



Ministry of Agriculture  
Republic of Indonesia



World Organisation  
for Animal Health  
Founded as OIE

# Information, Education, and Communication Materials Awareness on Antimicrobial Resistance/ Antimicrobial Use

## Multi-Partner Trust Fund on Antimicrobial Resistance

### Diskusi Kelompok Terarah

Uji Coba Media Komunikasi, Informasi dan Edukasi (KIE) tentang Pengendalian Resistensi Antimikroba"

Quadripartite MPTF on Antimicrobial Resistance

Bogor, 16-17 Maret 2023



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Directorate General of Livestock and  
Animal Health Services, Ministry of Agriculture  
Center for Indonesian Veterinary Analytical Studies  
World Organisation for Animal Health

# 2023



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Directorate General of Livestock and Animal Health Services  
Center for Indonesian Veterinary Analytical Studies (CIVAS)  
World Organisation for Animal Health (WOAH)

# INFORMATION, EDUCATION, AND COMMUNICATION

## Materials Awareness on Antimicrobial Resistance/ Antimicrobial Use

Multi-Partner Trust Fund on AMR

2023

# INFORMATION, EDUCATION, AND COMMUNICATION AWARENESS ON ANTIMICROBIAL RESISTANCE/ ANTIMICROBIAL USE AWARENESS MATERIALS

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# INTRODUCTION

## Background

Antimicrobial resistance (AMR) is a global health problem caused by the misuse and overuse of antimicrobials. The inappropriate use of antimicrobials in the human, animal, agricultural, fishery, and food product sectors has led to an accelerated rate of AMR. Based on the 2022 global report with statistical simulation models and risk factor studies, it is known that 4.95 million world deaths related to AMR are the highest in the African-Asian Region in 2019. A Lancet study conducted in 2019 discovered 1.27 million fatalities, of which 860,000 were in Africa, caused by drug-resistant bacteria. As well, HIV was the cause of death for 640,000 individuals in Africa in the same year (Lancet 2022, Anderson 2023).

In Indonesia, AMR is also a serious problem in the human, animal, agricultural, fisheries, and environmental sectors because it is projected that by 2030 it will be included among the 5 countries with the highest consumption of antimicrobials if no action is taken. Insufficient knowledge and awareness about AMR and inappropriate and irresponsible use of antimicrobials are key factors driving the acceleration of the incidence rate of AMR.

The World Organisation for Animal Health (WOAH) has roles to develop the Information, Education, and Communication (IEC) materials on AMR/AMU in Indonesia to gaining comprehensive understanding of AMR/AMU can transform prevailing attitudes and behaviour. WOAHA has appointed the Center for Indonesian Veterinary Analytical Studies (CIVAS) for a short-term consultancy, in November 2021 until June 2023, under the Multi-Partner Trust Fund (MPTF) project to collaborative with Quadripartite Alliance (WOAH, World Health Organization/WHO, Food and Agriculture Organization of the United Nations/FAO, and United Nations Environment Programme/UNEP) use One Health approach to combat AMR in Indonesia.

## Objectives and Outputs

The objectives are to develop the content (script concept and layout) and design for IEC materials on AMR/AMU suitable in posters, leaflets, infographics/social media tools.

The outputs are to develop 17 awareness materials (7 posters, 6 leaflets, and 4 infographics social media) in English and Indonesian version languages to encourage the prudent and responsible use of antimicrobials in human, animal, and environmental sectors, as well as to encourage and promotion of good animal production practices and infection control prevention.

## METHOD

The development content and design of IEC materials on AMR/AMU was gathered from the key messages based on the results of a consultation workshop on 18-19 August 2022 by 22 relevant stakeholders. Before developing a design, the inventory of published IEC materials on AMR/AMU was conducted to gather more information and insights for baseline on One Health awareness design.

The development contents process was discussed many times in internal meetings and other meeting with relevant stakeholders. The design and layout development were carried out on January until May 2023 in collaboration with an illustrator, layout designer, and translator, following the instructions in the Brand Manual WOAHA version 2.0 (Decimal 2023). A number of 17 awareness materials were pre-tested on 16 March 2023 to 28 participants from human health workers such as midwives, nurses, and pharmacists; animal health workers like livestock/fisheries extension workers and technical service/TS from animal drug company, poultry farmers, fish farmers; and as well as members of the general public, to gather input and feedback from the target audience. The target outputs for IEC Materials on AMR/AMU can be seen at Tabel 1.

The IEC materials have different identify colours for the background in each sector. The background for the human sector material is soft blue, for the animal sector is soft red, and for the environment sector is soft green. The materials were created in two language versions, Bahasa Indonesia and English.

**Table 1. Target Outputs for One Health IEC Materials on AMR/AMU**

Themes of Key Messages Suggested by WOAHA	Human Sector	Animal Sector	Environment Sector	Key Messages
1. Prudent and responsible use of antimicrobials in <b>human, animal, and environmental sectors</b>	- 1 poster - 1 leaflet - 1 social media infographic	- 1 poster - 1 leaflet - 1 social media infographic	- 1 Poster	Focus on AMU as an act with societal impact to human, animal, and environment
2. Promoting good animal <b>production practices</b> including biosecurity, vaccination, use of alternatives to antimicrobials	N/A	- 2 posters (animals and fish) - 1 leaflet - 1 social media infographic	- 1 leaflet	Focus on the process to ensure the quality and safety of animal food products
3. Promoting infection, prevention and control (IPC) and biosecurity in <b>human and animal health sectors</b>	- 1 poster - 1 leaflet	- 1 poster - 1 leaflet	- 1 social media infographic	Focus on the preventive measures to minimize the adverse impact of AMR to the people, planet, and prosperity

# THE ONE HEALTH INFORMATION, EDUCATION, AND COMMUNICATION (IEC) AWARENESS MATERIALS ON AMR/AMU IN INDONESIA

The materials were refined and finalized, have been sent to WOA on June 2023. The IEC materials can be seen in the figures below based on themes key messages from WOA. The Indonesian (Bahasa) version of the material is on the left side, and the English version is on the right side. References used to develop IEC data and infographics can be found in the sources cited (References part of this report).

## Theme 1: Promote Prudent and Responsible Use of Antimicrobials in Human, Animal, and Environmental Sectors

### Posters

There are 3 posters made, intended for the human (Figure 1), animal (Figure 2) and environmental sector (Figure 3).

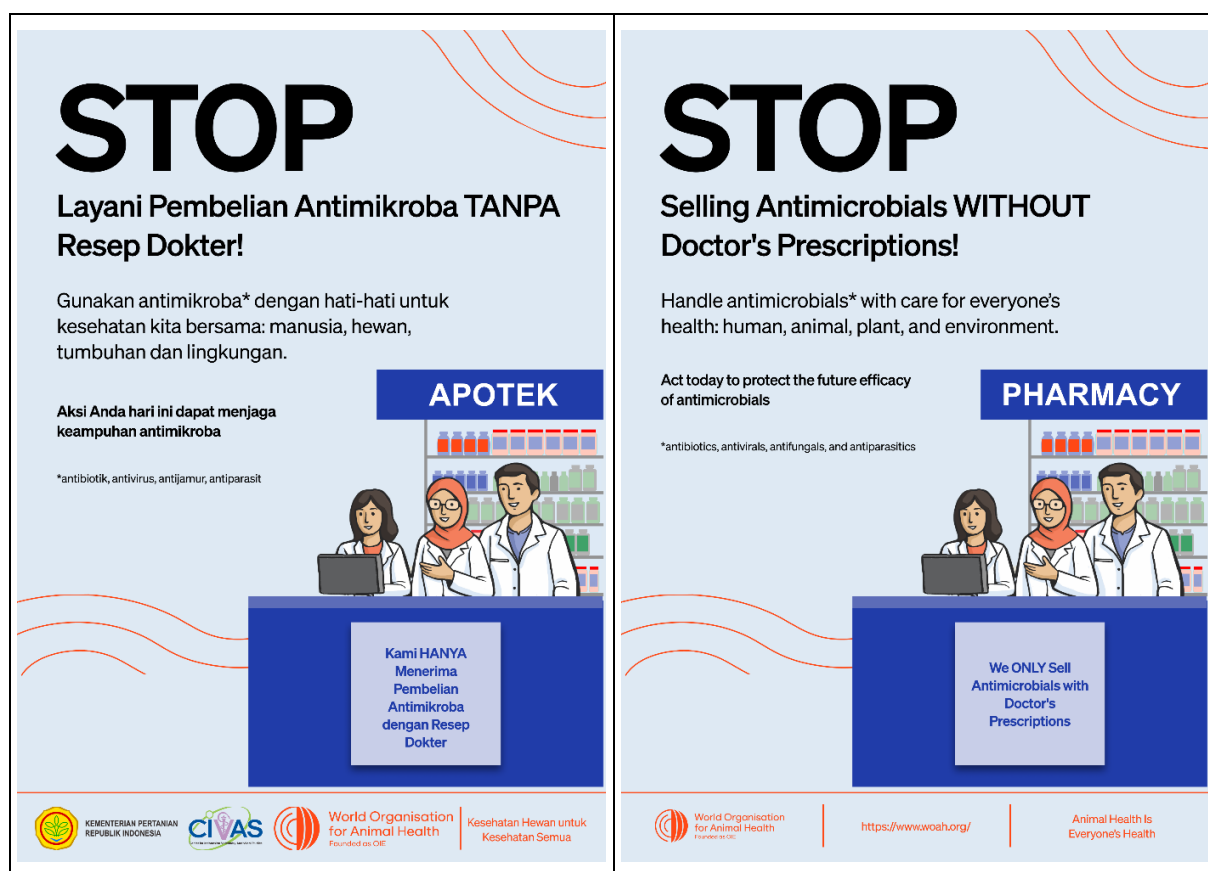


Figure 1. Human Posters of Theme 1

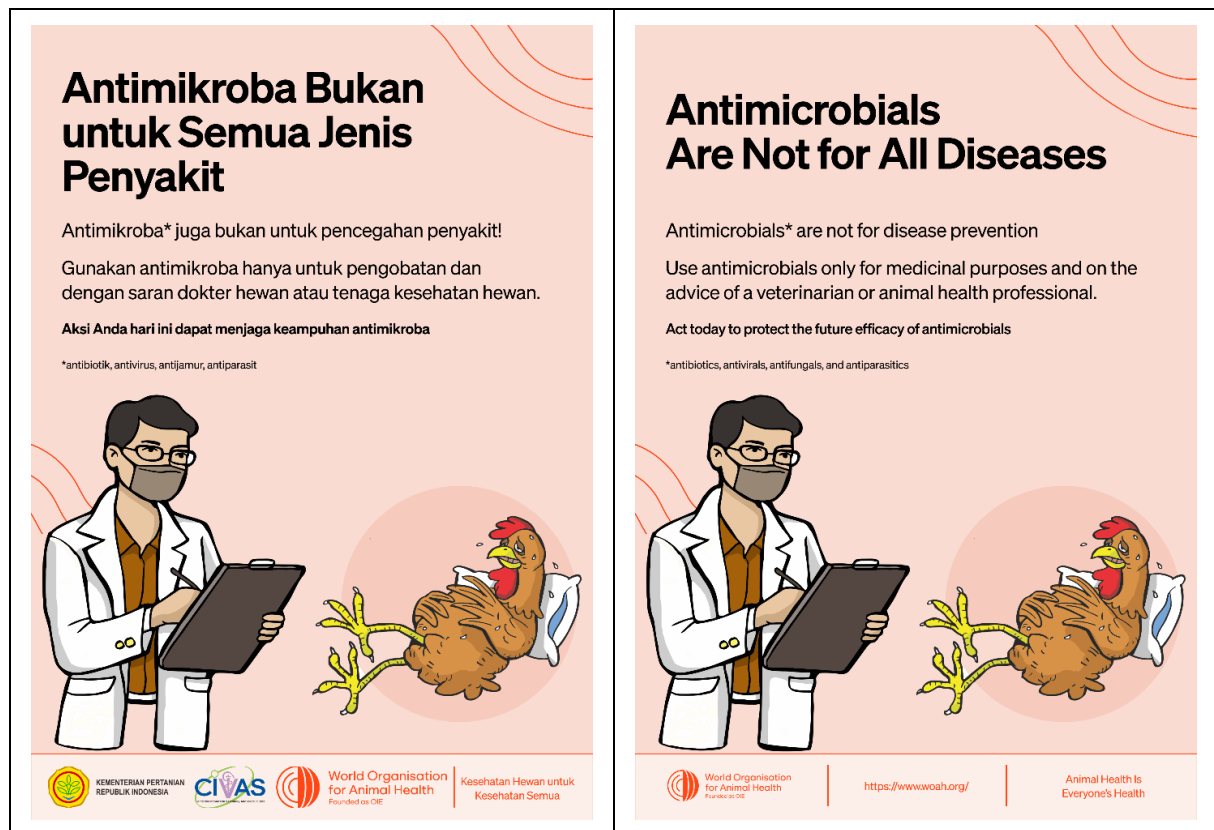


Figure 2. Animal Posters of Theme 1

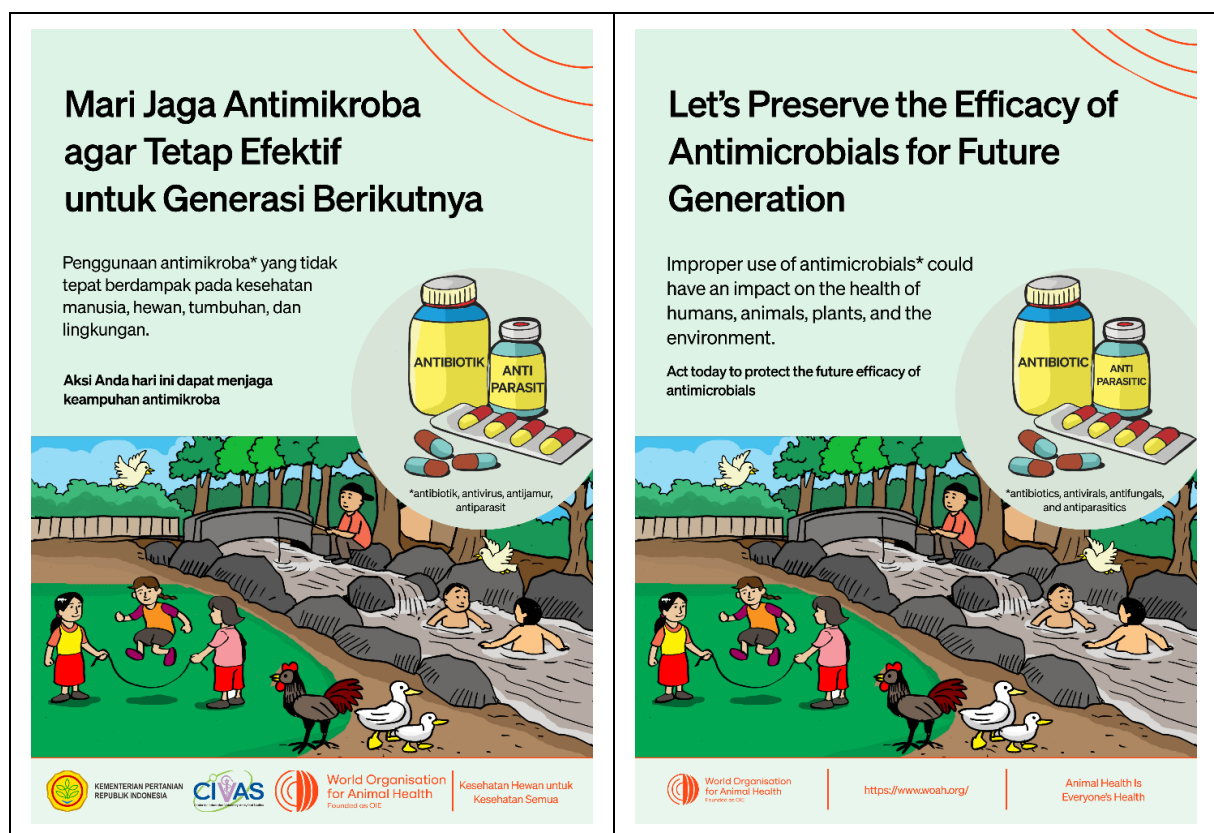


Figure 3. Environment Posters of Theme 1

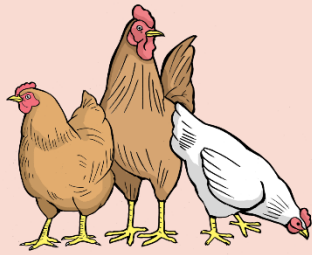
## Leaflets

There are 2 leaflets made, intended for the human (Figure 4) and animal sector (Figure 5).





Figure 4. Human Leaflets of Theme 1



## Misuse of Antimicrobials\* Leads to the Catastrophe

\*antibiotics, antivirals, antifungals, antiparasitics



Misuse and overuse of antimicrobials can increase the risk of resistance as well as threaten the health and welfare of humans, animals and the environment.

Antimicrobial resistance (AMR) is conditions in which bacteria, viruses, fungi, and the parasite no longer responds to the antimicrobial, therefore the antimicrobials become ineffective to treat disease anymore.


As a result, treatment duration getting longer, livestock production and farmer's income decrease, mortality rates increase, thus threatening health, food safety and security, as well as global sustainable development.


Antimicrobials are not for disease prevention!

Use antimicrobials only for treatment under the advice of a veterinarian or animal health professional.



Reduce antimicrobial use at your farm through the following steps:

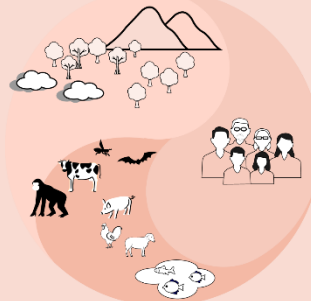
 Implement good farming management to maintain livestock health

 Infection Prevention and Control (IPC) with biosecurity and vaccination

Biosecurity is a strategic and integrated approach to analyze and manage risks to human, animal, plant, and the environment life and health (FAO, 2007).

The Government of Indonesia has banned the use of antibiotics for growth promoters and disease prevention.

One example is the prohibition of the use of the antibiotic namely colistin in animals. Colistin belongs to an important class of antibiotics and is the last resort in human medicine.



The health of humans, animals, plants, and the environment are linked, mutually related, and affecting one another.

Act today to protect the future efficacy of antimicrobials

“ Animal Health is Everyone's Health ”

<https://www.woah.org/>





Figure 5. Animal Leaflets of Theme 1

## Infographics for Social Media

There are 2 infographics made, intended for the human (Figure 6) and animal sector (Figure 7).



## Dampak Resistensi Antimikroba

**5.000.000**

Kegiatan global resistensi antimikroba

Source: Lancet 2022; 399; 629-55

**558.000**

Kasus baru Tuberkulosis (TB) yang resistensi terhadap antibiotik

Source: WHO, 2018

**200.000**

Kematian bayi baru lahir

Source: WHO, 2016

## Impacts of Antimicrobial Resistance

**5,000,000**

Global deaths related to antimicrobial resistance

Source: Lancet 2022; 399; 629-55

**558,000**

New cases of antibiotic resistant Tuberculosis (TB)

Source: WHO, 2018

**200,000**

Deaths of newborns

Source: WHO, 2016

## Resistensi Antimikroba Dapat Menyebabkan Kemiskinan Global



Sumber: <https://www.unep.org/explore-topics/chemicals-waste/what-we-do/emerging-issues/antimicrobial-resistance-global-threat>

## Antimicrobial Resistance Can Cause Global Poverty



Sumber: <https://www.unep.org/explore-topics/chemicals-waste/what-we-do/emerging-issues/antimicrobial-resistance-global-threat>

**Aksi Bersama  
Demi  
Kesehatan Semua**

Kesehatan Hewan untuk Kesehatan Semua

<https://www.woah.org/>

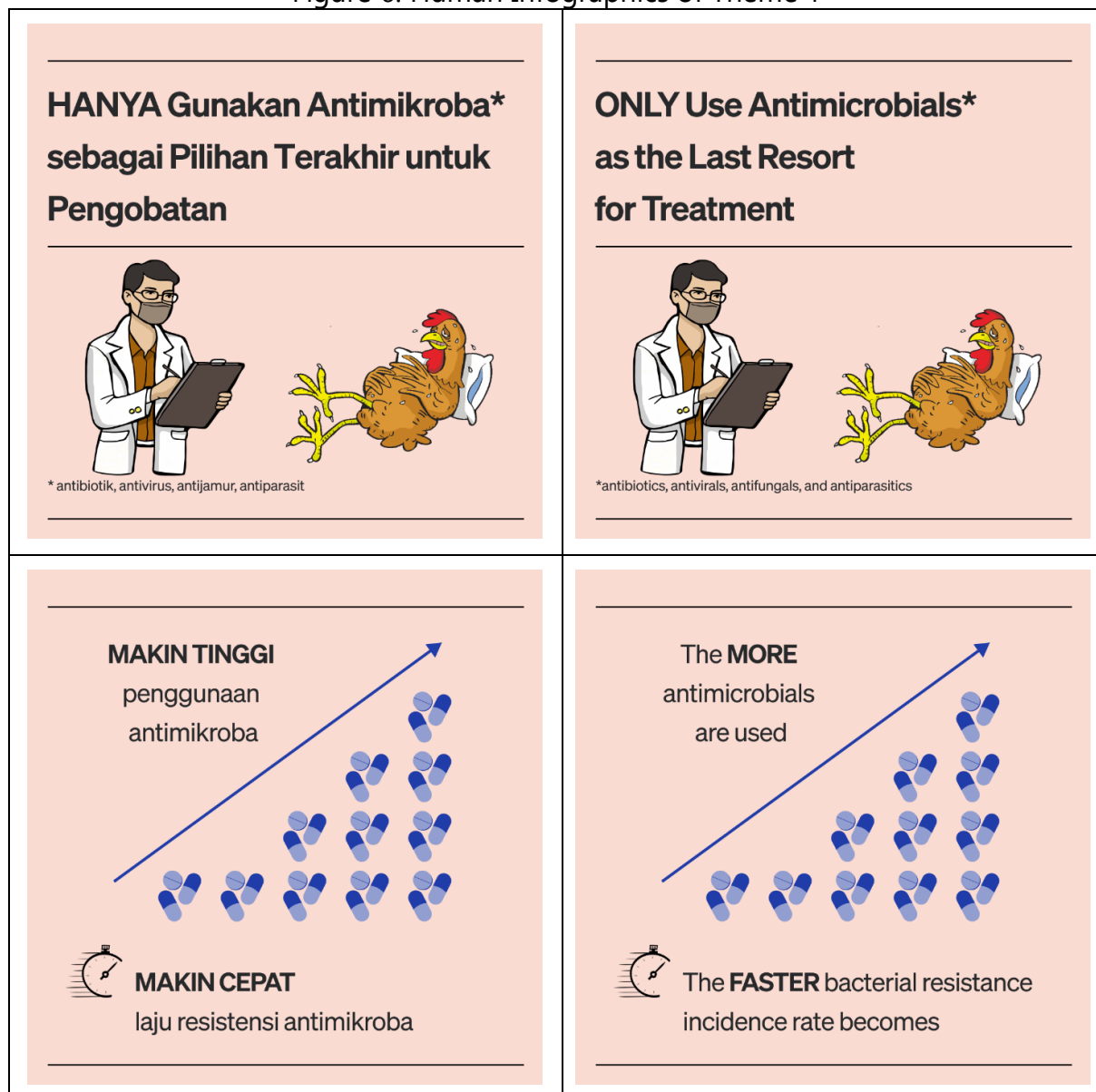
**Collaborative Actions  
For  
One Health**

Animal Health is Everyone's Health


<https://www.woah.org/>



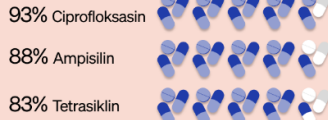
Figure 6. Human Infographics of Theme 1



### Tingkat Resistensi Bakteri terhadap Antibiotik

Korelasi  $\oplus$  antara bakteri resisten  dengan tingginya frekuensi penggunaan antibiotik


Tingginya kekebalan bakteri terhadap:



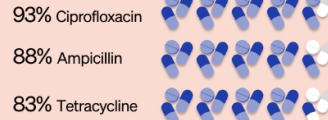
Sedangkan Ciprofloxacin dikategorikan sebagai antibiotik **SANGAT PENTING** bagi kesehatan manusia oleh WHO.

Studi pada 19 peternakan broiler di Kabupaten Bogor.  
Nurbianti et al., 2022

### Antibiotic Resistance Level of Bacteria

There is a  $\oplus$  correlation between resistant bacteria  and the high frequency of antibiotic use

Most bacteria are resistant to:



Meanwhile, Ciprofloxacin is categorized as a **CRITICALLY IMPORTANT** antibiotics for human health by WHO.

Study on 19 broiler farms in Bogor District.  
Nurbianti et al., 2022

Kita semua HARUS  
menjaga keampuhan  
antimikroba agar masih  
efektif ketika  
dibutuhkan untuk  
pengobatan manusia  
dan hewan



We all MUST protect the  
future efficacy of  
antimicrobials so that  
they will work effectively  
when needed for  
humans  
and animals



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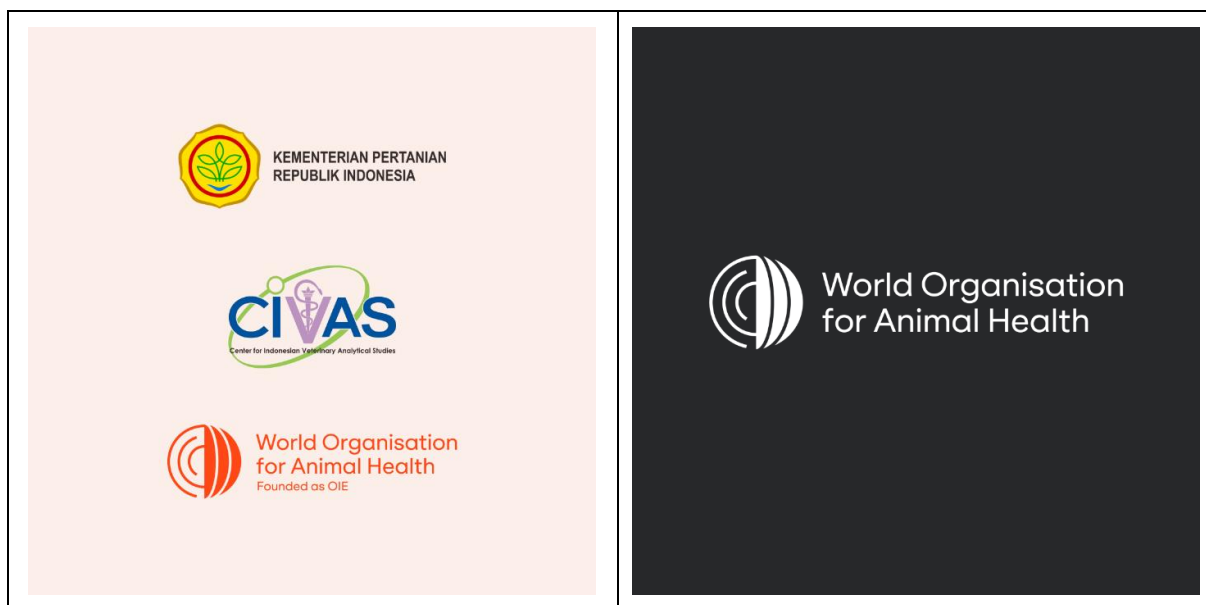


Figure 7. Animals Infographics of Theme 1

## Theme 2: Promote Good Animal Production Practices Including Biosecurity, Vaccination, Use of Alternatives to Antimicrobials

### Posters

There are 2 posters made, intended for the animal (Figure 8) and aquaculture sector (Figure 9).

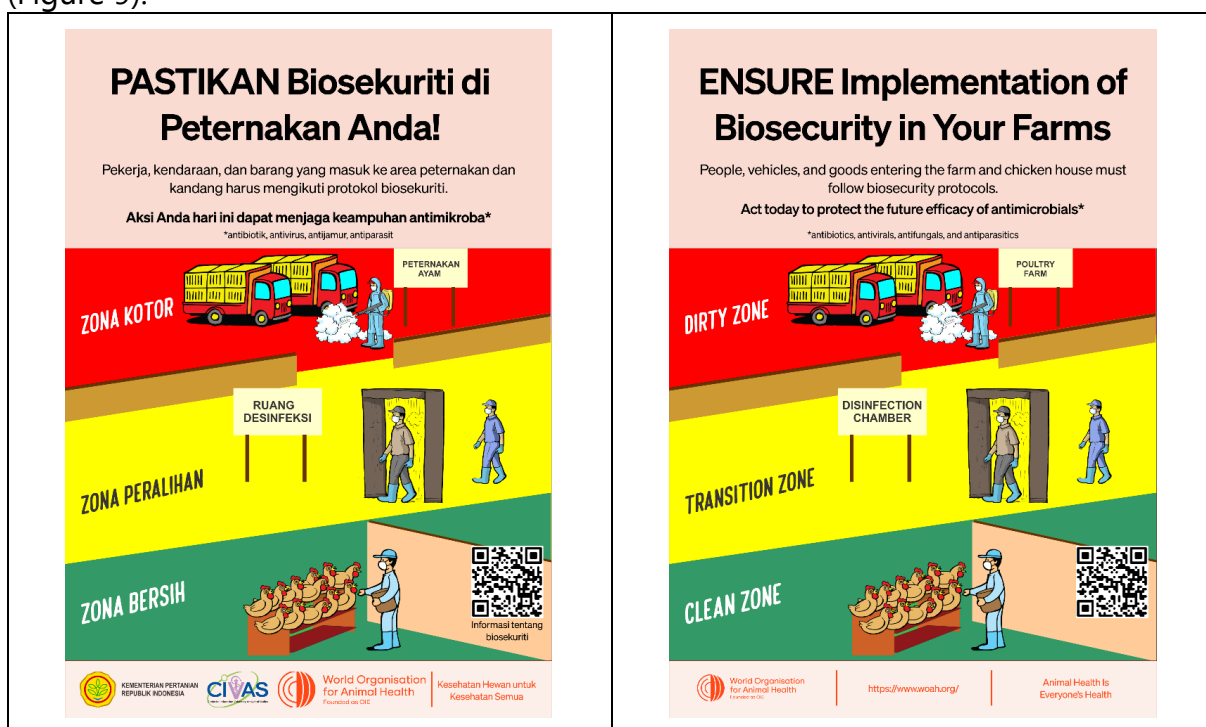


Figure 8. Animal Posters of Theme 2

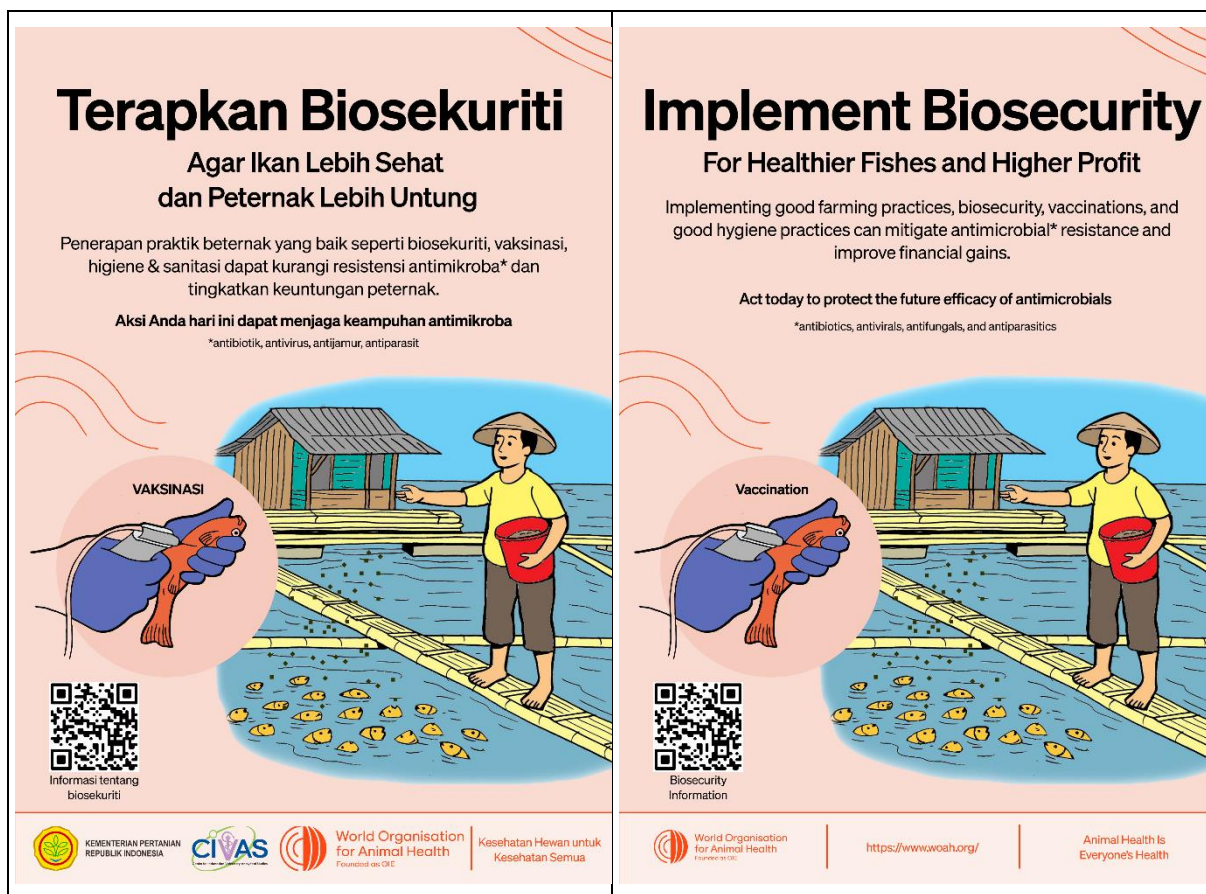
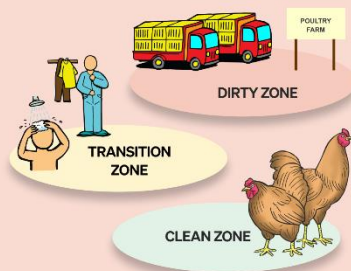


Figure 9. Fishery Posters of Theme 2

## Leaflets

There are 2 leaflets made, intended for the animal (Figure 10) and environment sector (Figure 11).



## Biosecurity for Optimum Production, Prosperous Farmers, Healthier Environment



World Organisation  
for Animal Health

Implement good farm practices, biosecurity, vaccination, hygiene, and sanitation so that the chickens are healthy, production is more optimal, and farmers' income increases.

Good biosecurity on the farm can prevent the spread of pathogens to humans, animal products, and the environment.



Biosecurity is a strategic and integrated approach to analyze and manage risks to human, animal, plant, and the environment life and health (FAO, 2007).

2



### Good Biosecurity Practices

Implementation of three-zone biosecurity on farms; separate dirty (red), transition (yellow), and production (green) zones.

Implementation of disinfection at the entrance gate, on vehicles, equipment, poultry houses, and the surrounding environment.

Restrictions on the movement of livestock, humans, vehicles, and equipment to enter the farms.

Implementation of routine sanitation of house equipment such as drinking and feeder bowls, and other equipment.

3



Pest control inside the farm and the surrounding environment



Provide special locations and installations for managing waste from farming activities.



Manage farm waste by separating it from the public sewer and avoid throwing it into the river.



4

## Have Your Farms Applied Biosecurity Measures?

Disease **prevention** is cheaper than treatment

Good biosecurity implementation can save the rearing cost per chicken per period

Source: FAO, 2016



Act today to protect the future efficacy of antimicrobials

5

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Figure 10. Animal Leaflets of Theme 2



## Prevent Diseases with Biosecurity, Vaccination, and Good Waste Management



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Biosecurity, vaccination, hygiene, and sanitation can prevent diseases and reduce morbidity and mortality.

Good waste management can reduce the risk of spreading pathogens into the environment.

Biosecurity is a strategic and integrated approach to analyze and manage risks to human, animal, plant, and the environment life and health (FAO, 2007).

2

## Biosecurity For The Optimum Production

Separation of dirty, transition, and clean zones

Disinfection at the entrance gate



Restrictions on the traffic movement

Implementation of routine WASH (water, sanitation, hygiene)



Implementation of pest control

3

## Protect Your Livestock From Diseases With Vaccinations



Align vaccination programs according to the disease mapping on the field.



Match the types and strains of the virus with the types and strains of the vaccines.



Conduct vaccination programs based on the age of the chickens.



Make sure vaccines are stored at the right temperature according to the label instructions.



Vaccines should be administered by trained personnel according to the procedures on the label.



Provide supplements and vitamins to boost immunity. Do not use antimicrobials before the program.

4

## Farm Waste Management For Everyone's Health



Provide special location and installation for waste management from farming activities.



Collect antimicrobial waste in securely closed containers.



Burn antimicrobial waste in a special installation (incinerator) that is secured and closed, separated from other types of waste, and is not accessible to people in the surrounding areas.



Manage farm waste by separating it from the public sewer and avoid throwing it into the river.

Act today to protect the future efficacy of antimicrobials

5

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### Cegah Penyakit dengan Biosekuriti, Vaksinasi, dan Pengelolaan Limbah yang Baik

Pencegahan penyakit dapat dilakukan dengan biosekuriti, vaksinasi, higiene, dan sanitasi, sehingga menurunkan angka kesakitan dan kematian.

**Pengelolaan limbah yang baik dapat mengurangi risiko penyebaran mikroba patogen ke lingkungan.**

Biosekuriti adalah pendekatan strategis dan terintegrasi untuk menganalisis dan mengelola risiko terhadap kehidupan dan kesehatan manusia, hewan, dan tumbuhan serta lingkungan (FAO, 2007).

2

### Biosekuriti untuk Produksi Optimal

Pemisahan zona kotor, transisi, dan bersih

Penerapan desinfeksi di pintu masuk

Pembatasan pergerakan lalu lintas

Penerapan sanitasi rutin

Pengendalian hama

3

#### Vaksinasi Lindungi Ternak dari Penyakit

- Menyelaraskan program vaksinasi sesuai pemetaan penyakit di lapangan.
- Cocokkan jenis mikroorganisme dan strain lapang dengan jenis dan strain vaksin
- Lakukan vaksinasi berkala sesuai dengan umur ayam.
- Pastikan produk vaksin disimpan pada temperatur yang tepat sesuai petunjuk label/kemasan.
- Vaksin diberikan pada hewan oleh tenaga yang sudah terlatih sesuai prosedur pada label/kemasan.
- Berikan suplemen dan vitamin untuk meningkatkan kekebalan. Jangan gunakan antimikroba sebelum vaksinasi.

4

#### Pengelolaan Limbah Peternakan untuk Kesehatan Semua

- Sediakan lokasi dan instalasi tempat pembuangan limbah khusus peternakan.
- Kumpulkan sampah antimikroba di dalam wadah atau kemasan tertutup yang aman.
- Bakar sampah antimikroba di tempat pembakaran khusus yang aman dan tertutup, serta terpisah dari sampah lain dan tidak mudah diakses oleh warga sekitar.
- Kelola limbah peternakan yang terpisah dengan saluran pembuangan umum dan tidak langsung dibuang ke sungai.

**Aksi Anda hari ini akan menjaga keampuhan antimikroba.**

5

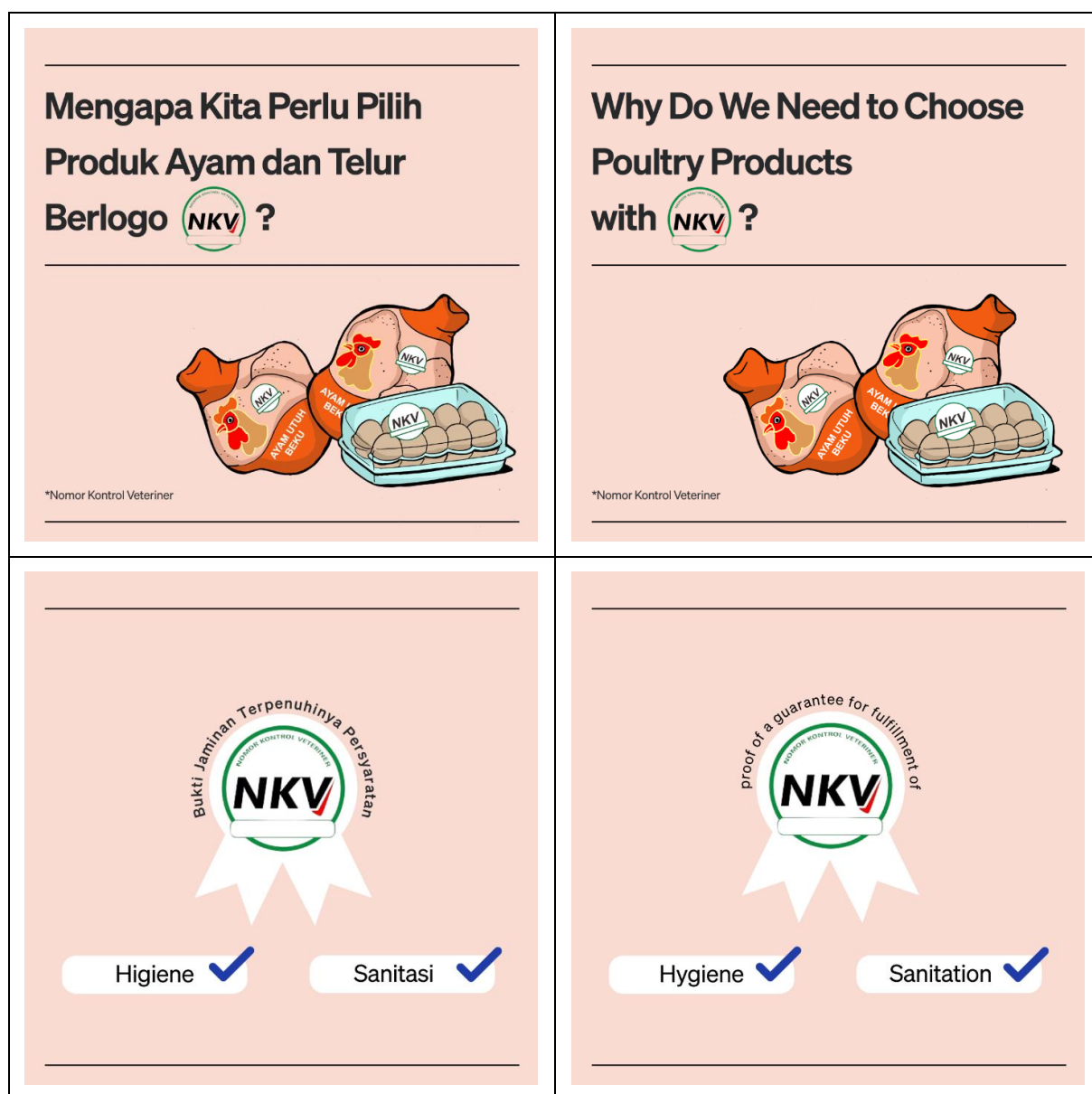
**“Kesehatan Hewan untuk Kesehatan Semua”**

<https://www.woah.org/>

Figure 11. Environment Leaflets of Theme 2

## Infographics for Social Media

There are 1 infographic made, intended for the animal sector (Figure 12).



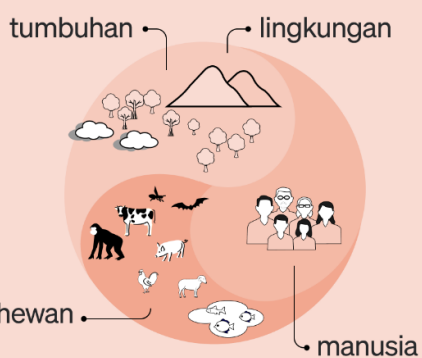
Konsumen PINTAR pilih produk hewan  
yang bertanda 



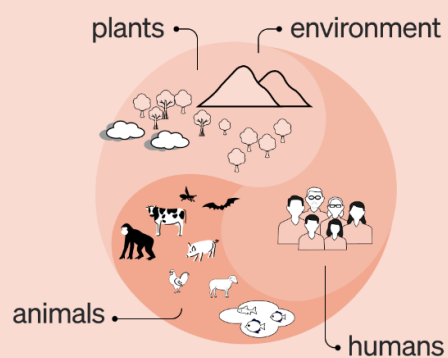
Engaged and healthy consumers choose  
food products with 



... sehingga membantu menjaga kesehatan



...thus help protecting the health of



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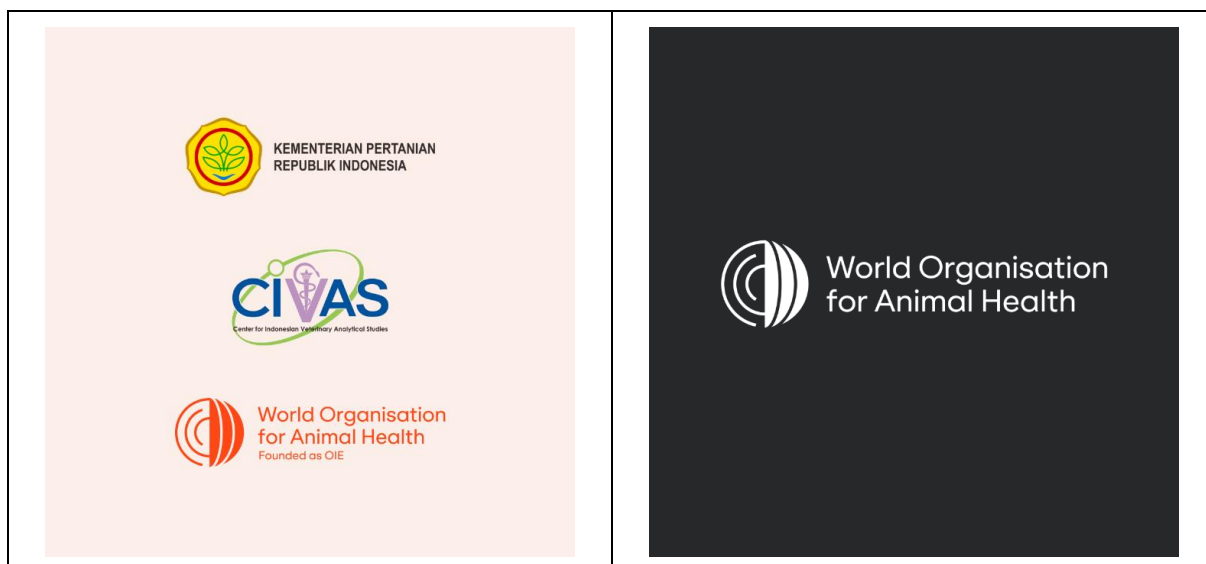


Figure 12. Animal Product Infographics of Theme 2

## Theme 3: Promote IPC and Biosecurity in Human and Animal Health Sectors

### Posters

There are 2 posters made, intended for the human (Figure 13) and animal sector (Figure 14).

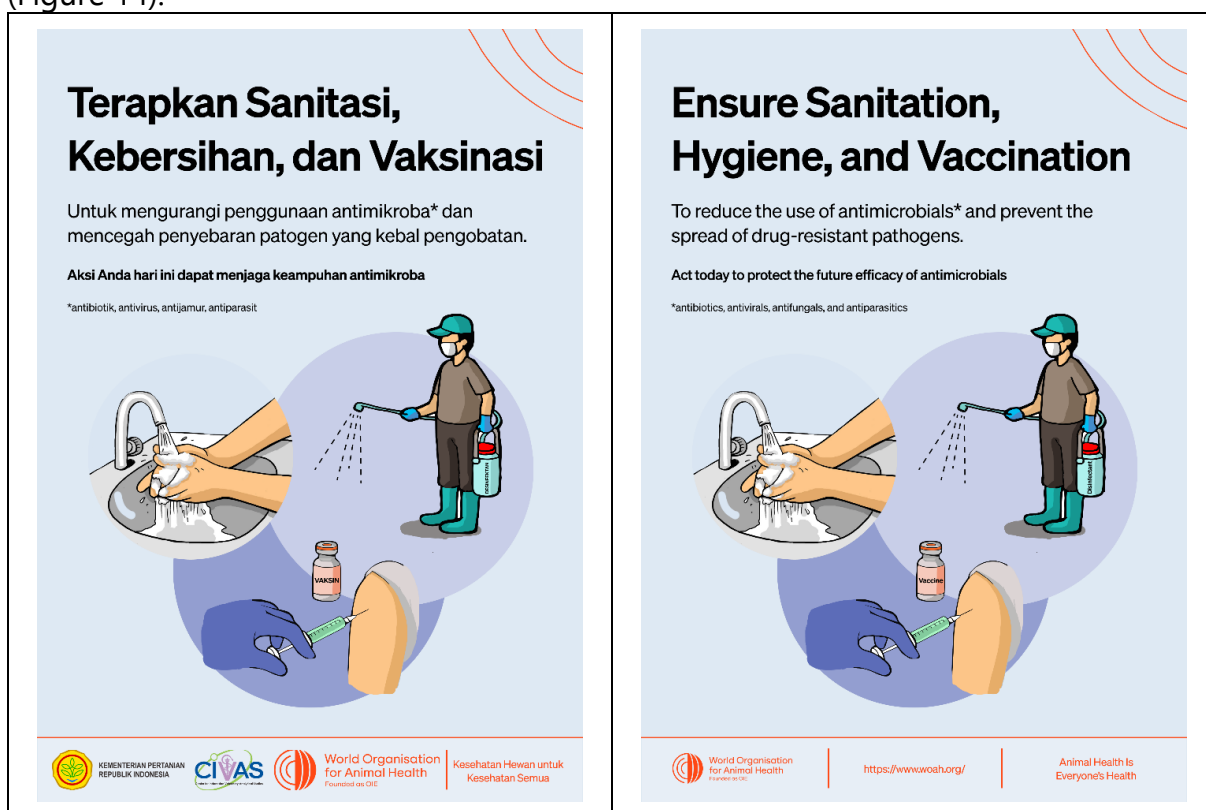


Figure 13. Human Posters of Theme 3

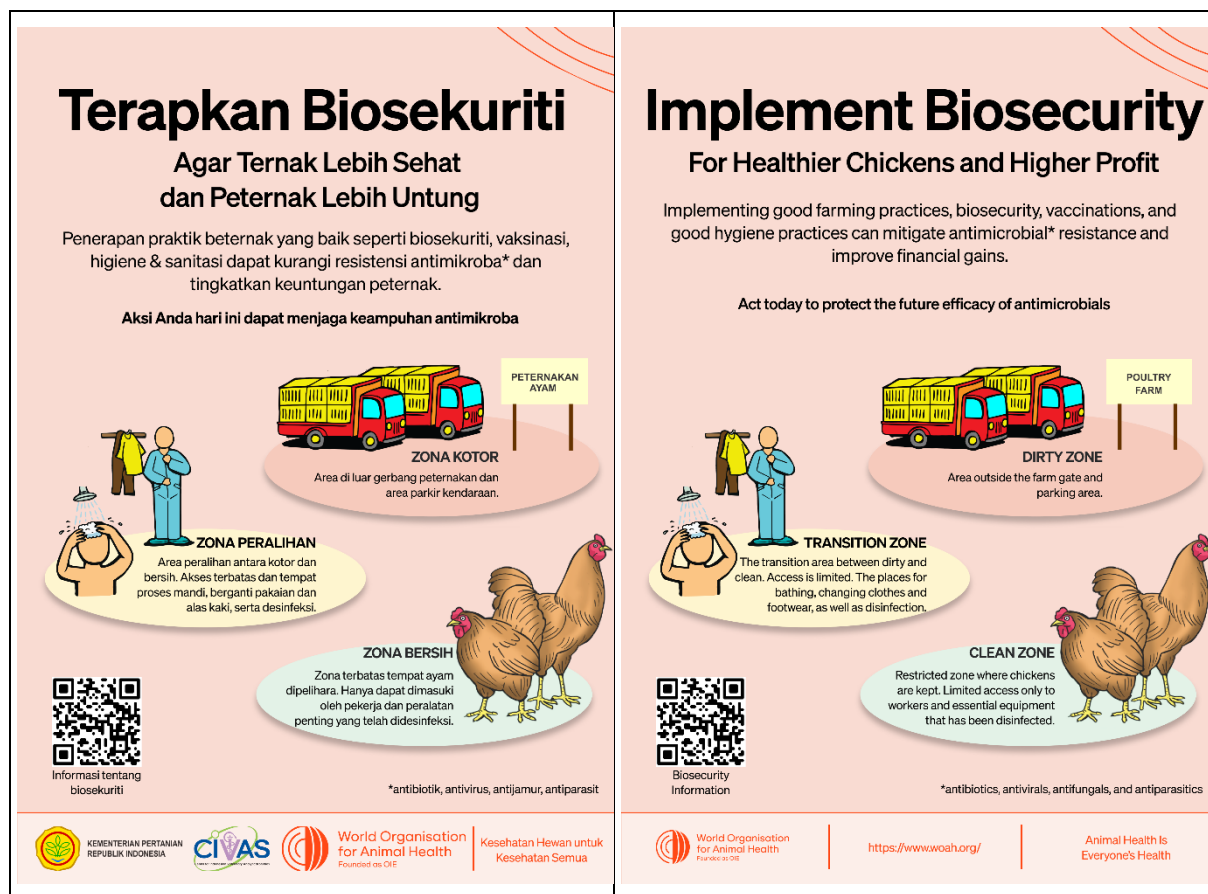


Figure 14. Animal Posters of Theme 3

## Leaflets

There are 2 leaflets made, intended for the human (Figure 15) and animal sector (Figure 16).



## Why Do We Need to Treat Antimicrobial Waste Carefully?

\*antibiotics, antivirals, antifungals, antiparasitics

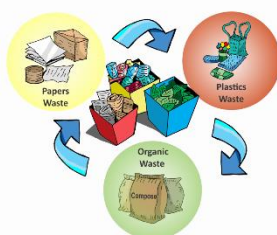


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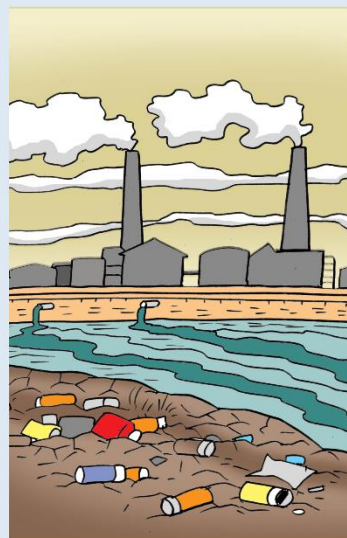
**Antimicrobial resistance (AMR) is conditions in which bacteria, viruses, fungi, and the parasite no longer responds to the antimicrobial, therefore the antimicrobials become ineffective to treat disease anymore.**

Improper disposal of antimicrobial waste can pollute the environment thereby contributing to accelerating the rate of occurrence of antimicrobial resistance.

Waste containing antimicrobials in the environment can come from residual antimicrobials in fertilizers, industrial waste (eg: from drug factories), and those excreted through urine or feces from human and animal bodies.



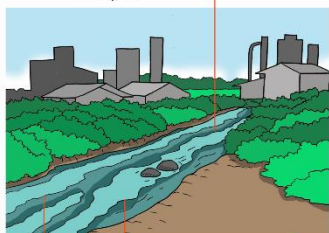
Human-induced water, air, and soil pollution of water can exacerbate antimicrobial resistance in the environment.



**65%**

Estimation of increase in drug residue concentration in water in 2050

Source: Francesco Bergoli, European Geosciences Union General Assembly, 2018



**High** concentrations of antibiotic residues have been found in several sewers in India

Source: Omkar Goonkar, 2022

**2/3**

Rivers in the world have been polluted with antibiotics (300x above the environmental safety threshold)

Source: Carolyn Wilke, 2019



Management of municipal, agricultural and industrial waste is an important preventative measure.

**Act today to protect the future efficacy of antimicrobials**

**“ Animal Health is Everyone’s Health ”**

<https://www.woah.org/>



World Organisation  
for Animal Health  
Founded as OIE

## Mengapa Kita Perlu Berhati-Hati Membuang Sampah dan Limbah Antimikroba\*?

\*antibiotik, antivirus, antijamur, antiparasit

**Resistensi antimikroba (AMR) adalah kondisi dimana bakteri, virus, jamur, dan parasit tidak lagi merespon agen antimikroba, sehingga tidak ampuh mengobati penyakit.**

Pembuangan sampah dan limbah antimikroba yang tidak tepat dapat mencemari lingkungan sehingga berkontribusi mempercepat laju terjadinya resistensi antimikroba.

Contoh sampah dan limbah yang mengandung antimikroba di lingkungan, dapat berasal dari sisa antimikroba dalam pupuk, limbah industri (contoh: pabrik obat), dan yang dikeluarkan bersama urin atau kotoran dari tubuh manusia dan hewan.

Polusi air, udara, dan tanah akibat ulah manusia dapat memperburuk resistensi antimikroba di lingkungan.

**65%** Estimasi kenaikan konsentrasi residu obat dalam air di tahun 2050

Sumber: Francesco Bertoli, European Geosciences Union General Assembly, 2018

**2/3** Sungai di dunia telah tercemar antibiotik (300x di atas ambang batas keamanan lingkungan)

Sumber: Carolyn Wilke, 2019

Konsentrasi **tinggi** residu antibiotik ditemukan di beberapa saluran pembuangan limbah di India

Sumber: Omkar Goswami, 2022

Pengolahan limbah dari kota, pertanian dan industri menjadi tindakan pencegahan yang penting.

**Aksi Anda hari ini akan menjaga keampuhan antimikroba.**

“Kesehatan Hewan untuk Kesehatan Semua”

<https://www.woah.org/>

Figure 15. Human Leaflets of Theme 3



## Why Does Antimicrobial\* Waste Needs to be Managed?

\*antibiotics, antivirals, antifungals, antiparasitics



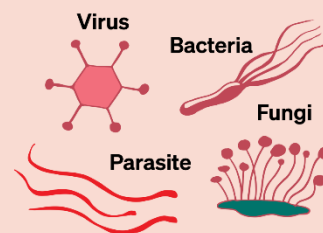
World Organisation  
for Animal Health

Not all of the antimicrobial products given to the chickens are absorbed fully. Residual antimicrobials can be excreted in feces and urine.

Untreated farm waste and leftover antimicrobial products can pollute the environment and have the potential to accelerate the rate of antimicrobial resistance.



2



Antimicrobial resistance is a condition where microbes are resistant to treatment.

Resistant microbes have resistance genes. Resistance genes are found in several types of organic waste, livestock manure, sludge, and food scraps.

Resistance genes can contaminate animal products such as meat and eggs.

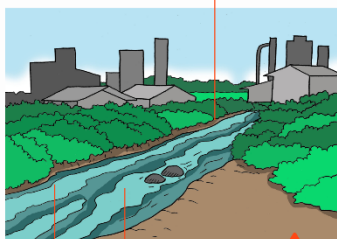
The spread of resistant genes to humans, animals, plants, and the environment threatens everyone's health.

3

65%

Estimation of increase in drug residue concentration in water in 2050

Source: Francesco Bergotti, European Geosciences Union General Assembly, 2018



High concentrations of antibiotic residues have been found in several sewers in India

Source: Omkar Gaoankar, 2022

2/3

Rivers in the world have been polluted with antibiotics (300x above the environmental safety threshold)

Source: Carolyn Wilke, 2019

4

## Your Contribution To Everyone's Health



Collect antimicrobial waste in securely closed containers.



Burn antimicrobial waste in a special installation (incinerator) that is secured and closed, separated from other types of waste, and is not accessible to people in the surrounding areas.



Manage farm waste by separating it from the public sewer and avoid throwing it into the river.



Build good drainage installations to prevent wastewater flowing directly into the environment.

Act today to protect the future efficacy of antimicrobials

“ Animal Health  
Is  
Everyone's Health ”

<https://www.woah.org/>



World Organisation  
for Animal Health  
Founded as OIE

5

## Mengapa Limbah Antimikroba\* Perlu Dikelola?

\*antibiotik, antivirus, antijamur, antiparasit

Produk antimikroba yang digunakan pada saat pemeliharaan ternak tidak seluruhnya diserap oleh tubuh unggas. Sisa antimikroba dapat dikeluarkan melalui kotoran dan urin.

**Limbah peternakan dan sisa produk antimikroba yang tidak diolah dapat mencemari lingkungan dan berpotensi mempercepat laju resistensi antimikroba.**

2

**Resistensi antimikroba merupakan suatu keadaan dimana mikroba kebal terhadap pengobatan.**

Mikroba kebal memiliki gen resisten. Gen resisten ditemukan di beberapa jenis sampah organik, limbah kotoran ternak, lumpur, dan sisa makanan.

Gen resisten dapat mencemari produk hewan seperti daging ayam dan telur.

Potensi penyebaran gen resisten ke manusia, hewan, tumbuhan, dan lingkungan mengancam kesehatan semua.

3

**65%** Estimasi kenaikan konsentrasi residu obat dalam air di tahun 2050

Sumber: Francesco Bergoli, European Geosciences Union General Assembly, 2018

Konsentrasi **tinggi** residu antibiotik ditemukan di beberapa saluran pembuangan limbah di India

Sumber: Omkar Gaothkar, 2022

**2/3** Sungai di dunia telah tercemar antibiotik (300x di atas ambang batas keamanan lingkungan)

Sumber: Carolyn Wilke, 2019

4

## Kontribusi Anda untuk Kesehatan Semua

Kumpulkan sampah antimikroba di dalam wadah atau kemasan tertutup yang aman.

Bakar sampah antimikroba di tempat pembakaran khusus yang aman dan tertutup, serta terpisah dari sampah lain dan tidak mudah diakses oleh warga sekitar.

Kelola limbah peternakan yang terpisah dengan saluran pembuangan umum dan tidak langsung dibuang ke sungai.

Bangun instalasi drainase yang baik untuk mencegah air limbah mengalir langsung ke lingkungan.

**Aksi Anda hari ini akan menjaga keampuhan antimikroba.**

5

**Kesehatan Hewan untuk Kesehatan Semua**

KEMENTERIAN PERTANIAN  
REPUBLIK INDONESIA

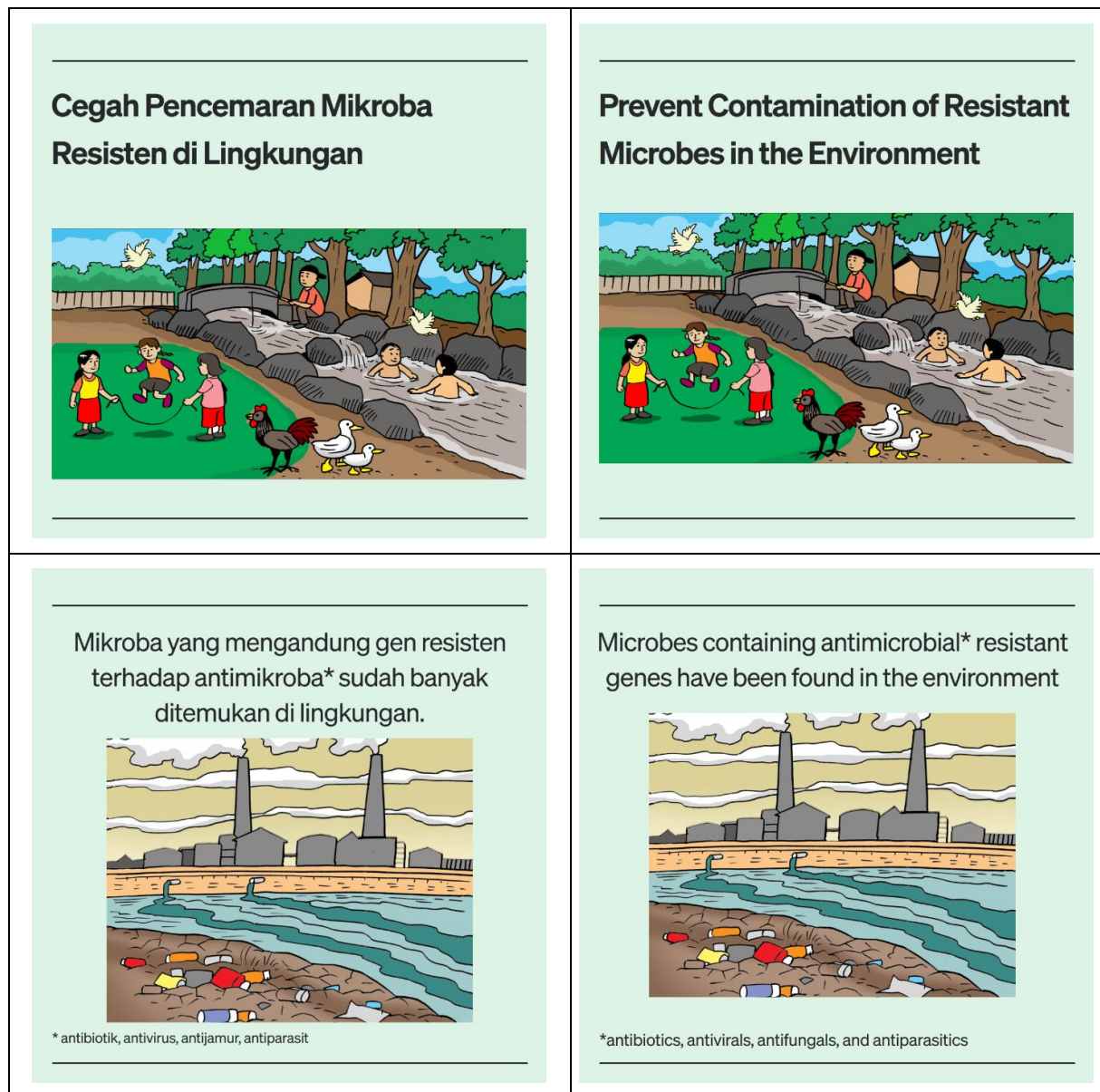
World Organisation  
for Animal Health  
Founded as OIE

<https://www.woah.org/>

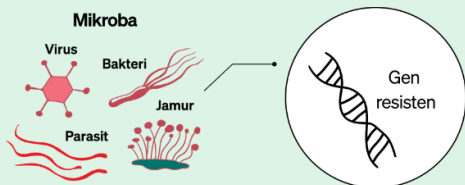
Figure 16. Animal Leaflets of Theme 3

## Infographics for Social Media

There are 1 infographic made, intended for environment sector (Figure 17).

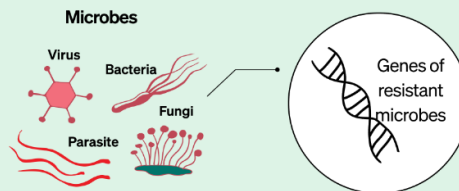


Gen resisten dapat menyebar di antara dan di dalam populasi hewan, manusia, dan tumbuhan.



Gen resisten juga dapat berpindah lewat produk peternakan/pertanian, hewan, dan manusia melalui air, kotoran, dan udara.

Genes of resistant microbes can spread between and within animal, human, and plant populations

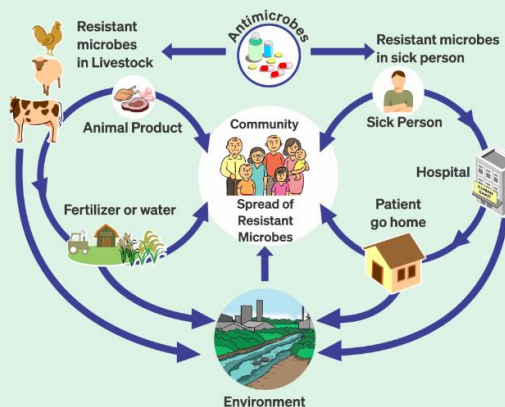


Genes of resistant microbes can also be transferred through water, soil, and air

### Alur Penyebaran Mikroba Resisten

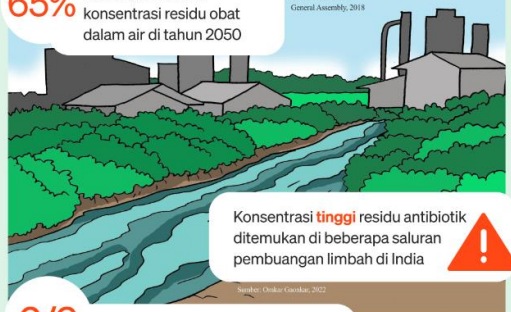


### Resistant Microbes Spreading Pathways



65% Estimasi kenaikan konsentrasi residu obat dalam air di tahun 2050

Source: Francesco Borgoli, European Governance Union General Assembly, 2018



Konsentrasi **tinggi** residu antibiotik ditemukan di beberapa saluran pembuangan limbah di India

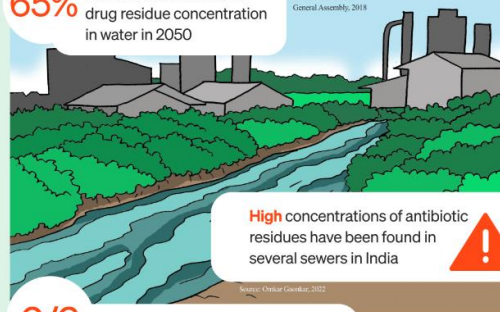
2/3

Sungai di dunia telah tercemar antibiotik (300x di atas ambang batas keamanan lingkungan)

Source: Carolyn Wilke, 2019

65% Estimation of increase in drug residue concentration in water in 2050

Source: Francesco Borgoli, European Governance Union General Assembly, 2018



High concentrations of antibiotic residues have been found in several sewers in India

2/3

Rivers in the world have been polluted with antibiotics (300x above the environmental safety threshold)

Source: Carolyn Wilke, 2019

Kita harus bertindak **sekarang** untuk mencegah penyebaran resistensi antimikroba di lingkungan.



We must act **NOW** to prevent the spread of antimicrobial resistance in the environment.



#### Cegah Resistensi Antimikroba dengan:

Gunakan antimikroba hanya untuk pengobatan.



Habiskan antimikroba sesuai resep dan anjuran dokter.

Terapkan pola hidup bersih dan sehat.



#### Let's Prevent Antimicrobials Resistance by:

Using antimicrobials only for treatment.



finishing antimicrobials treatment according to the prescription and doctor's advice.

Applying a clean and healthy lifestyle.



“ Aksi Bersama  
Demi  
Kesehatan Semua ”

Kesehatan Hewan untuk Kesehatan Semua

<https://www.woah.org/>

“ Collaborative Actions  
For  
One Health ”

Animal Health is Everyone's Health

<https://www.woah.org/>

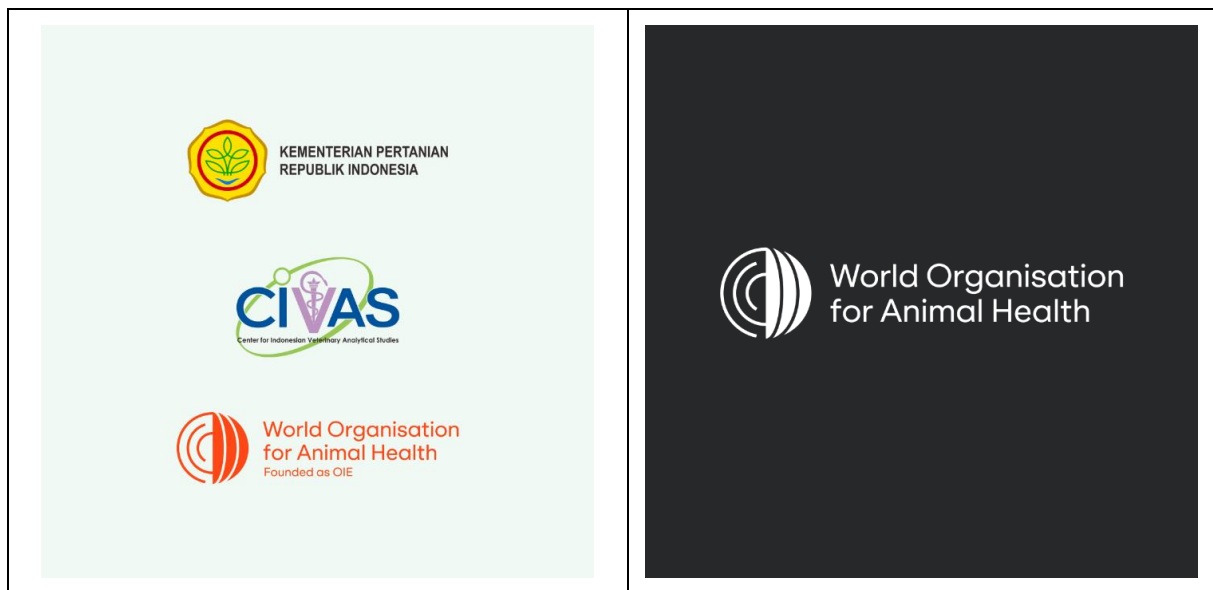


Figure 17. Environment Infographics of Theme 3

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- Anderson S. 2023. Antimicrobial Resistance Death Toll Could Catch Up to Cancer by 2050, and Pollution is Fuelling its Spread. Health Policy Watch Independent Global Health Reporting, Climate and Health (Published on 07/02/2023). <https://healthpolicy-watch.news/antimicrobial-resistance-deaths-cancer/>.
- Lancet. 2022. Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. Antimicrobial Resistance Collaborators\*, Lancet 2022 (399): 629–55. <https://www.thelancet.com/action/showPdf?pii=S0140-6736%2821%2902724-0> (Downloaded on 20/06/2023).



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