

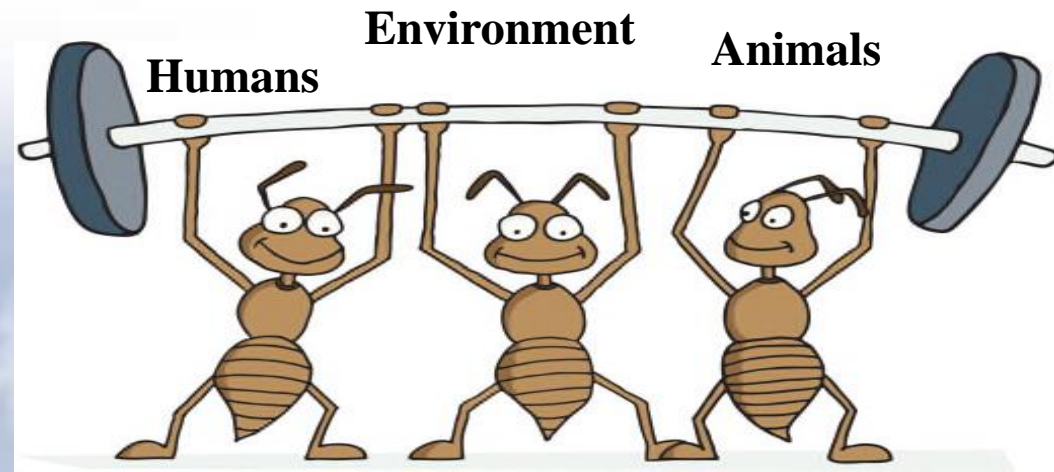


HEALTH • ENVIRONMENT • SOCIETY



One Health: why we must go forward together

**Prof Patrick Wall
University College Dublin**



efsa

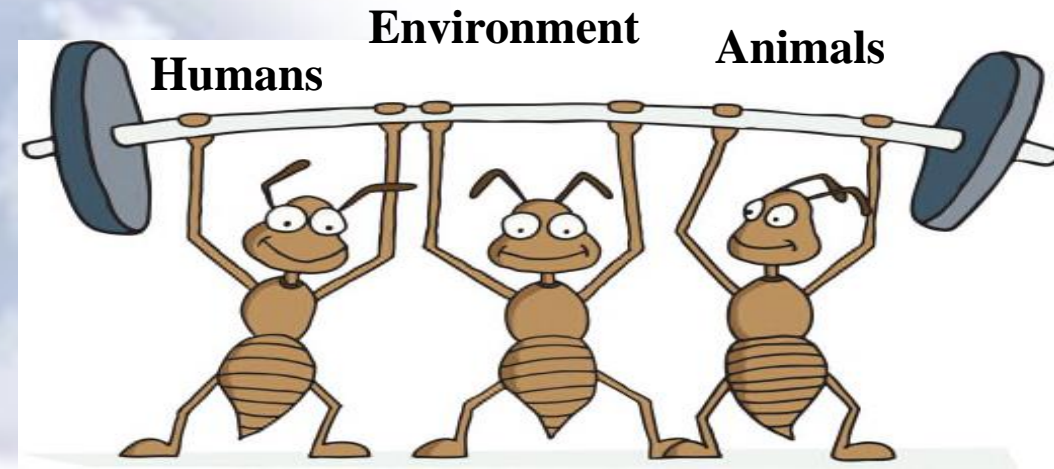


European Food Safety Authority

In team work there is strength

Some of the big issues under the One Health Umbrella

- Food Security
- Climate Change
- Impact of political conflict
- Global village and equivalency of standards
- Surveillance and laboratory capacity
- Supply chain disruption
- Food Fraud



A photograph showing a landscape affected by drought. The foreground is dominated by dry, cracked earth in shades of tan and brown. Several small, green, leafy plants are scattered across the field, appearing somewhat sparse. In the background, a flat horizon line separates the land from a bright blue sky filled with numerous white, fluffy clouds. A single utility pole is visible on the right side of the horizon.

Droughts
New plant disease
New animal diseases

A man wearing a wide-brimmed hat and a white t-shirt is crouching in a dry, sandy field. He is holding a black irrigation pipe that runs across the ground. A small green plant is growing out of the pipe, and a small pool of water is visible around its base. The background shows a vast, flat, arid landscape under a clear blue sky.

Scarcity of water

Contaminated water used for irrigation

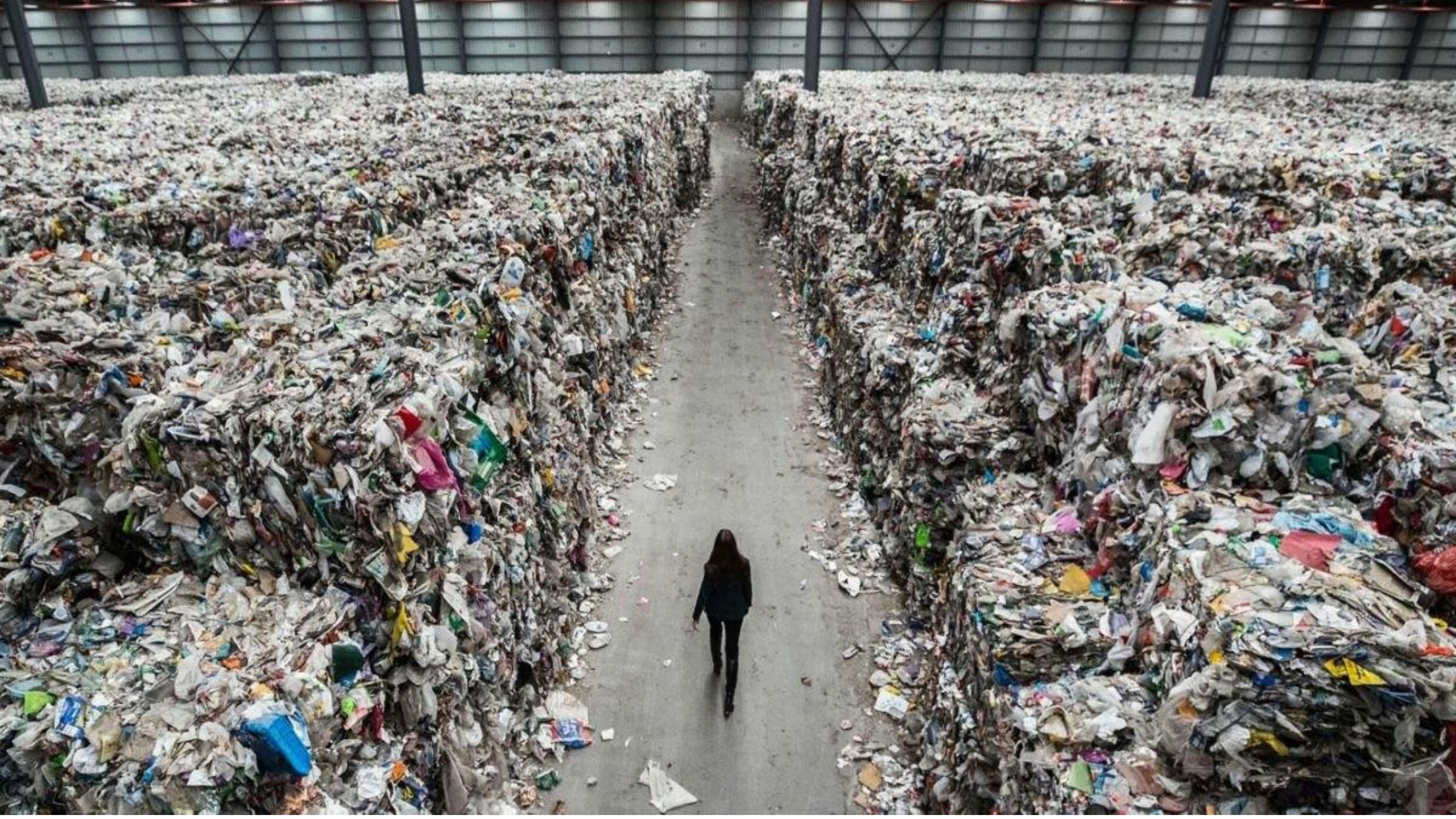
Outbreaks associated with produce

Plant health
Safe Plant protection products



**75% of crops eaten
by humans are
pollinated by bees**





Marine pollution



Pregnant whale washed up in Italian tourist spot had 22 kilograms of plastic in its stomach

By Gianluca Mezzofiore, CNN

🕒 Updated 0954 GMT (1754 HKT) April 1, 2019



Food Security and Food Waste??



A photograph of a man's bare torso, focusing on the abdomen. The man has a large, protruding belly, which is the central focus of the image. He is wearing a black leather belt and dark pants. The background is a bright, slightly blurred outdoor scene with trees and a sky. Overlaid on the center of the belly is a white rectangular box containing the text "Another form of waste" in a dark blue, serif font.

Another form of waste

West Africa:-
One third world's cocoa
Unfair trade deals
Child labor





**Non zoonotic diseases
of animals can lead to
human deaths:-
Hunger**





CTV

Biological control



Non Zoonotic disease disrupt supply chains

African swine fever



Foot and Mouth disease





“From soil to Society”

Soil:

- **Chemical**
- **Physical**
- **Biological**

Challenge: Globally sourced Animal Feed



Challenge:- Intensive production and disease transmission



Animal welfare: Stress - disease -antibiotics



How are we going to use less antibiotics?



Next Generation sequencing and Metagenomics

A revolution in molecular epidemiology and forensic microbiology



Linking apparent
Sporadic cases



Source attribution

Farmers/
Millers

Patient

Processors

Food

Retail/ Catering
outlet



**Sub lethal stress only makes them
angry**



Virulent and survival genes upregulated



Virulence factors and other traits akin to weapons

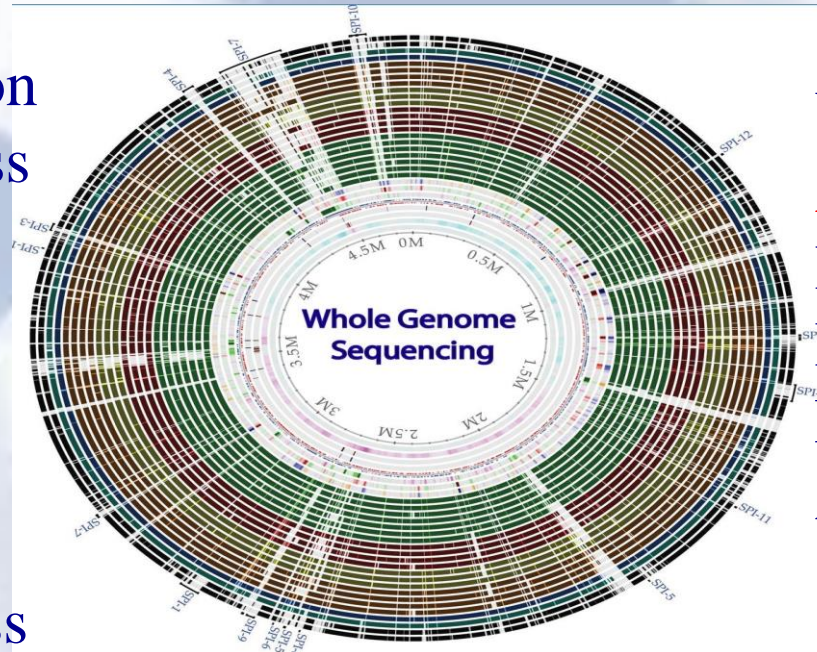
Bioinformatics



“Know your enemy”

Stressors

nutrient deprivation
heat and cold stress
UV radiation
oxidative stress
dessication
acid stress
nitrosative stress
cell envelope stress
heavy metal exposure
osmotic stress
Biocides
Antibiotics



Response

Virulence factors
Antibiotic resistance
Heat tolerance
Biocide resistance
Metal resistance
Ability to:-

- survive desiccation
- go dormant
- form biofilms
- form spores



Animals as sentinels of environmental hazards



Companion animals

- **Sentinels**
- **Zoonoses**
- **Emotional support**





Producing a climate friendly cow

Biofortification



**Omega 3 chicken
EPA and DHA**



This is no ordinary chicken!!

Risk Communication

Changing Society norms

Are we ambitious enough?



I want the
messenger
RNA
Vaccine?





**National
Agencies**



One Health's time has come :- This conference is timely

