منظمة الأغذية والزراعة
للأمم المتحدة

Reef ريف

وزارة البيئة والمياه والزراعة
Ministry of Environment Water & Agriculture

National Strategy for Sustainable Honey Bee Health and Disease Control in KSA

Dr. Giovanni Formato – Riyadh 26 June 2022 - BEE/051/2022/8

FAO KSA Technical Cooperation Programme

Strengthening MoEWA's Capacity to implement its Sustainable Rural Agricultural Development Programme (UTF/SAU/051/SAU)

2 Outline of presentation

1 **Background**

Apiary of traditional hives
in Makkah Region

1 - Background

1 HONEY BEES POPULATIONS DISTRIBUTION IN KSA

In the KSA there are 13.000 beekeepers c.a.

Both races are widely used in most parts of the country and the project target regions

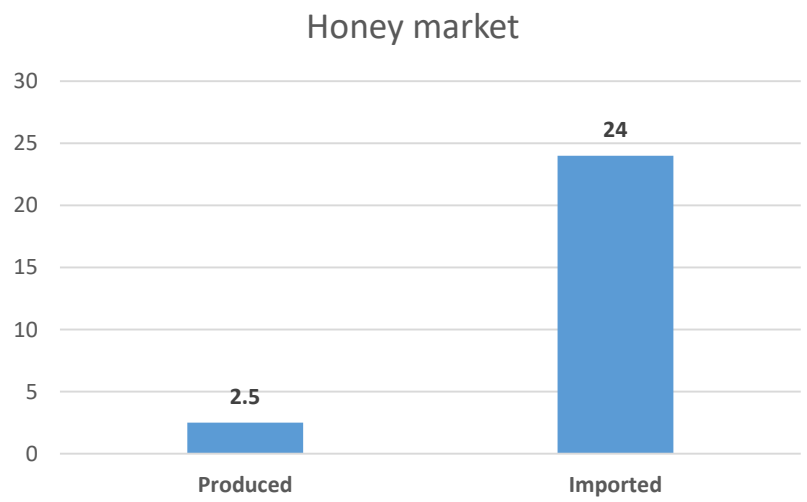
Only in Jazan Region there is a wide area where hybrid imported honey bees are not allowed to enter.

10 queen rearing centres are available in KSA, but they lack of qualified staff and optimum facilities to effectively run the queen rearing activities.

1- Background

1

The country produces 2.55 thousands of tons of honey annually, and imports about 24 thousands of tons of honey.



Honey production volumes (in kg) of KSA by region and year

Regions	2017	2018	2019
Riyadh	14 902	707 10	804 13
Makkah	845 283	937 890	110 868
Al-Madinah	27 132	247 28	689 29
Al-Qassim	23 368	718 22	043 23
\Eastern Province	3 764	807 3	785 3
Asser	674 593	735 681	164 778
Tabuk	251 956	212 843	232 400
Hail	135 000	113 091	124 045
Jazan	305 676	951 328	413 330
Najran	161 250	573 165	411 163
Al-Baha	75 072	026 74	549 75
Al-Jouf	4 000	465 3	732 3
Total	**2 521 996**	**100 536 2**	**145 646 2**

Source: Ministry of Environment Water and Agriculutre, 2019

5 Outline of presentation

2 **Methodology**

Apiary of traditional hives
in Makkah Region

2 - Methodology

The situational analysis for HBH in KSA considered:

2

4 field missions in 5 regions, 42 apiaries visited, and semi-structured interviews on colony losses and bee management (GBPs, BMBs) were realized.
Moreover, 4 surveys for HBH risk assessment were set-up and administered. 39 meetings: with MoEWA officers (7), beekeepers single (35) or Associations (2) were used for consultation, data collection and validation.

Activity	N.
Field missions	4
Regions visited	5 (Medinah, Makkah, Jazan, Riyadh and Al Baha)
Apiaries visited	33
Varroa tests	63
Samples collected	161
Surveys for beekeepers	2
Surveys for MoEWA Officers	2
Meetings with beekeepers	35 (1 queen exporter from Egypt, and 1 retailer)
Meeting with Beekeepers' Associations	2
Meetings with MoeWA	2 Central, 5 Regional Offices

Outline of presentation

3 **Current situation on HBH and HB disease control**

Apiary of traditional hives
in Makkah Region

Region	N. apiaries inspected	Modern beehives /Traditional (Modern/Trad. %)	Average Winter mortality rate (declared by beekeepers)	N. samples taken for nosema and virosis (to send to IT lab)	N. Hives with varroa infestation levels >2%	Apiaries with problems with varroa
Madinah	7	259/2000 (11.5% Vs 88.5%)	55%	33	6 hives (22 hives sampled)	3
Makkah	9	590/1685 (25.9% Vs 74.1%)	39.6%	46	5 hives (23hives sampled)	2
Jazan	8	1080/1820 (37.3% Vs. 62.7%)	30.7%	23	7 hives (18hives sampled)	2
	Total 24 apiaries	1929 modern/5505 traditional hives. **Modern 25.9%; traditional 74.1%**	**Average Winter mortality 41.7%**	**Total 102 samples**	**18 hives** (63 hives sampled) with 38% average infestation level	**7 out of 24 apiaries** (**29.2% of apiaries**)

The 161 samples (mostly adult honey bees) in alcohol were sent to IZSLT Italian laboratory by DHL on 20th of June 2022 (Fig. 25).

3 - Current situation on HBH and HB disease control

Prevalence of Nosema infection, virosis (CBPV) and acarapisosis

3

To define the prevalence of Nosema infection, the species of Nosema interested, the presence of Acarapis Woodi, and of virosis, the 161 samples (mostly adult honey bees) were sent in alcohol to IZSLT laboratory in Rome (IT) on 20th of June 2022.

RESULTS: TO BE INCLUDED!

3 - Current situation on HBH and HB disease control

What risks for HBH in KSA?

3

Migratory beekeeping
(95% of beekeepers);

Import of honey bees
(1.3 million of packages/year);

Feedings, above all containing hive products like pollen or honey, imported by China.

Phytotherapeutic products misuse even with airplanes.

ONE-HEALTH APPROACH: the RISK FOR HUMAN HEALTH linked with the residues in hive products and AMR.

Phytotherapeutic products (PPPs) must be used prudently and properly, in respect of the bees and of the environment.

Adult honey bees dead after PPP treatment

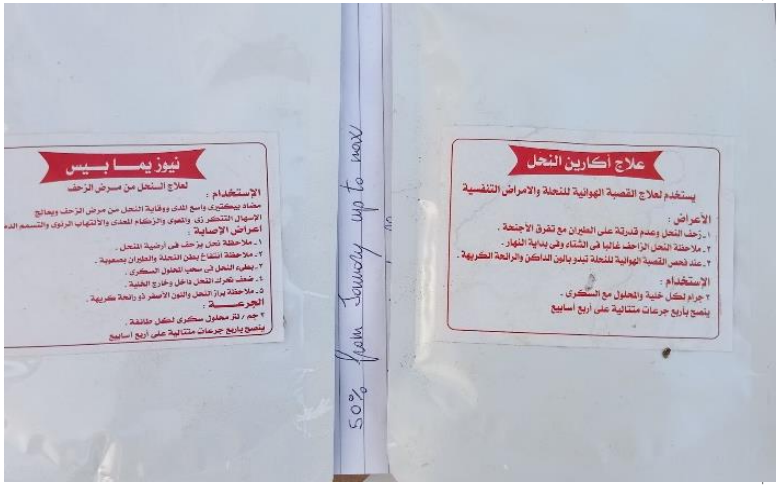
3 - Current situation on HBH and HB disease control

Control of HB diseases and sustainability in KSA beekeeping

3

1) Low adoption/Knowledge on biosecurity measures in beekeeping;
2) Wide use of unregistered antimicrobials (antibiotics included)
3) Lack of awareness on the impact of the medicines on safety of hive products (residues) and AMR
4) No organic medicines registered for bees

Not registered antimicrobiasl used by KSA Beekeepers (3 of the 4 are antibiotics)



Large spectrum antibiotics in use in Egypt

3 - Current situation on HBH and HB disease control

Veterinary quarantine and border control for imported bees

3

KSA is one of the largest importer of honey bee packages in the world: 1.3 millions of packages/year. Bee packages are only allowed and arrive at the international airports of Riyadh and Jazan. Two mobile clinics are available for laboratory analysis.

KSA, as member of WTO, WOAH and GCC should follow the WTO SPS agreement and the WOAH Terrestrial HBH Code standards (Vol 2, Sec. 9, pag. 531-548). No specific measures are foreseen for nosemosis.

At the border inspection points clinical examinations should be foreseen, as well as sampling and laboratory testing. So far, no clinical controls nor samplings or risk analysis are applied to control activities.

Riyadh International airport

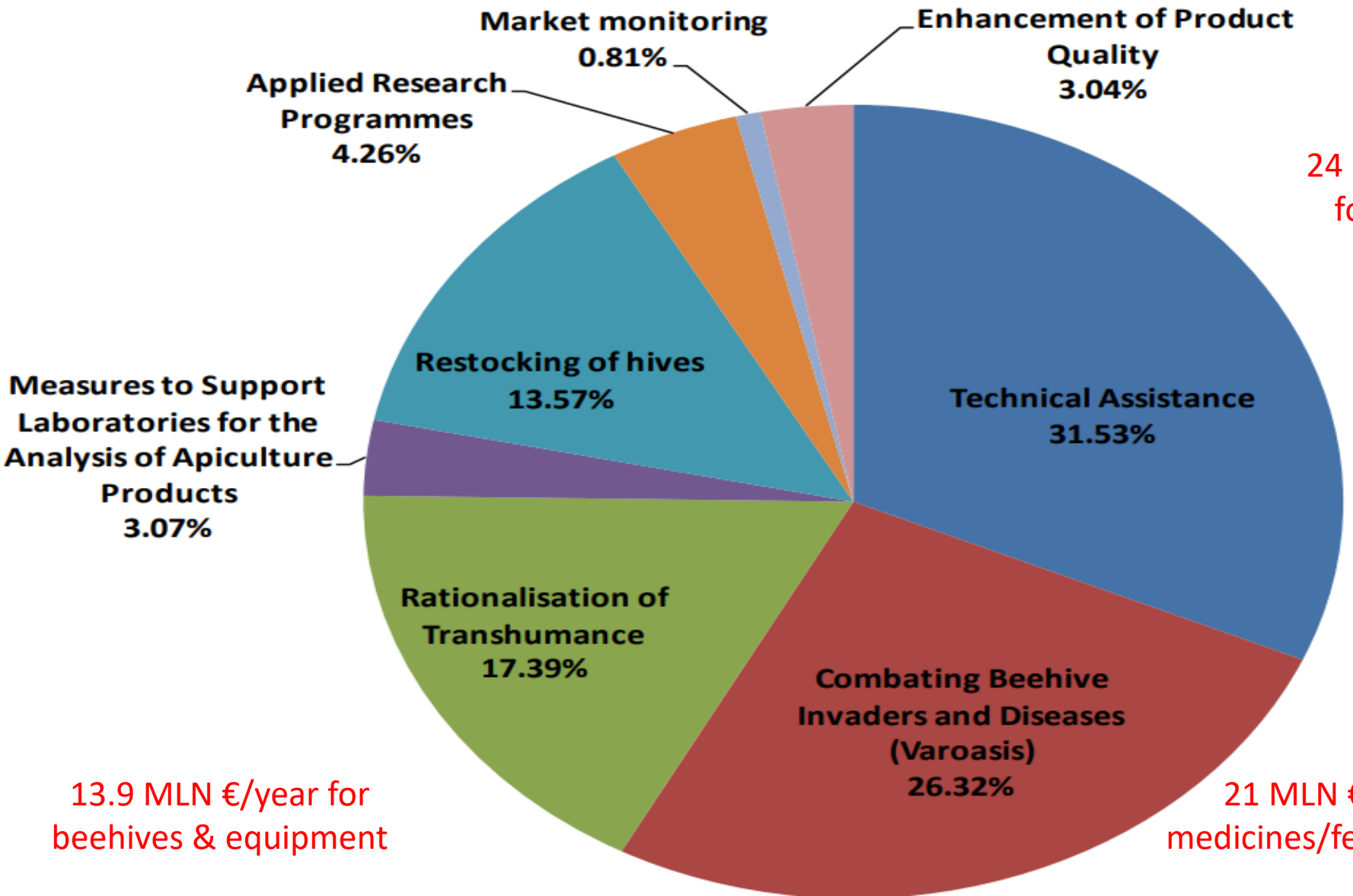
Two mobile laboratories will be available at the Riyadh airport

4 **Benchmarking process and gap analysis**

Apiary of traditional hives
in Makkah Region

EU Apiculture programme 2020: 80 MLN € investments on different measures

Benchmark!



24 MLN €/year for training

13.9 MLN €/year for beehives & equipment

21 MLN €/year for medicines/feeds/research

Benchmarking the therapeuthic choice (N. of veterinary medicines registered for the bees)

4

In KSA there is a Wide use of unregistered antimicrobials (antibiotics included).

No organic medicines in KSA are registered for the honey bees.

Beekeepers have too low therapeutic choice for their bees.
They have only 1 product (fluvalinate – which has been proved varroa-reistance) to control varroa, and 1 antibiotic treatment.

Fluvalinate registered strips, for varroa treatment

4 - Benchmarking process and gap analysis

Medicines registered in Italy for varroa

- ✓ Apilifevar
- ✓ Apiguard
- ✓ Thymovar
- ✓ Apistan
- ✓ Polyvar
- ✓ MAQS
- ✓ Varterminator
- ✓ Apifor60
- ✓ Varromed
- ✓ Api-Bioxal (polvere, liquido)
- ✓ Oxuvar
- ✓ Oxybee
- ✓ Apitraz
- ✓ Apivar

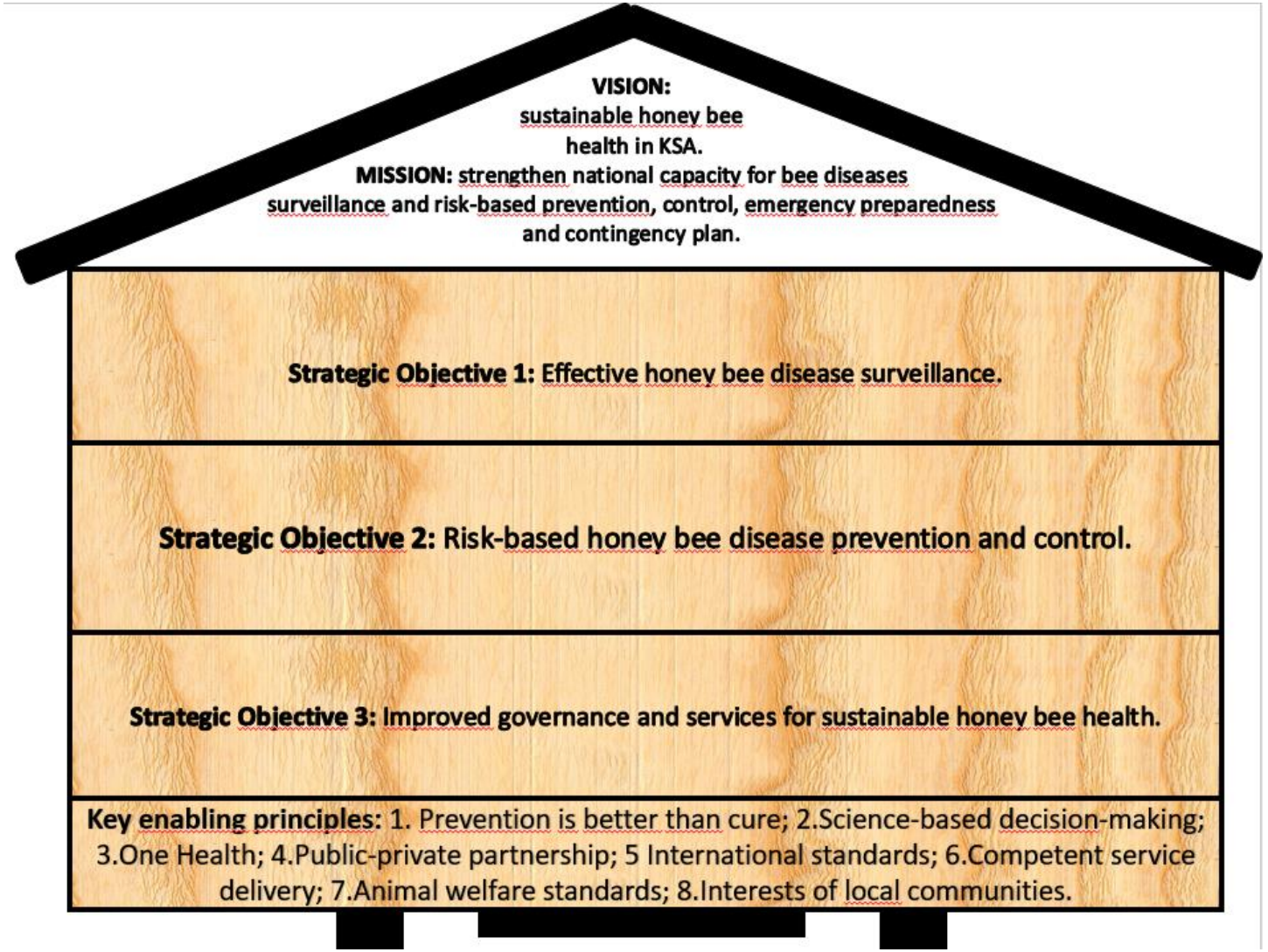
No antibiotic is registered for honey bees in Europe

Outline of presentation

5 **National HBH strategic framework**

Apiary of traditional hives
in Makkah Region

5 – National HBH strategic framework



Outline of presentation

6 **Mitigation measures**

Apiary of traditional hives
in Makkah Region

6 – Mitigation measures

1. At the apiary level, to improve HBH:

Improve transition toward modern beehives through the adoption of modern, well insulated beehives (movable frames)

Training of beekeepers on good beekeeping practices and biosecurity measures in beekeeping (key enabling principle: Science-based decision-making)

6

Provide beekeepers with **veterinary medicines** (above all organic!) **and feeds** for varroa and nosema control

Modern beekeeping in KSA

Beekeepers event in in Saudi Arabia's Qassim

6 – Mitigation measures

2. MoEWA could provide:

Extension services:
(public-private partnership) with a well-structured veterinary extension programme and advisory services, under the coordination of a competent MoEWA expert (eg. through extensions: may provide beehives, organic feeds, prescriptions for medicines, etc.). Involvement of the mobile clinics!

6

Registration of Veterinary medicines and medicated feeds: authorization of medicines (above all organic). Foreseen the prescription is relevant for traceability and involvemen of private veterinarians in the sector. Sustainable means no antibiotics.

Beekeeping extension service

6 – Mitigation measures

Set-up a surveillance programme for HB diseases: monitoring prevalence and incidence of notifiable and emerging HB diseases, preventing (good beekeeping practices) and set-up early detection and controls (biosecurity measures); set-up contingency plans (for exotic or emerging-nosemosis diseases).
A reporting system should be foreseen.

Set-up a surveillance programme for HB diseases

Activate a national registry for beekeepers and traceability systems

6

eg. to track hives and the whole honey value-chain.

Imported bees

Strengthen the capacity for border control and quarantine (key enabling principle “Prevention is better than cure”.
Criteria: compliance with international standards (OIE Manual); export certifications (treatments and selection for nosema resistance); sanctions in case of not in conformity.
Needs: refrigerated areas (10°C ca.); trained personnel; risk-based controls; monitor varroa (threshold: < 1,5%); monitor nosema (threshold: <9x10^3 spores/bee).

6

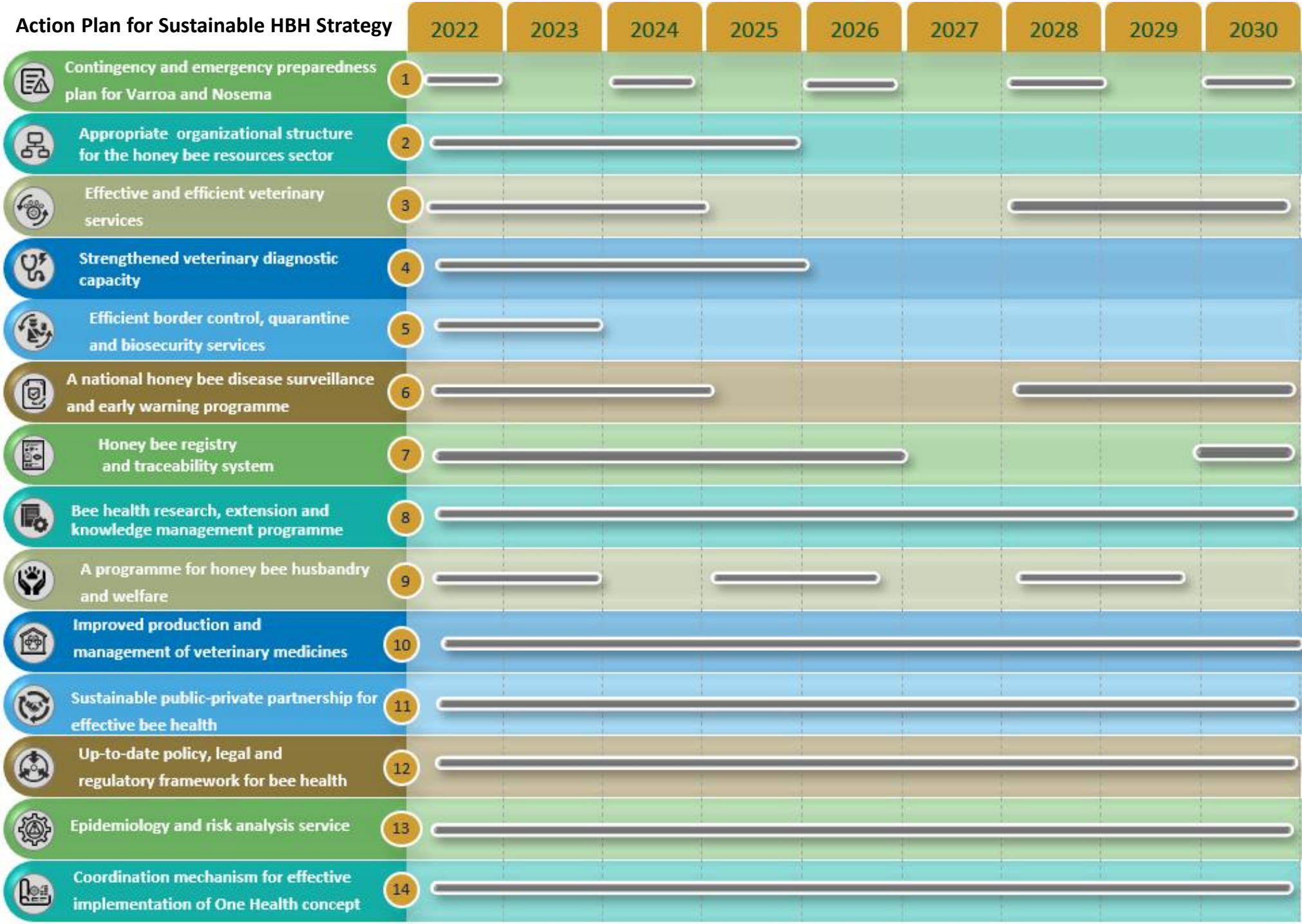
Mitigation measures to prevent spread of HB diseases: health certificate; health status control at entrance in KSA (varroa and nosema); identify restricted areas for hybrids; activate traceability of bees and beekeepers

Refrigerated container

Outline of presentation

7 **Action plan**

Apiary of traditional hives
in Makkah Region


Action Plan for Sustainable HBH Strategy
2022
2023
2024
2025
2026
2027
2028
2029
2030
Contingency and emergency preparedness plan for Varroa and Nosema
1
Appropriate organizational structure for the honey bee resources sector
2
Effective and efficient veterinary services
3
Strengthened veterinary diagnostic capacity
4
Efficient border control, quarantine and biosecurity services
5
A national honey bee disease surveillance and early warning programme
6
Honey bee registry and traceability system
7
Bee health research, extension and knowledge management programme
8
A programme for honey bee husbandry and welfare
9
Improved production and management of veterinary medicines
10
Sustainable public-private partnership for effective bee health
11
Up-to-date policy, legal and regulatory framework for bee health
12
Epidemiology and risk analysis service
13
Coordination mechanism for effective implementation of One Health concept
14

7 - Action plan – Strategic Objective 1 – Initiative 1 - Outputs

Strategic Objective 1: effective HB disease surveillance

Initiative 1: A national HBH surveillance and early warning programme

Outputs:

1.1 A passive and active surveillance and early warning system, case definitions and guidelines for for detection and reporting of nosema and varroa established

1.2 A passive and active surveillance and early warning system, case definitions and guidelines for for detection and reporting of other notifiable diseases established (*A. woodi*, AFB)

1.3 A network of the trained stakeholders for the surveillance and HB disease ,early warning established (including monitoring of varroa infestation), and control provide treatments/feeds to beekeepers.

1.4 Epidemiological situation assessment and investigations- of notifiable HB diseases elaborated and provided

7 - Action plan – Strategic Objective 1 – Initiative 2 - Outputs

Strategic Objective 1: effective HB disease surveillance
Initiative 2: strengthened veterinary diagnostic capacity

Outputs:

2.1 A National Veterinary Laboratory Network system established for diagnosis of HB diseases (even borders) and detection of antibiotics' and acaricides' residues in honey and comb honey (in collaboration MoeWA-SFDA)

2.2 Public labs ISO 17025 Quality System accredited. Collaboration with external labs.

2.3 Standard operating procedures established

2.4 Laboratory staff skills improved

7 - Action plan – Strategic Objective 1 – Initiative 3 - Outputs

Strategic Objective 1: effective HB disease surveillance
Strategic initiative 3: Efficient border control and quarantine biosecurity services

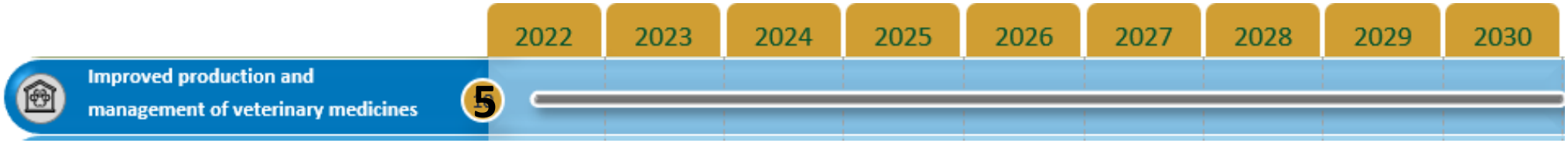
Outputs:

3.1 Border Control and Quarantine biosecurity services's ISO Quality Management System (QMS) Introduced and implemented

3.2 An electronic notification system for import of hives developed, tested and implemented

3.3 Border and quarantine points inspectors appointed and trained

7 - Action plan – Strategic Objective 1 – Initiative 5 - Outputs



Strategic Objective 1: effective HB disease surveillance
Strategic initiative 5: management of AMR (previously named: «Improved production and management of veterinary medicines»)

Outputs:

5.1 Temporary authorization of veterinary medicines

5.2 Policies, regulation and guidelines on the use of antimicrobials in beekeeping

5.3 Awareness and understanding of AMR among beekeepers and the public improved through effettive communication, education and training

5.4 National register of antibiotic use established and surveillance system for AMR implemented

5.5. Action plan to optimize the use of antimicrobials.

5.6 Effective alternative measures to reduce the need for antibiotics

7 - Action plan – Strategic Objective 2 – Strategic initiative 7 - Outputs

Strategic Objective 2: risk-based HB disease prevention and control

Strategic initiative 7: contingency and emergency preparedness plan

Outputs:

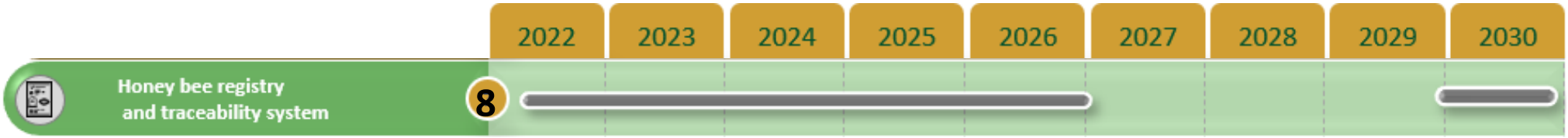
7.1 Emergency plan for *Tropilaelaps*

7.2 Emergency plan for *Aethina tumida* (SHB)

Set-up and spread protocols for Tropilaelaps and SHB

7.3 Compensation fund defined and agreed

7.4 Emergency communication plans developed and implemented



Strategic Objective 2: risk-based HB disease prevention and control
Strategic Initiative 8: HB registration and traceability system

Outputs:

8.1 Regulatory provision, methodology, standards and tool and movement control forms prepared

8.2 Web-based database for the system developed and implemented

8.3 Activate stakeholders' network established (e.g. SFDA, national and regional branches)

8.4 Beehives identification and registration and traceability procedures implemented

Thank You