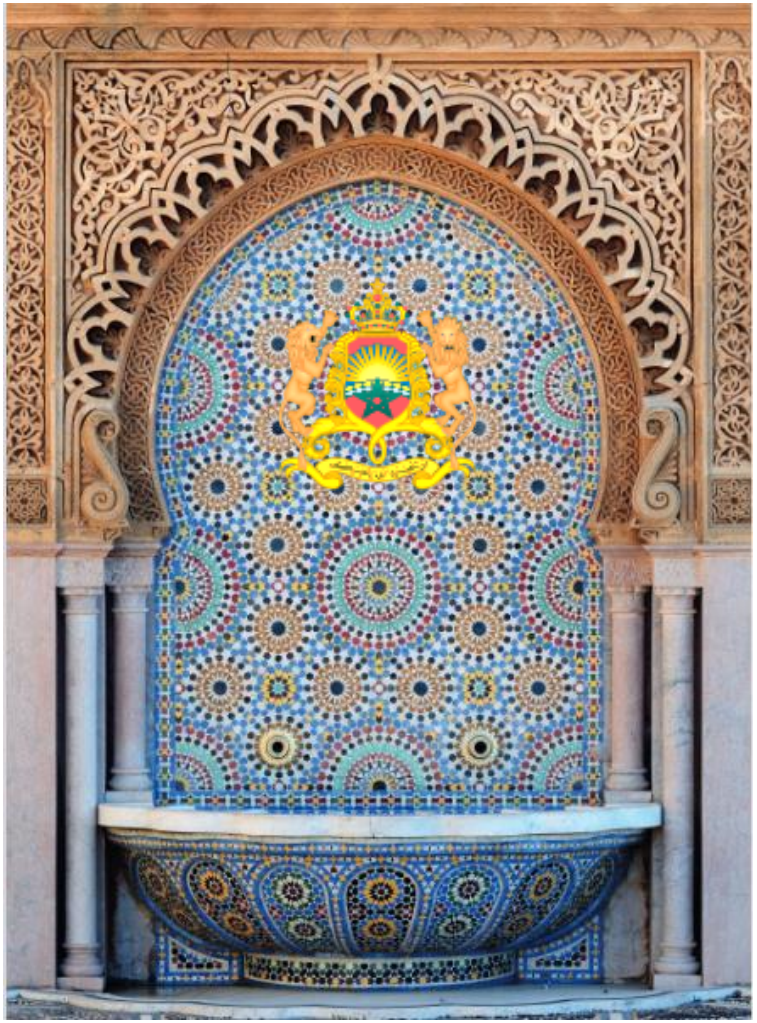

المملكة المغربية

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ROYAUME DU MAROC

Morocco experience in Prevention and Control of AMR

DARKAOUI Sami (DVM, PhD)
Head of Pharmacy and Veterinary Inputs Division
Moroccan Office of Food Safety (ONSSA)

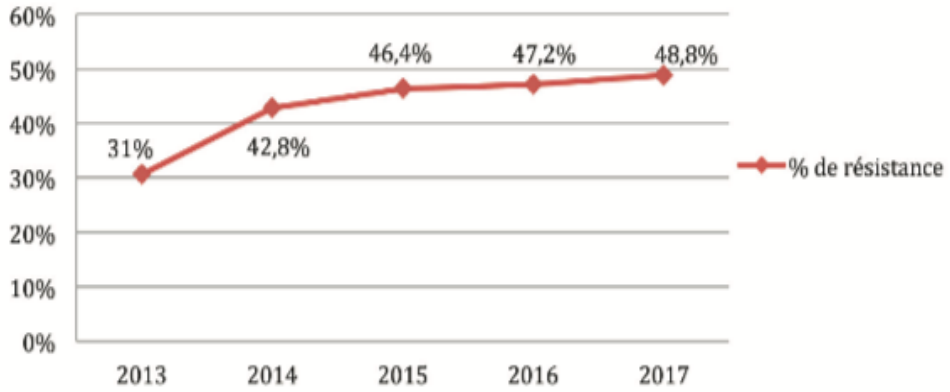
Kingdom of Morocco

- North Africa
- Capital : Rabat
- surface is **710 850 Km**
- Moroccan coasts extends over **3500 km**
- Mediterranean climate
- Total population : **35,186,603**
- Life expectancy at birth m/f (years): 74.2/77.4
- Average annual population growth rate between 2004 and 2014 (percent) : 1.25
- Livestock (21 M sheep/goat, 3 M cattle, 2 M equids, 200,000 camelids, 400 M Broilers)

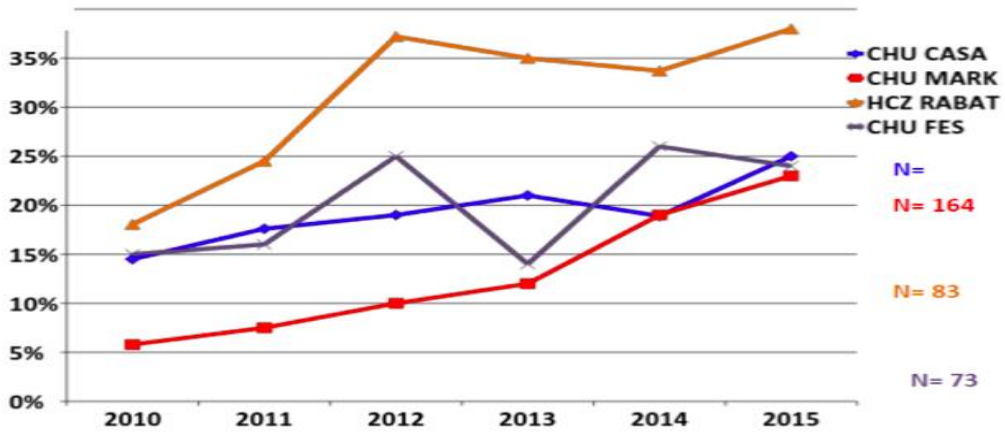
Key facts – on the situation/issue

humans

Worrying figures on the rates of AMR in human health sector



Source: Écologie microbienne et sensibilité aux antibiotiques des bactéries isolées d'infections urinaires chez l'enfant au Maroc, REVUE FRANCOPHONE DES LABORATOIRES • N° 511 • AVRIL 2019



Source : Observatoire Pédiatrique de l'Epidémiologie de la RAM SOMIPEV, 2017
https://www.somipev.ma/congres/2019/resumes/Observatoire_Resistance_Bacterienne_aux_Antibiotiques.pdf

Evolutionary and worrying character of AMR

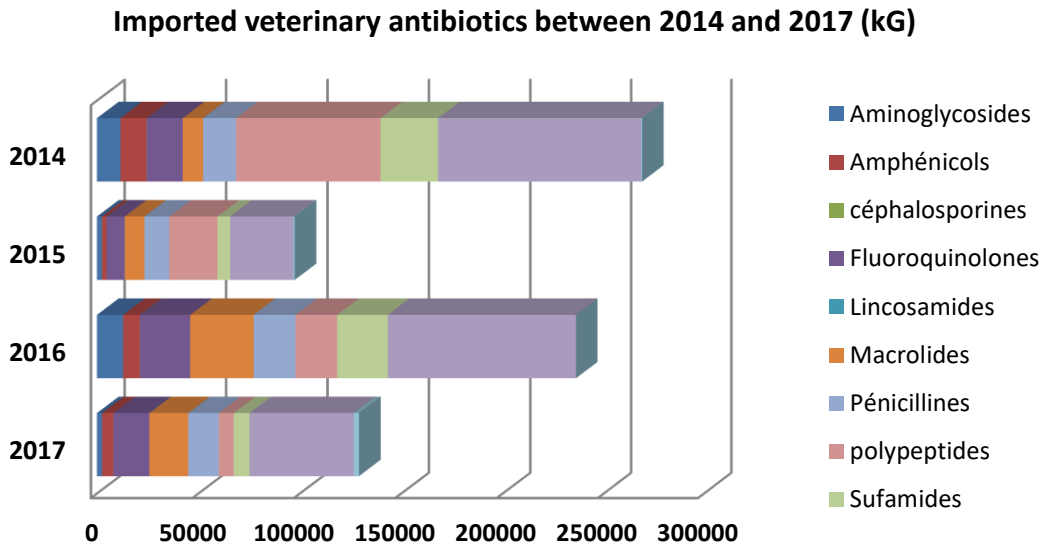
Resistance data from animal sector

animals

Before 2015:

Existing data are fragmentary and difficult to interpret

Few studies have been carried out in particular on colibacillosis in poultry (filali, 1986; amara, 1994; chorfi, 1994; amara, 1995; Jaouzi, 2004; El Houadfi et Zekhnini, 2009; Rahmatallah, 2013; Guemmouri, 2013; Gazzar, 2015; Alillouch , 2015; Bhar, 2016; Hafed, 2016; Rahmatallah, 2016; Rhnima, 2017)



Worrying character of the antibiotic resistance in animal health

TSU : 1986 : Filali et al. (16%) ; 2015: Gazar et al. (96,9%)

Enrofloxacine: 2009 : Zekhini et al. (4%) ; 2015: Rahmatallah (87%)

Gentamycine : 2015: Rahmatallah et al. (14,9%) and Gazar et al. (30,9%)

Data from environmental sector

environment

Many national programs of environmental department related to :

- Solid waste management sector (according to law 28-00, since 2008)
- National pooled liquid sanitation program (PNAM, since 2005)
- Monitor the quality of bathing waters and beach

Data related to chemical, microbiological and fungal contamination are periodically collected but don't include AMR evaluation

Existing Prerequistics

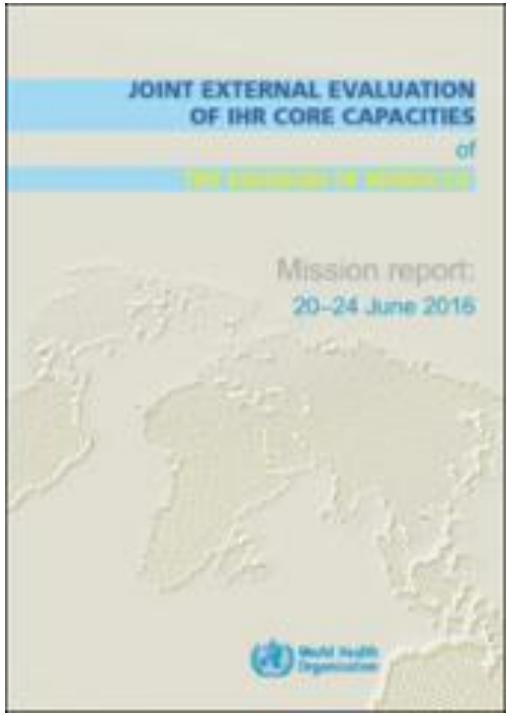
Intersectoral Coordination:

- Between MOH and MA: Zoonosis control (several interministerial circulars about rabies, TB, Brucellosis, HPAI, anthrax, …), Food safety

- Between MA and Environment Dpt: Pesticides registration

- The Crisis Coordination Centre (PCC): coordinate the multiple ministries and stakeholders involved in emergency response, including for communication

Score 4*



Laboratory capability

Strong vertical programmes exist for certain diseases with AMR monitoring (tuberculosis (TB), gonorrhoea, and certain animal diseases such as salmonellosis*

* : (IHR core capacities evaluation 2016)
https://apps.who.int/iris/bitstream/handle/10665/254514/WHO-WHE-CPI-2017.3-eng.pdf?sequence=1&isAllowed=y

ANTIMICROBIAL RESISTANCE
Morocco level of capabilities

Morocco's commitment to address AMR in the animal health sector and its ability to diagnose and confirm zoonotic AMR is a successful example that can be followed by other countries.

Antimicrobial resistance	P.3.1 Antimicrobial resistance (AMR) detection	2
	P.3.2 Surveillance of infections caused by AMR pathogens	2
	P.3.3 Health-care associated infection prevention and control programmes	2
	P.3.4 Antimicrobial stewardship activities	1
Zoonotic diseases	P.4.1 Surveillance systems in place for priority zoonotic diseases/pathogens	4
	P.4.2 Veterinary or animal health workforce	4
	P.4.3 Mechanisms for responding to zoonoses and potential zoonoses are established and functional	3
Food safety	P.5.1 Mechanisms are established and functioning for detecting and responding to foodborne disease and food contamination	4

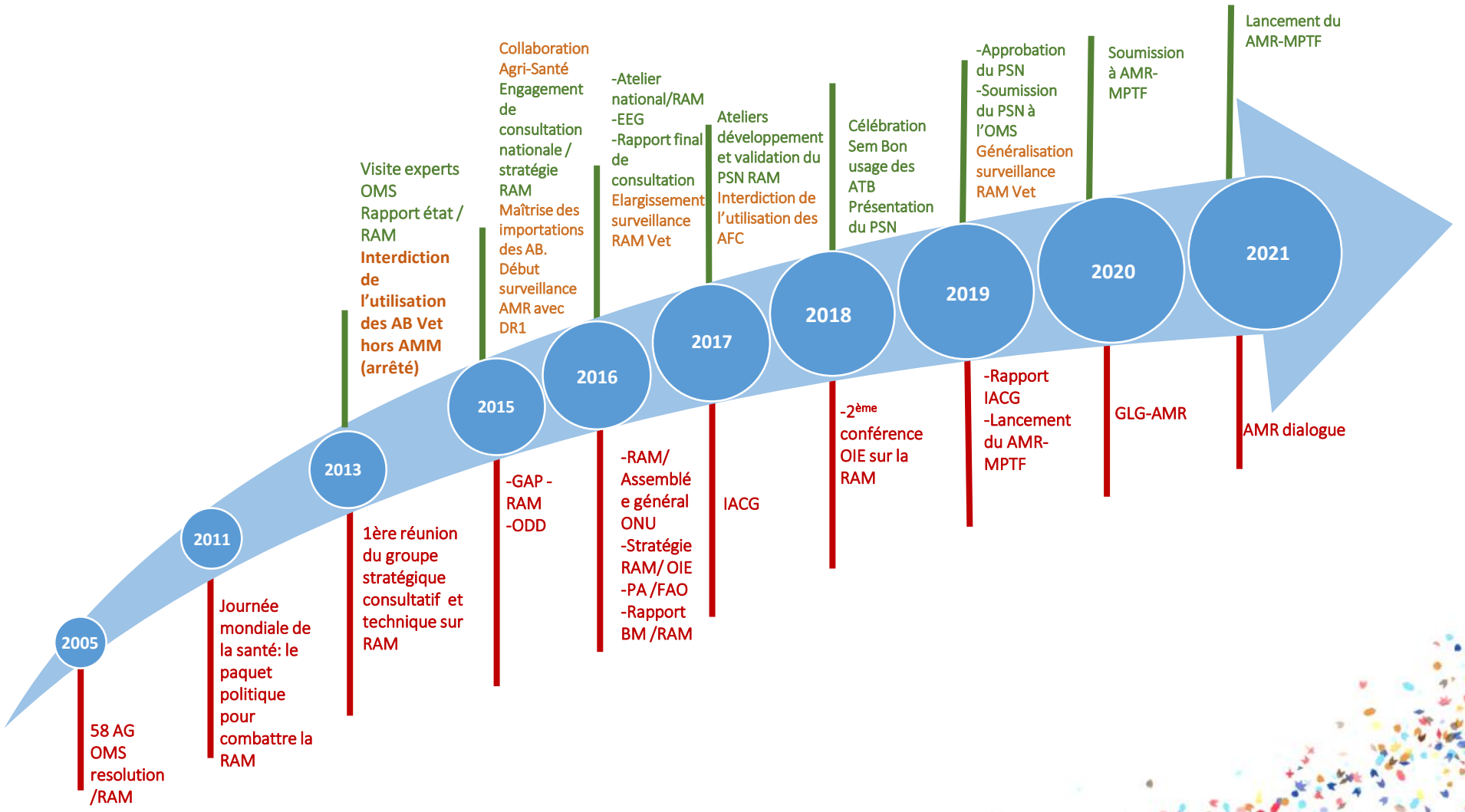
Challenges/ problems

- Misuse of antimicrobials (self-medication, lack of microbiological info, etc)
- Influence of the drug producers/ distributors / vested interest
- Accessibility/ Availability of resources
- Low and inefficient interactions within and between sectors and stakeholders
- Lack of civil society engagement and social mobilization
- Antimicrobial resistance surveillance (human and animal health)
- Lack of data about AMR in environment
- Data on AMR fragmentary or difficult to use in the human and veterinary sector
- Political commitment

Need for "One Health" approach

Summary- realization

Development process:



humans

animals

Flagship achievements

- Political commitment
- Governance and coordination between human, veterinary and environmental sectors
- AMR monitoring system / Tricycle project participation
- Awareness of professionals, public, students, etc.
- **Management, capacity building : MPTF to support NAP**

Flagship achievements :
High level political commitment

*Aziz Akhennouch, **Minister** of Agriculture*
OIE World Conference on the Safe Use of Antimicrobials Marrakech, october 2018

*Khalid Aït Taleb, **Minister** of Health*
Launch of the MPTF-AMR project
Rabat, June 2021

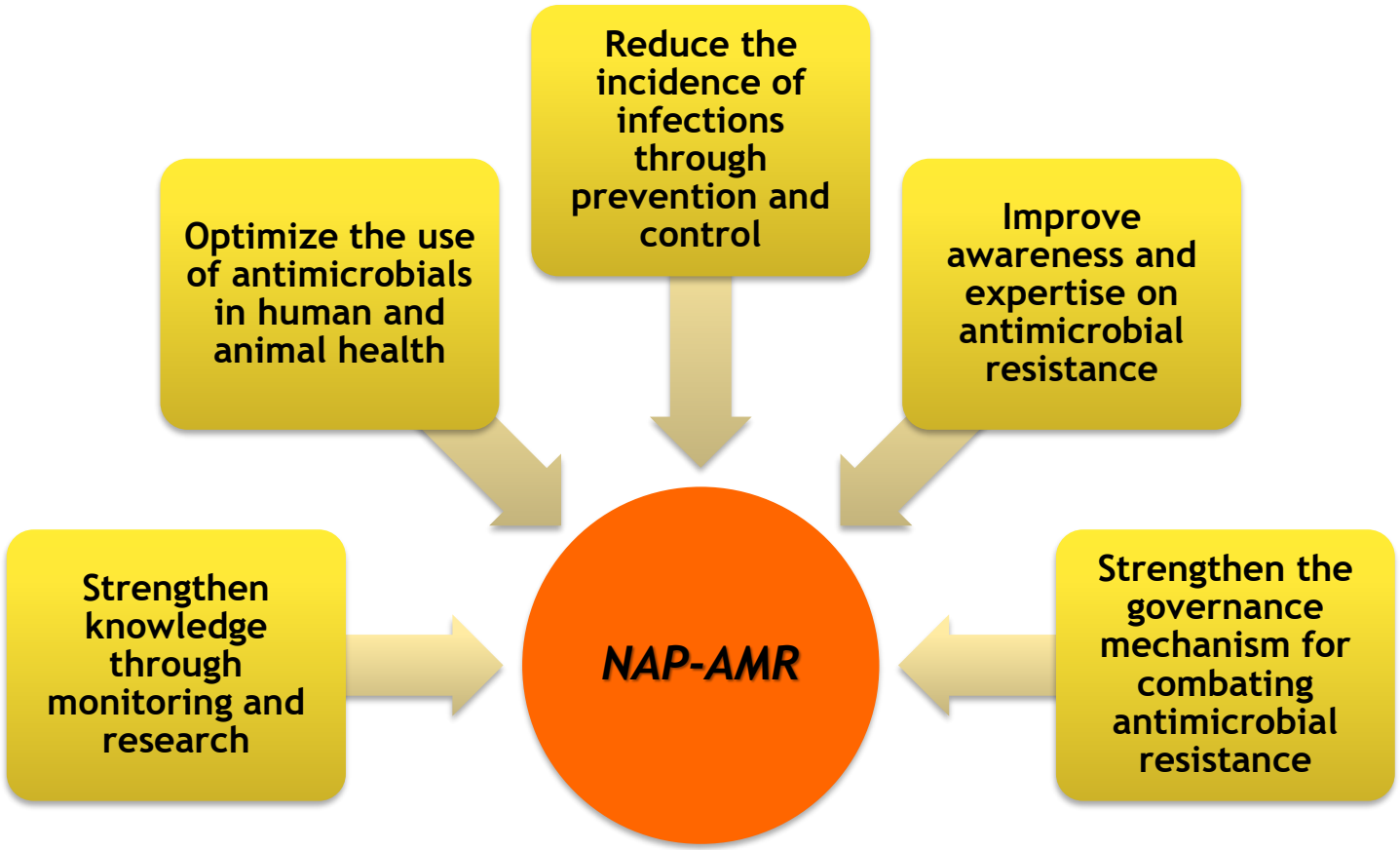
MPTF-AMR project team
Ministry of Health, Ministry of Agriculture and Ministry of Environment
Rabat, June 2021

humans

animals

environment

Flagship achievements : Adoption of NAP



Adopted in 2018 for 2019-2022 period

5 Strategic objectives, 11 actions, 27 measures, 81 activities

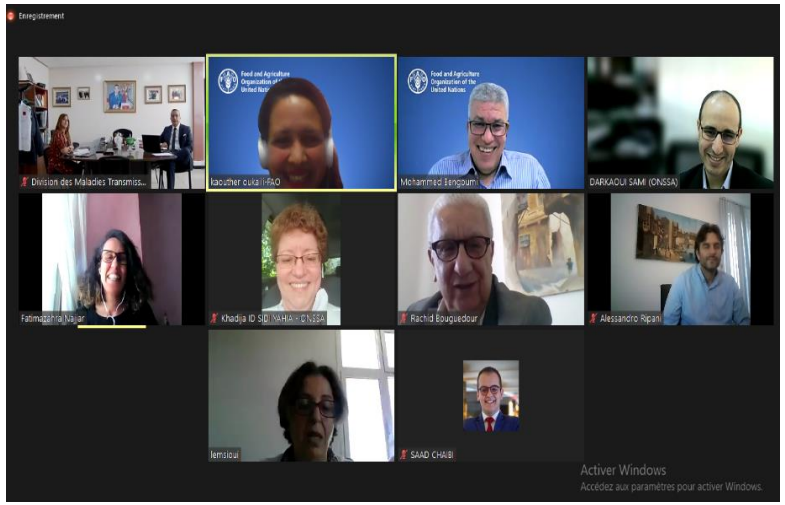
https://www.who.int/publications/m/item/morocco-national-strategic-plan-for-prevention-and-control-of-antimicrobial-resistance-(fr)

Governance and coordination between human, veterinary and environmental sectors

humans

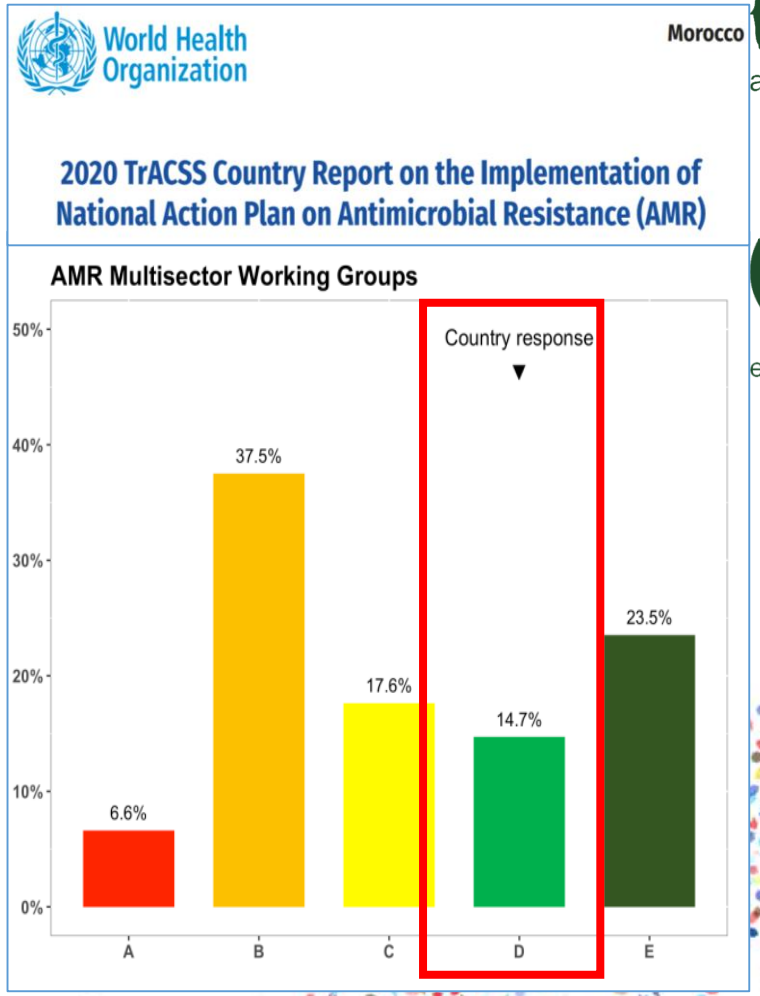
animals

environment



Online coordination meetings

MPTF-AMR project team Ministry of Health, Ministry of Agriculture and Ministry of Environment Rabat, June 2021



Flagship achievements: AMR Surveillance system

humans

animals

Human health :

- Started in 2019
- AMR surveillance Technical Committee
- National Coordination Unit
- Information system in progress

humans animals environment

Animal Health

- Started in 2015 in poultry.
- Gradually rolled out for national coverage in 2020
- To be extended to other animal productions in 2022
- Import data of veterinary antimicrobials since 2011

Integrated AMR surveillance (human, animal and environment) started in 2020 under Tricycle project

Integrated information system to be done in 2022 under MPTF Project

Global Tricycle Surveillance

ESBL *E.coli*

Awareness (professionals, public, students, etc.)

humans

animals

Celebration of World Antibiotic Awareness Week (WAAW)
12 to 18 november 2018

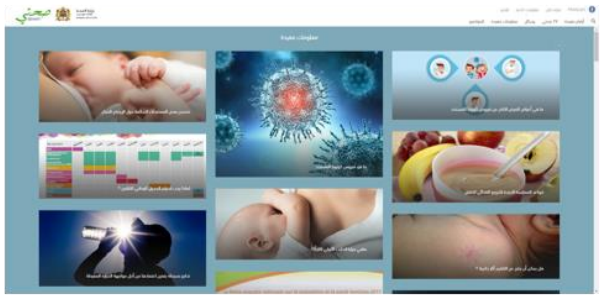
Awareness (professionals, public, students, etc.)

humans

animals

Students awareness:

Congrès national de l'antibiorésistance
17 novembre 2018 (FMPC)
18 Novembre 2018 (IAVH2)



Public awareness:

Ministry of Health Website
https://sehati.gov.ma/uploads/Flyer_3.pdf
https://sehati.gov.ma/uploads/affiche_anti_Final_60x42_cm_2.pdf

Management / capacity building: Multi Partner Trust Fund to support NAP

- **Preexisting intersectorial coordination**
- **Political commitment**

- **MPTF project (2 years): "Support the implementation of the National Action Plan against Antimicrobial Resistance through a one health approach“**

humans

animals

environment

Perspectives

Governance:

Consolidate regulations

Monitoring and surveillance:

- Extend AMR epidemiological surveillance to other types of animal production

- Consolidate integrated RAM monitoring for the 3 sectors

Awareness :

-Risks associated with the AB (residues and antibiotic resistance),

- Animal husbandry Biosafety

-Good use practices and traceability (human and animal sector)

Alternative methods:

- Facilitate the authorization of probiotics in animal feed.

- Encourage the use of vaccines and autogenous vaccines.

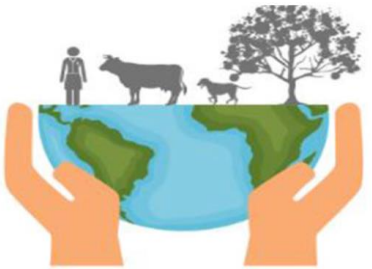
humans

animals

environment

Although several measures to control the spread of AMR are being taken at the national level, many challenges still remain….

Thank you for your attention



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Mme TRIKI Soumia
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