duc Tur Goo Mus Gfl Par Phe Qua Pea Pgn Swa Cas Emu Nan Ost	*Clostridium tetani*	No
Infectious necrotic hepatitis	She Cat Pig Hor Goa Rab Dro	*Clostridium novyi* type B	No
Lyme Borreliosis	Dee	*Borrelia burgdorferi*	No
Necrotic enteritis	Chi Duc Tur Goo Mus Gfl Par Phe Qua Pea Pgn Swa Cas Emu Nan Ost	*Clostridium perfringens,* types A and C	No
Malignant oedema	Cat Hor She Goa Pig	*Clostridium septicum*	No
Ulcerative enteritis, quail disease	Qua Chi Phe Tur	*Clostridium colinum*	No
Bordetellosis, (turkey coryza, Bordetella avium rhinotracheitis (BART), Alcaligenes rhinotracheitis (ART), Adenovirus-associated respiratory disease, Acute respiratory disease syndrome, turkey rhinotracheitis)	Tur	*Bordetella avium*	No
Bovine genital campylobacteriosis	Cat Buf Dee	*Campylobacter fetus venerealis* or *C. fetus fetus*	Yes
Bovine brucellosis (*Brucella abortus*)	Cat Dro Bac Lla Alp Gua Vic Buf Yak Dee Pig	*Brucella abortus*	Yes
Caprine and ovine brucellosis	She Goa Cat Yak Bac Dro Alp Lla Gua Vic Pig	*Brucella melitensis*	Yes
Porcine brucellosis (*Brucella suis*)	Pig Hor Cat	*Brucella suis*	Yes
Brucellosis (*Brucella suis* biovar 4)	Dee	*Brucella suis biovar 4*	Yes
Ovine epididymitis (*Brucella ovis*)	She Dee Goa	*Brucella ovis*	Yes
Fowl typhoid	Chi Tur Phe	*Salmonella gallinarum*	Yes
Pullorum disease	Chi Tur	*Salmonella pullorum*	Yes
Salmonellosis	Buf Cat Yak Goa She Pig Ass Hor Bac Dro Alp Lla Gua Vic Dee Rab Gpg Dog Chi Duc Tur Goo Mus Gfl Par Phe Qua Pea Pgn Swa Cas Emu Nan Ost	*Salmonella* spp.	Yes (only sheep and goat)
Haemorrhagic septicaemia	Cat Buf Yak Pig She Goa Hor Ass Dro Dee	*Pasteurella multocida*	Yes
Pasteurellosis	Rab Cat She Goa Pig Dee Lla Alp Yak Buf Dro Ost Gua Vic	*Pasteurella* spp.	No
Fowl cholera, Avian cholera, Avian pasteurellosis, avian hemorrhagic septicemia	Chi Duc Tur Goo Mus Gfl Par Phe Qua Pea Pgn Swa Cas Emu Nan Ost	*Pasteurella multocida*	Yes
Contagious equine metritis	Hor Ass	*Taylorella equigenitalis*	Yes
Dermatophilosis	Cat She Goa Hor Ass Pig Dro Bac Buf	*Dermatophilus congolensis*	No
Erysipelas	Tur Chi Duc Mus Goo Gfl Phe Pig Cat She Rab Dee	*Erysipelothrix rhusiopathiae*	No
Footrot	Cat She Goa Dee Buf	*Fusobacterium necrophorum*	No
Glanders	Hor Ass	*Burkholderia mallei*	Yes

Functionality: select country relevant diseases

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Actinomycosis	Dee She Goa Cat Buf	*Acinomyces bovis*	No
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Arizona infection (avian arizonosis)	Tur Chi	*Salmonella arizonae*	No
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Escherchia coli infections	Cat She Dro Lla Alp Chi Goa Pig Tur Gfl Pea Phe Duc	*Escherchie coi*	No
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Necrotic enteritis	Chi Duc Tur Goo Mus Gfl Par Phe Qua Pea Pgn Swa Cas Emu Nan Ost	*Clostridium perfringens*, types A and C	No
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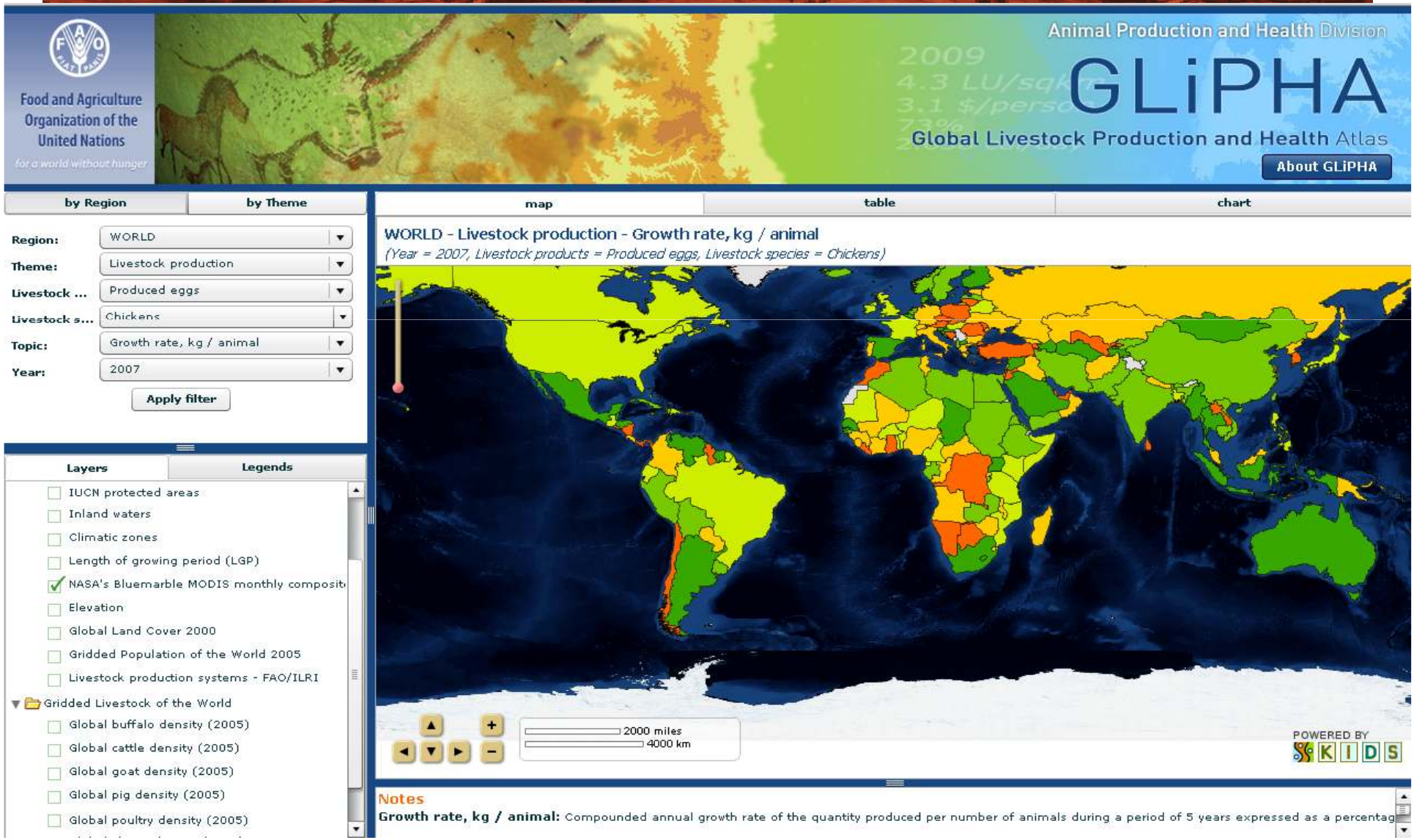
Footrot	Cat She Goa Dee Buf	*Fusobacterium necrophorum*	No
Glanders	Hor Ass	*Burkholderia mallei*	Yes

Way forward

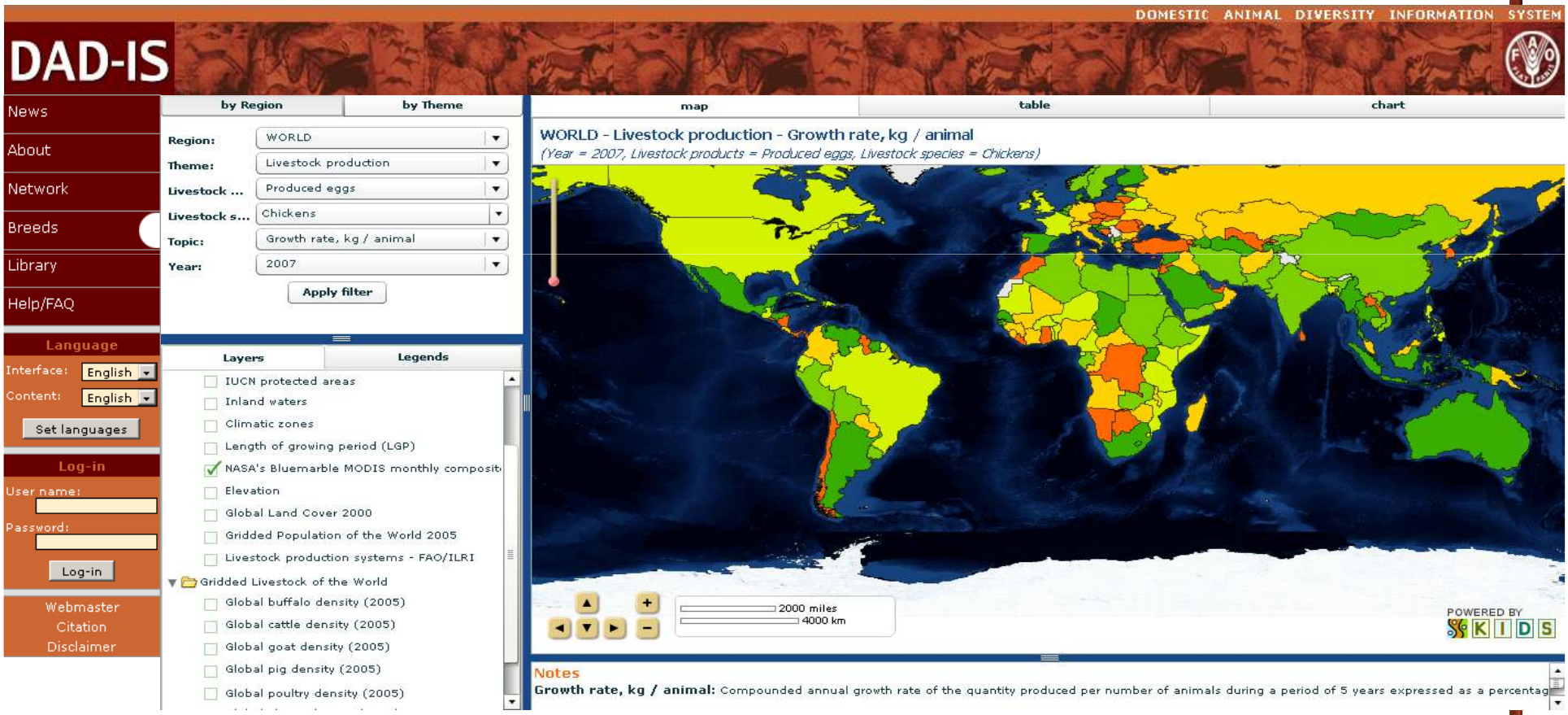
- Finalize development & implementation in DAD-IS and related IS: EFABIS & 16 national nodes before end 2010
- LOA with ICARDA - collecting production environment descriptions of breeds kept in Egypt, Iran, Morocco, Turkey to:
  - provide case studies
  - demonstrate use of the system
  - recommend in detail further output of the system (identify suitable breeds
- Develop further outputs of the system

Promoting diversity

Functionality: browse breeds with given criteria on the map



Functionality: browse breeds with given criteria on the map



Way forward

- Fundraising for climate change modeling continues

- ... and encourage National Coordinators to enter data and use the system !

Thank you !

Please visit http://www.fao.org/dad-is/ or http://efabis.tzv.fal.de

& **check & maintain your national data up-dated**!