



Training Program of AITRS for 2018-2019 within the Framework for Developing Statistics that Support the Sustainable Development Goals (SDGs) 2030 in the Arab Region

SDG Indicators under FAO Custodianship

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GOAL 2. END HUNGER, ACHIEVE FOOD SECURITY AND IMPROVED NUTRITION AND PROMOTE SUSTAINABLE AGRICULTURE



2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed

- Indicator 2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities (Tier I)
- Indicator 2.5.2 Proportion of local breeds classified as being at risk, not at risk or at unknown level of risk of extinction (Tier I)
 - They provide complementary information on plant and animals, with animal genetic resources tracked both *in situ* and *ex situ*



IMPORTANCE OF GENETIC RESOURCES

- Building blocks of food security
- Plant and animal diversity provides adaptability and resilience in the face of: climate change, emerging diseases, pressures on feed and water supplies and shifting market demands;
- Between 2005 and 2016, livestock breeds classified as being at risk of extinction increased from 15 to 17%;
- 58 percent of breeds are classified as being of unknown risk status because no recent population data are available
- An estimated three-quarters of crop genetic diversity has been lost since the 1900s



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SDG INDICATOR 2.5.1

**NUMBER OF ANIMAL GENETIC RESOURCES
FOR FOOD AND AGRICULTURE SECURED IN
EITHER MEDIUM- OR LONG-TERM
CONSERVATION FACILITIES**



THE ANIMAL COMPONENT: METHODOLOGY (1)

- The animal component of the indicator is calculated as the number of **local breeds** with sufficient material stored in a gene bank
- The **local breeds** of a country consists of the animals belonging to a specific breed that is found only in the respective country.
- Mammalian and avian livestock breeds are reported to occur either in only a single country (local breeds), in several countries in one region (regional transboundary) or in different regions of the world (international transboundary).
- Fish are currently outside the scope of the indicator. However, FAO has reported on country *in vitro* and *in vivo* collection of aquatic species in [The State Of The World's Aquatic Genetic Resources For Food And Agriculture](#) report and is considering eventual integration of this data into the indicator



THE ANIMAL COMPONENT: METHODOLOGY (1)

- Populations with **sufficient material stored** means local breed populations with an amount of genetic material stored which is required to reconstitute the breed (differs between type of material, species, storage conditions etc.);
- The conservation of animal genetic material over the medium and long term is done by **cryoconservation**.
- Cryoconservation is the deep-freezing of semen, embryos, oocytes (immature eggs) and other types of tissue in liquid nitrogen.



DAD-IS – DOMESTIC ANIMAL DIVERSITY INFORMATION

- Hosted by FAO
- Communication and information tool for implementing strategies for the management of animal genetic resources
- Provides the user with searchable databases of breed-related information, images, management tools, publications, links and contacts of regional and national coordinators for the management of animal genetic resources
- <http://www.fao.org/dad-is/en/>



DAD-IS – DOMESTIC ANIMAL DIVERSITY INFORMATION

- Contains data from 15,000 national breed populations, including 8800 local breeds, from 182 countries and 40 species
- Allows countries to enter data for the calculation of the animal element of SDG indicator 2.5.1 and SDG indicator 2.5.2
- Calculates the animal component of SDG indicator 2.5.1 and 2.5.2 for country, region or globally
- Provides graphical presentations of SDG indicator 2.5.1 and 2.5.2 for country, region or globally



THE ANIMAL COMPONENT: CALCULATION AND REPORTING

- DAD-IS – Data for SDG indicator 2.5.1
 - ✓ Cryo data (storage status per year)
 - ✓ Where such data can be found: in national or regional gene banks
 - ✓ Contact information of the gene bank manager
 - ✓ Updates possibly on yearly base
- DAD-IS automatically calculates the Indicator 2.5.1 based on the data provided by the National Coordinator; can estimate if genetic material stored is “sufficient” in case of uncertainty

Year	Semen samples	Semen donors	Embryos	Embryos donors Tot/M/F	Oocytes	Oocyte donors	Somatic cell samples	Somatic cell Donors Tot/M/F	DNA samples	DNA donors Tot/M/F	Sufficient
2017	500	30	25	-/25/-	-	-	-	-/-/-	-	-/-/-	YES
2010	210	15	-	-/-/-	-	-	-	-/-/-	-	-/-/-	NO



DAD-IS – DOMESTIC ANIMAL DIVERSITY INFORMATION

- DAD-IS Data are official country data
- Only the officially nominated National Focal Point for the management of animal genetic resources can enter data
- The National Focal Point is nominated by the respective ministry of the country (e.g. Ministry of Agriculture)
- FAO provides usernames and password, but does not enter or amend data provided by countries
- Most Arab countries have **newly appointed** national focal points, often in a different national institution than in the past (only Palestine and UAE have not determined a focal point yet)

Country	National Focal Point, 2.5.1 /animal and 2.5.2
Algeria	Dr Mourad Abdefettah, Institut National de la Recherche Agronomique (INRA)
Bahrain	
Comoros	
Djibouti	Dr Moussa Ibrahim Cheik, Ministère de l'Agriculture, de l'Elevage et de la Mer
Egypt	Dr Alaa El Deen Ahmed Hassan Al Tahan, Animal Production Research Institute, APRI
Iraq	Dr Sahar Ahmad Abdul Hussain Al-Bayatti, Min. of Agriculture
Jordan	Dr Khaleel I. Z. Jawasreh, National Center for Agricultural Research and Extension (NCARE)
Kuwait	Ms Zahra A. R. Al Wazzan, Public Authority of Agricultural Affairs and Fish Resources
Lebanon	Dr Mohammad Soukarie, Ministry of Agriculture
Libya	Mr. Mustafa ELAGHEL, Agricultural Research Centre
Mauritania	Mohamed Iemine Ould Haki, Ministry of Rural Development



Country	National Focal Point, 2.5.1/animal and 2.5.2
Morocco	Mr Tazi Said, Ministère de l'Agriculture et de la Pêche
Oman	Mr. Rashid Soud Al-Habsi, Ministry of Agriculture and Fisheries
Palestine	
Qatar	Ms Salma Dasmal Alkuwari, Ministry of Environment
S.Arabia	Mr Fuad Hamed AlZuriq, Germplasm Bank Manager
Somalia	Dr Ahmed Hashi Nu
Sudan	Dr Abubaker Adam Mohamed
Syria	Mr Mohammed Ayman Daba, General Commission for Scientific Agricultural Research (GCSAR)
Tunisia	Prof M'Naouer Djemali, INAT Institut National Agronomique de Tunisie
UAE	
Yemen	Dr Abed Mohammed Al-Bial, Agriculture Research & Extension Authority (AREA)

2.5.1 /animal	% breeds w/ material stored	% breeds suff. material reconstitute
Algeria	0%	0%
Bahrain	0%	0%
Comoros	na	na
Djibouti	0%	0%
Egypt	0%	0%
Iraq	0%	0%
Jordan	0%	0%
Kuwait	0%	0%
Lebanon	0%	0%
Libya	0%	0%
Mauritania	0%	0%
Morocco	0%	0%
Oman	0%	0%
Palestine	na	na
Qatar	na	na
Saudi Arabia	0%	0%
Somalia	0%	0%
Sudan	0%	0%
Syria	0%	0%
Tunisia	0%	0%
United Arab Emirates	na	na

Aquatic resources (not part of 2.5.1 yet)	<i>In vivo ex situ</i>		Species maintained in in vitro collections
	Programmes	Species	
Algeria	15	?	
Bahrain			
Comoros			
Djibouti			
Egypt	10	?	6
Iraq			
Jordan			
Kuwait			
Lebanon			
Libya			
Mauritania			
Morocco			
Oman			
Palestine			
Qatar			
Saudi Arabia			
Somalia			
Sudan			
Syria			
Tunisia	6	?	3
United Arab Emirates			

Country	National Focal Points designated for the preparation of the <i>First State of the World's Aquatic Genetic Resources for Food and Agriculture</i> report
Djibouti	Mr Ahmed DARAR DJIBRIL, Ministère de l'Agriculture, de la Pêche, de l'Élevage et des Ressources Halieutiques
Egypt	* Awaiting confirmation of official nominations from National Authorities
Iraq	* Awaiting confirmation of official nominations from National Authorities
Jordan	Mr. Nizar Jamal Haddad, NCARE
Lebanon	(Mr) Imad LAHOUD
Mauritania	Mr Djiby Moussa GUEYE, Chef Service Aménagement des Ressources Halieutiques et Réglementation au Ministère des Pêches et de l'Économie Maritime
Morocco	* Awaiting confirmation of official nominations from National Authorities
Oman	Ms Abdel HALIM, Head of Biological Technology Section of the Marine and Fishery Science Centre
Sudan	* Awaiting confirmation of official nominations from National Authorities
Syria	Mr Mohammed Zein EDDIN, Director General General Commission for Fisheries
Yemen	Mr Mohammed Abdullah SAAD, Marine Biologist/Head of Oceanography Department, MSBRA



SDG INDICATOR 2.5.2 PROPORTION OF LOCAL BREEDS CLASSIFIED AS BEING AT-RISK, NOT-AT-RISK AND UNKNOWN-LEVELS OF RISK OF EXTINCTION





INDICATOR METHODOLOGY

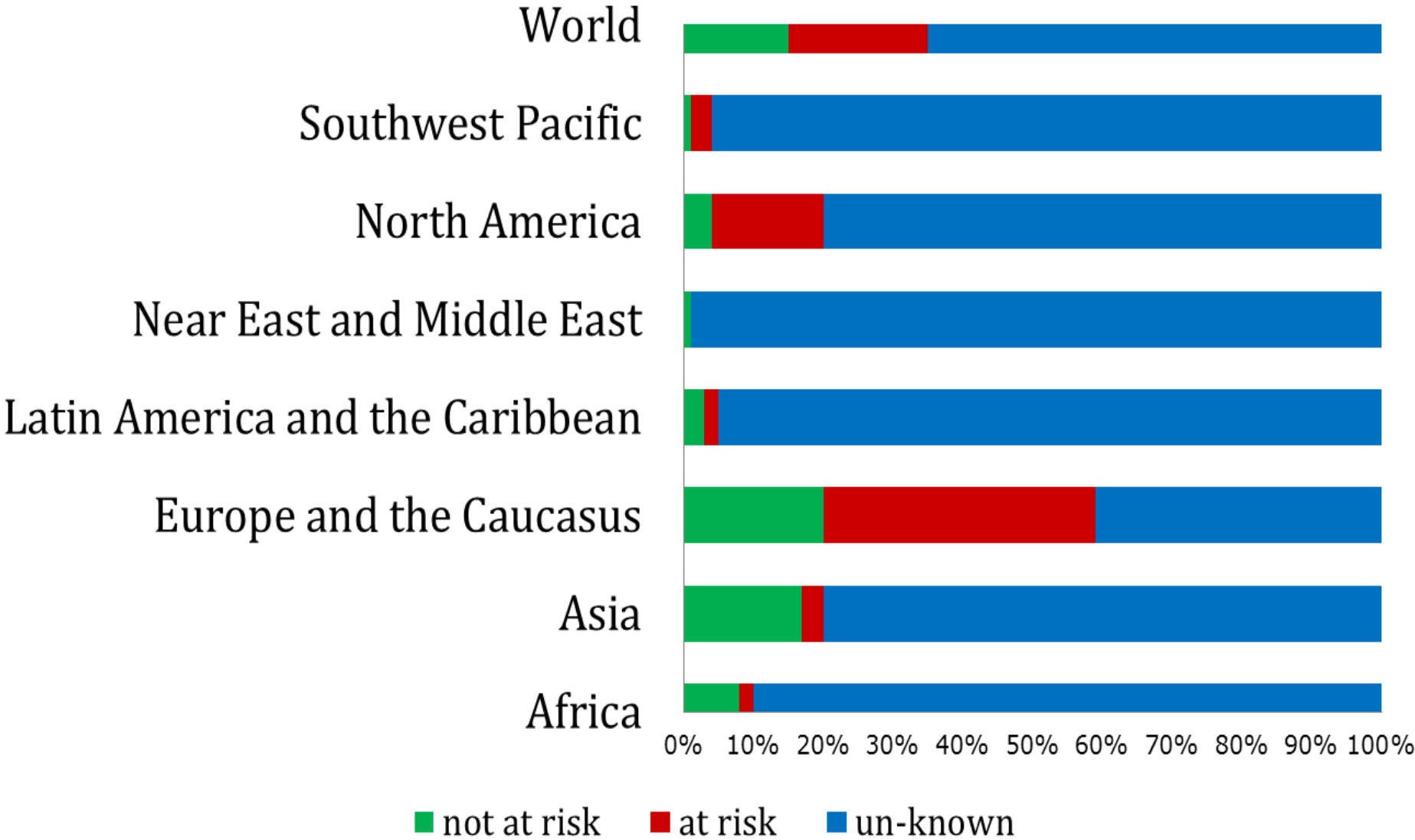
- Proportion of local livestock breeds classified as being at risk, not at risk or of unknown risk of extinction at a certain moment in time
- **Local breed** definition same as for 2.5.1 /animal: occurs only in one country (different to transboundary breeds with national breed populations in several countries)
- The risk of extinction is linked to the number of animal belonging to a breed: the lower the number the higher the risk



INDICATOR METHODOLOGY

- **At risk:** a breed that has been classified as either critical, critical-maintained, endangered, or endangered-maintained, based on the following criteria:
 - ✓ number of breeding females and proportion vs. breeding males
 - ✓ inbreeding rate (ΔF)
 - ✓ presence of active conservation programmes.
- **Not at risk:** the breed does not fall in the critical or endangered categories (including the respective subcategories) or the vulnerable category
- **Unknown:** population data is unavailable or >10 years old
- **Cryoconserved only:** no breeding males or females remain, but sufficient cryoconserved material is available to reconstitute the breed [SDG indicator 2.5.1 /animal]

GLOBAL STATISTICS





CALCULATION AND REPORTING

- Officially appointed national focal points report through DAD-IS (as with SDG indicator 2.5.1 /animal) **population size data for each local breed** (status per year)
- DAD-IS calculates the risk level of local breeds automatically based on population size data provided by the national focal point
- Where such data can be found:
 - ✓ Livestock Censuses on breed level
 - ✓ Breeders associations
 - ✓ Key-informants and rapid appraisals
- Data should be updated at least every 10 years

2.5.2	No. of local breeds	At risk	Not-at-risk	% unknown
Algeria	16	0%	0%	100%
Bahrain	1	0%	0%	100%
Comoros	7	na	na	na
Djibouti	9	0%	0%	100%
Egypt	62	0%	0%	100%
Iraq	21	0%	0%	100%
Jordan	22	0%	0%	100%
Kuwait	na	0%	0%	100%
Lebanon	0%	0%	0%	100%
Libya	3	0%	0%	100%
Mauritania	6	0%	0%	100%
Morocco	42	0%	0%	100%
Oman	20	0%	0%	100%
Palestine	na	na	na	na
Qatar	na	na	na	na
Saudi Arabia	9	0%	0%	100%
Somalia	18	0%	0%	100%
Sudan	56	0%	0%	100%
Syria	8	0%	0%	100%
Tunisia	8	0%	13%	88%
UAE	na	na	na	na
Yemen	30	0%	0%	100%



IMPLEMENTATION CHALLENGES

- Breed-related information remains far from complete. Globally, for almost 60 percent of all reported breeds, risk status is not known because of missing population data or lack of recent updates.
- In the Arab region, virtually 100 percent of all reported breeds are of unknown status
- Generally data collection should be possible in all countries. Updating of population size data at least each 10 years is needed for the definition of the risk classes.
- National coordinator/ National focal point needs support from statisticians for indicator 2.5.2:



CAPACITY DEVELOPMENT

- A global training workshop took place in Rome/FAO HQ in November 2017, complementing the launch event of the new DADIS interface
- Seven Arab countries took part:
 - Egypt: Ghada ELZONOKOLY
 - Iraq: Ahmed Abdulhusein AL-BAYATTI SAHAR [national focal point]
 - Jordan: Saed ALSAWAWREH [national focal point], and Khaleel Ibrahim JAWASREH
 - Lebanon: Mohamad SOUKARIE [national focal point]
 - Palestine: Abdelmuhsen ALALAMI and Borhan ISSA
 - Qatar: Hamad ALSHAMARI
 - Tunisia: Mnaouar Sassi JAMALI [national focal point]



CAPACITY DEVELOPMENT

- The workshop emphasized the need for cooperation between the national focal point (usually from the Ministry of Agriculture) and the National Statistical Office (possibly with the appointment of a livestock statistician focal point) for the organization of breed-level population census or survey
- FAO provides comprehensive guidelines on surveying and monitoring the
 - cryoconservation of animal genetic resources (SDG indicator 2.5.1 /animal), and
 - *in vivo* conservation of animal genetic resources (SDG indicator 2.5.2)

<http://www.fao.org/dad-is/publications/en/>

- E-learning courses on both indicators in preparation



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THANK YOU

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For more detailed information please see:

- <http://www.fao.org/sustainable-development-goals/indicators/251/en/>
- <http://www.fao.org/sustainable-development-goals/indicators/252/en/>