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# Journey of One Health in Bangladesh (2007-19)

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Prof of Chottagram Vet and Animal Sciences University (CVASU)

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# Outline of the presentation

**Background: Bangladesh & its Progress and challenges**

**Conceiving One Health Concept in Bangladesh**

**Institutionalization of One Health**

**Political Commitment and Policy influence**

**Institutionalization and Governance**

**Operationalization of One Health**

**Outbreak preparedness & Collaborative surveillance**

**Disease Control and Prevention**

**Collaborative Research**

**Community engagement**

**Capacity Building**

**National and International Networking**

**Impact of One Health approach**

**Lesson Learned & Way forward**



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# Bangladesh : The Progress

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# Bangladesh is at a Historical Juncture

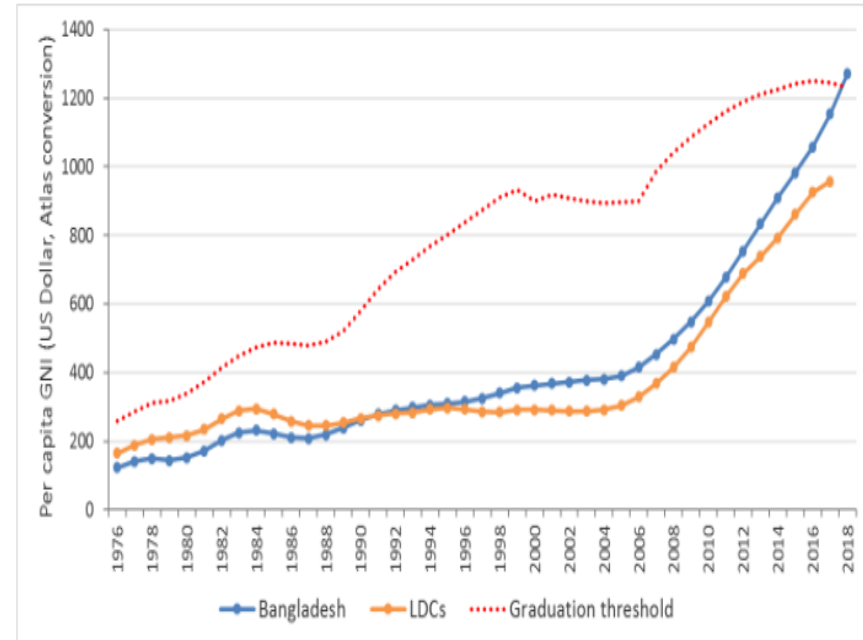
**Bangladesh Graduated to DC status**

**Reduction in the poverty rate from 40% to 14%**

Increases across the five components of the human assets index

- ✓ infant mortality,
- ✓ maternal mortality,
- ✓ undernourishment,
- ✓ adult schooling and adult literacy
- ✓ meant that Bangladesh exceeded the threshold on this index for the first time in 2016.
- ✓ Food Security significantly improved

Per capita gross national income, US\$, Atlas conversion, 1976-2018 (three-year averages)



## Important indicators:

- Agriculture 14.75% or \$44billion
- Manufacturing 33.71% or \$100 billion
- Service 52.3%
- \$30billion export from RMG (2nd biggest)
- NRB \$13.7 billion Remittance (8thlargest)



# PROJECTED RANKING CHANGES BY 2030 COMPARED WITH 2018

## BIGGEST ECONOMIES (IN 2030)

## BIGGEST RISERS

COUNTRY	RANKING CHANGE	COUNTRY	RANKING CHANGE
China	+1 (2 to 1)	<b>Bangladesh</b>	<b>+16 (42 to 26)</b>
US	-1 (1 to 2)	Philippines	+11 (38 to 27)
India	+4 (7 to 3)	Pakistan	+10 (40 to 30)
Japan	-1 (3 to 4)	Vietnam	+8 (47 to 39)
Germany	-1 (4 to 5)	Malaysia	+ 5 (34 to 29)

SOURCE: HSBC ESTIMATES AND PROJECTIONS

**Bangladesh 2nd largest economy in South Asia. This will see the country climb 19 places in the World Economic League Table to become the world's 24th largest economy by 2033**



## **ECONOMY IS GROWING FAST....**

**“Bangladesh is known for its remarkable progress in reducing poverty and creating opportunities for its citizens. It is among the 10 fastest growing economies in the world and has made commendable progress on human development”**

**Qimiao Fan -World Bank**



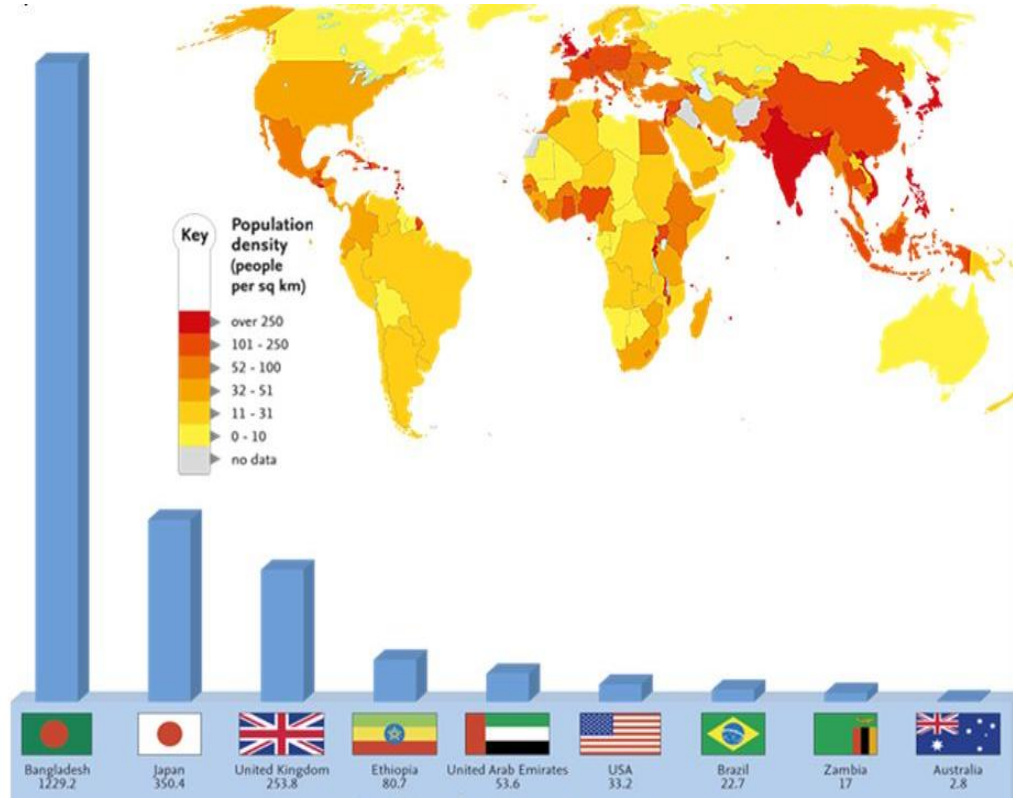
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# Challenges

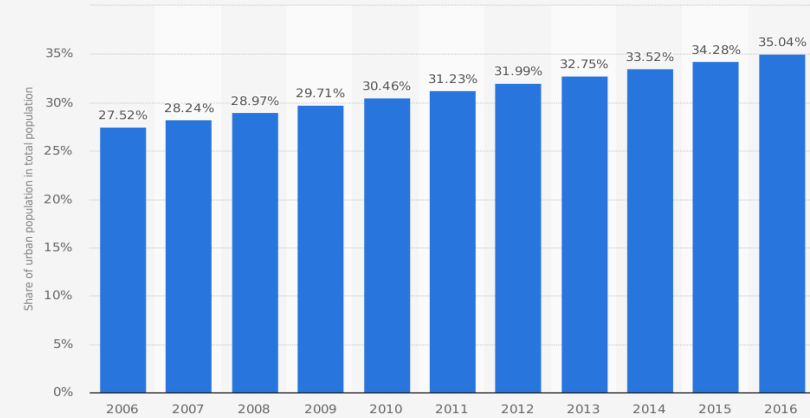
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# Population density and urbanization in Bangladesh (165 million people & 56 thousands SM area)



**Bangladesh: Urbanization from 2006 to 2016**



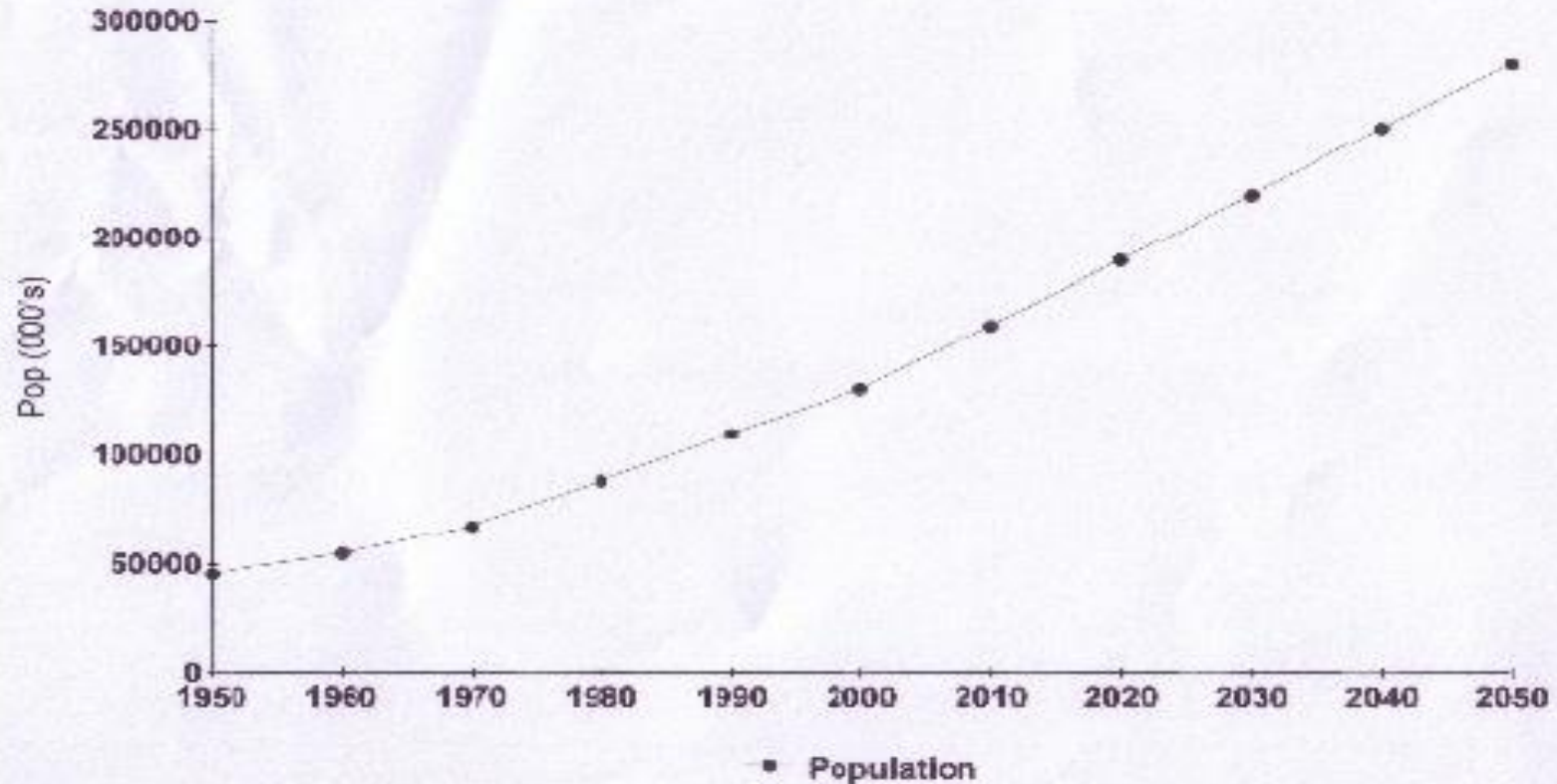
Source  
World Bank  
© Statista 2018

Additional Information:  
Bangladesh; World Bank

# Comparison in three major cities in Asia

	Dhaka	Mumbai	Bangkok
Population in 2010	10.1 M	21.3 M	8.3 M
Projected 2025 population	22.0 M	26.4 M	8.5 M
Area	246 sq. Km	777 sq. Km	2202 sq. Km
Density	40100/ sq. Km	24900 sq. Km	3600/ sq.km
National GDP/ capita (2009)	\$1600	\$3100	\$8100

# Trend of Population Growth in Bangladesh



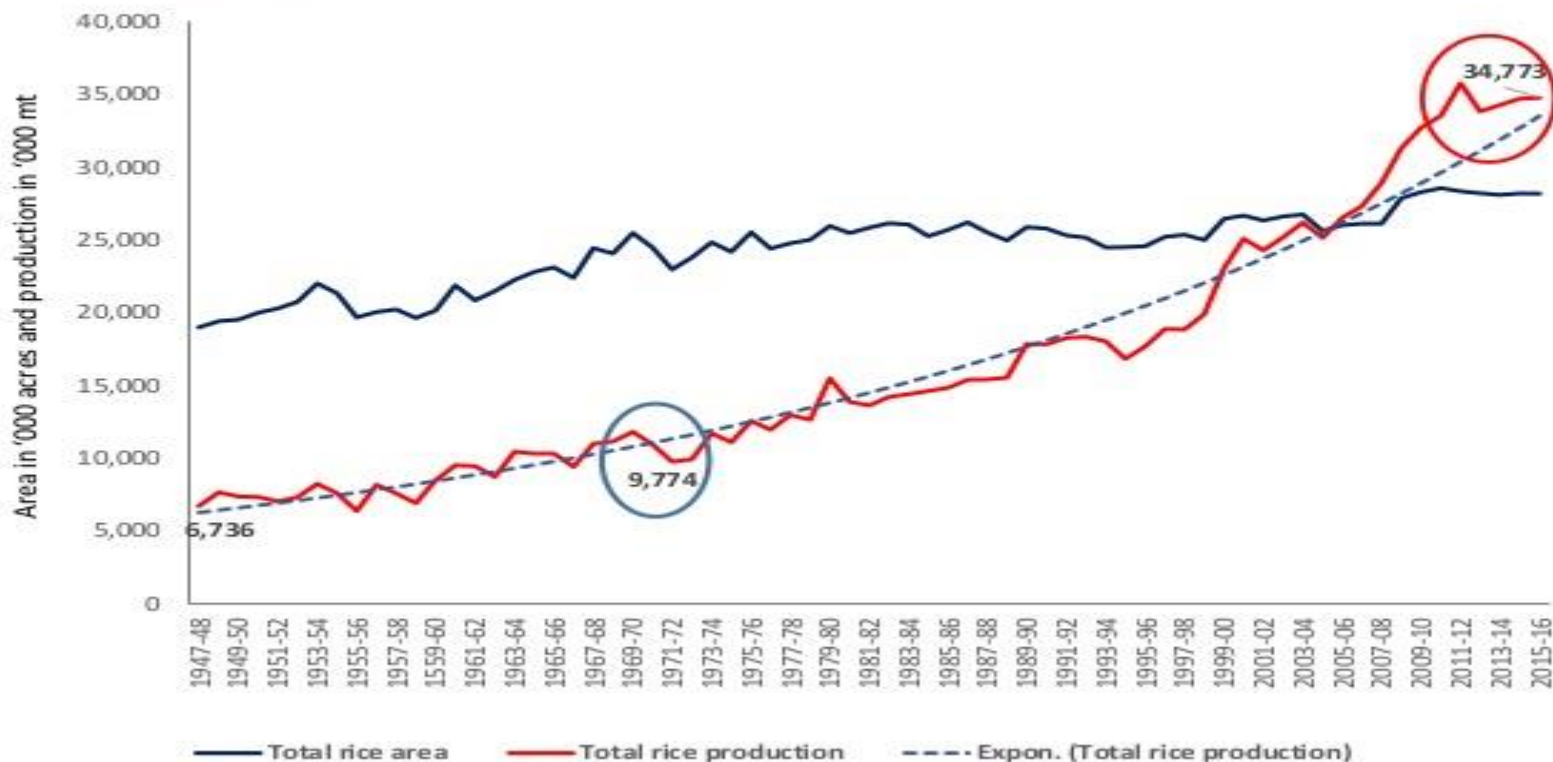


Feeding millions always a  
**Challenge in Bangladesh**



# Rice production more than tripled since liberation

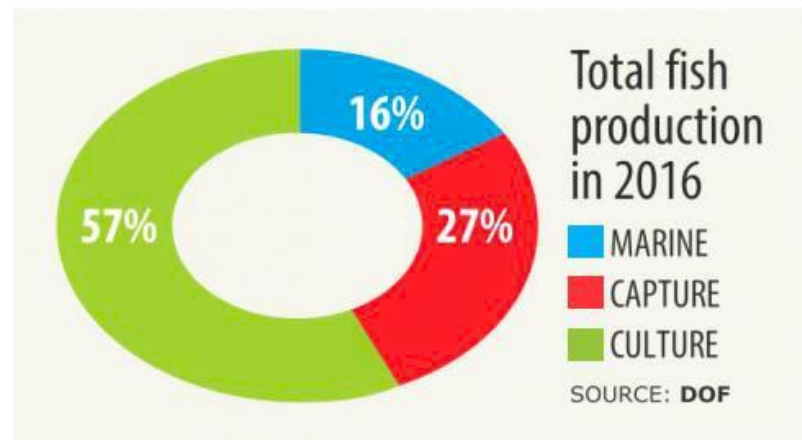
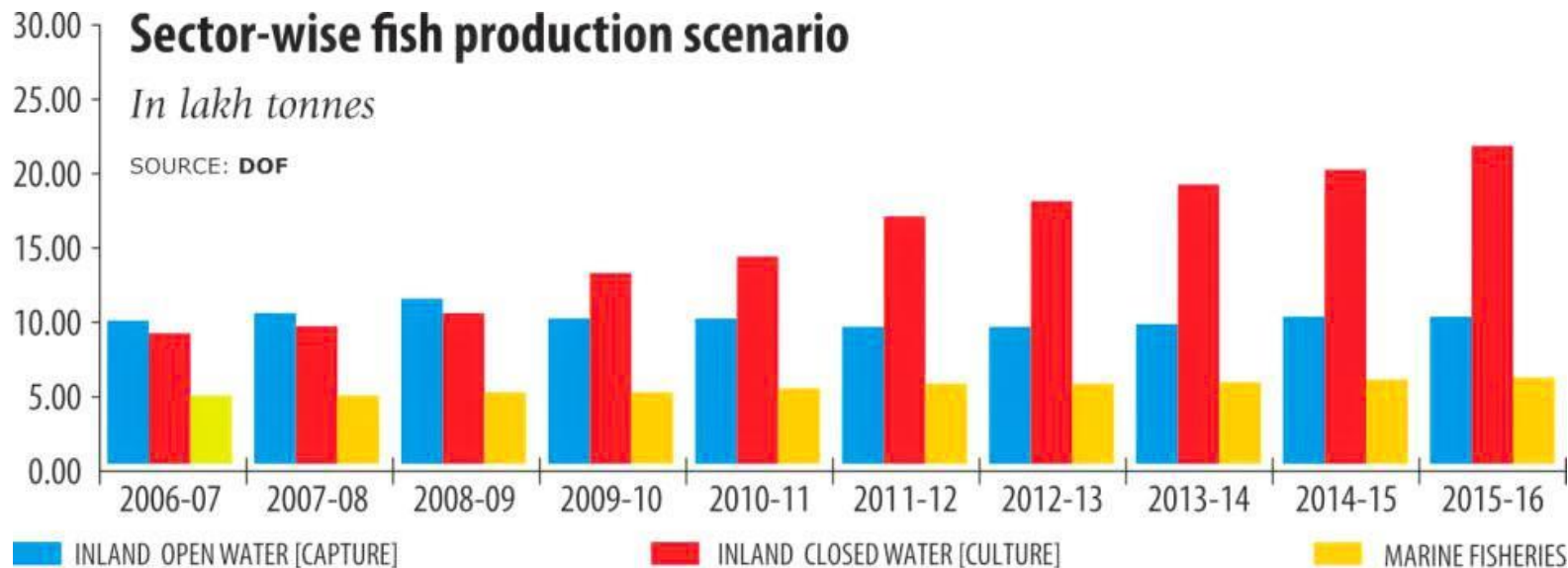
Total rice area and production (Bangladesh Bureau of Statistics (BBS), various years)



# Sector-wise fish production scenario

*In lakh tonnes*

SOURCE: DOF



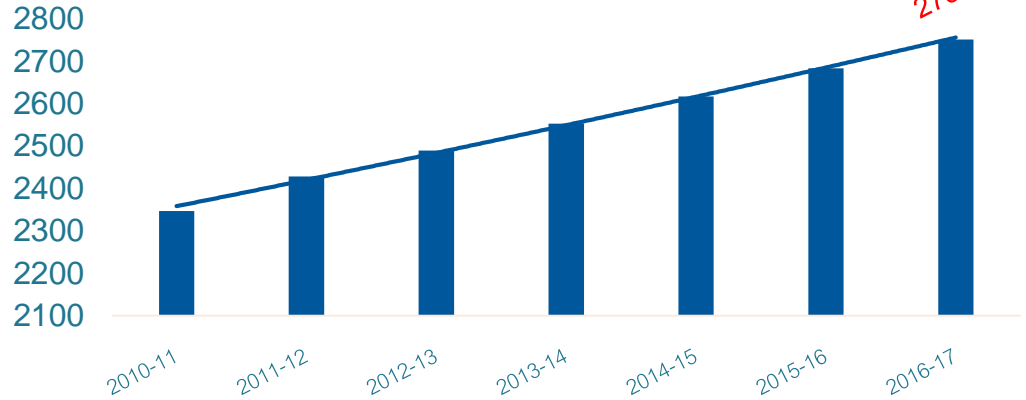
## Fish prices at wholesale level (Tk/kg)

FISH	2015	2016
Pangasius (big)	113.11	112.40
Pangasius (small)	96.58	97.26
Silver carp	117.72	116.78
Tilapia	122.58	117.17
Grass carp	143.05	140.70
Rohu (medium)	288.73	291.83
Cat fish	569.15	548.58

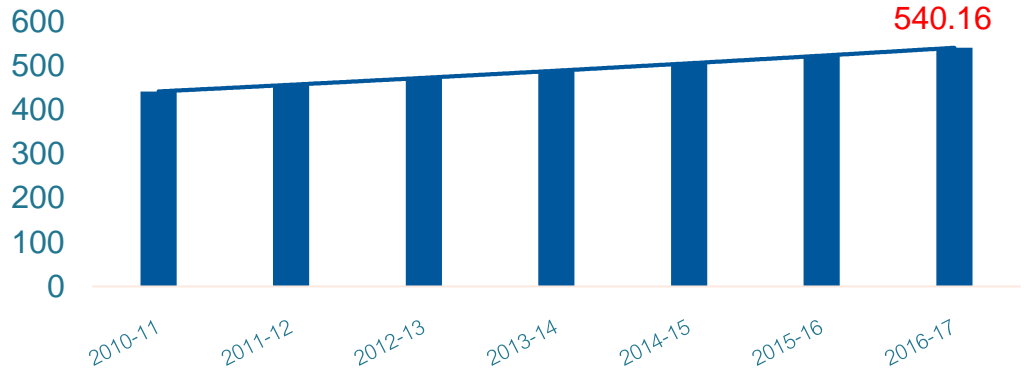
SOURCE: BBS

**Poultry Population  
by years**

## Chicken



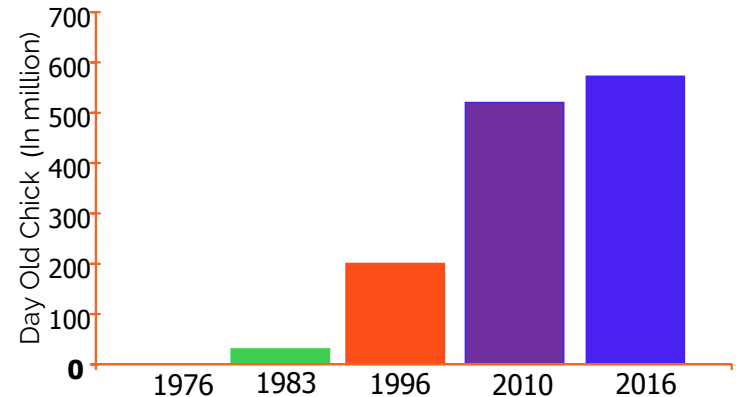
## Duck



# Changes in poultry production

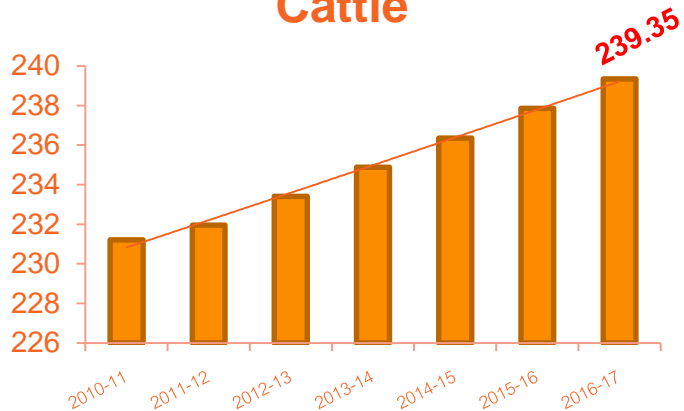


- ❑ **16** grand parent farms produce 60000-70000 parent stock chicks/week
- ❑ Around **206** parent stock farms produce day old chicks (15 million/week, Broiler), Layer chicks (6 lakh), eggs (25 million/day)

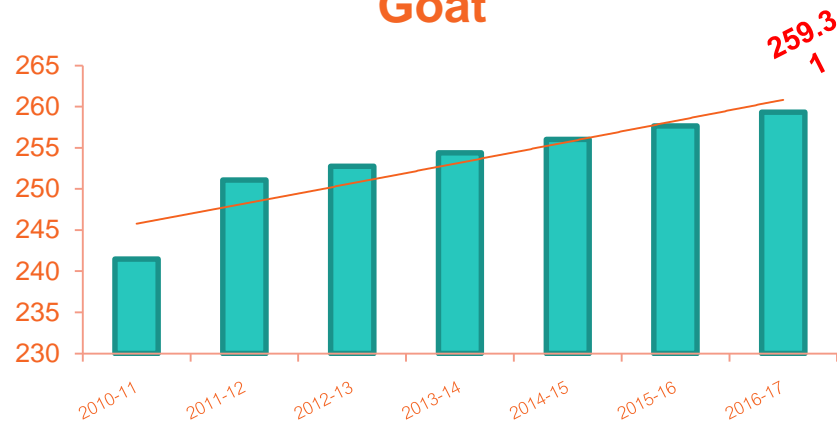




## Cattle

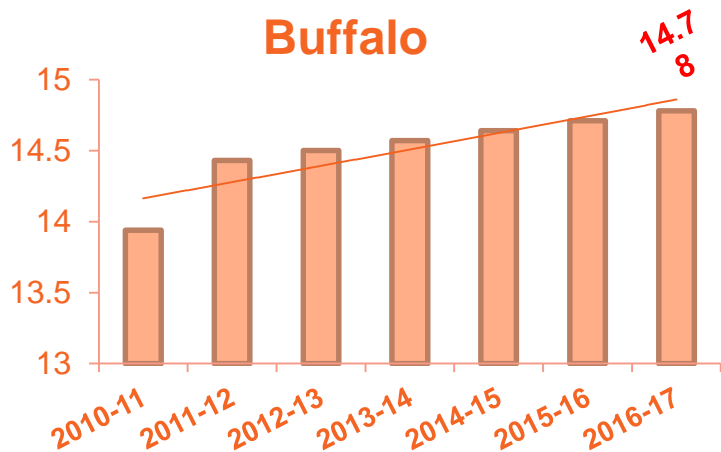


## Goat

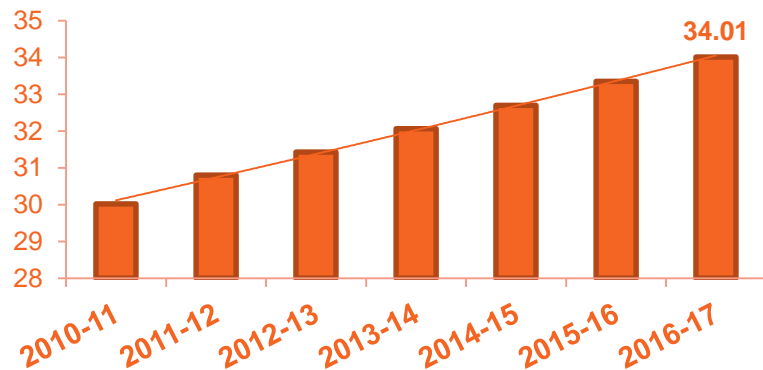


Livestock Population growth by year

## Buffalo

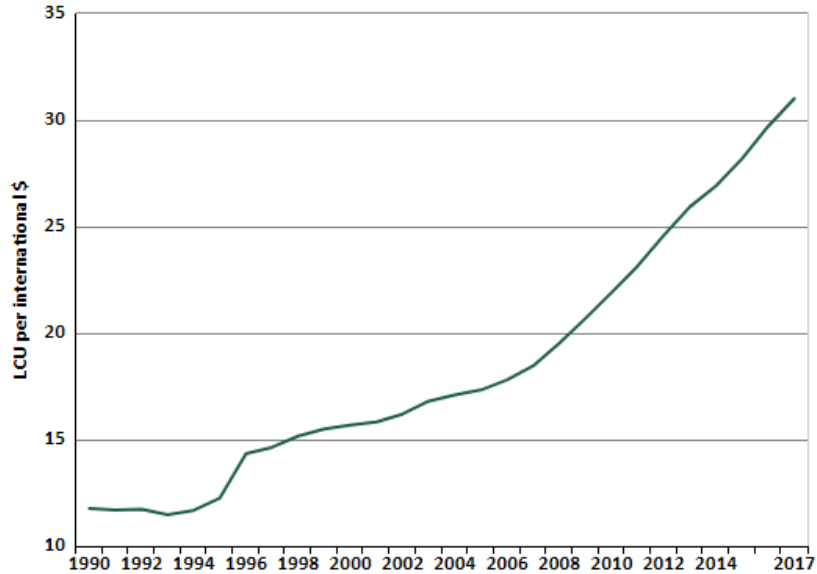


## Sheep



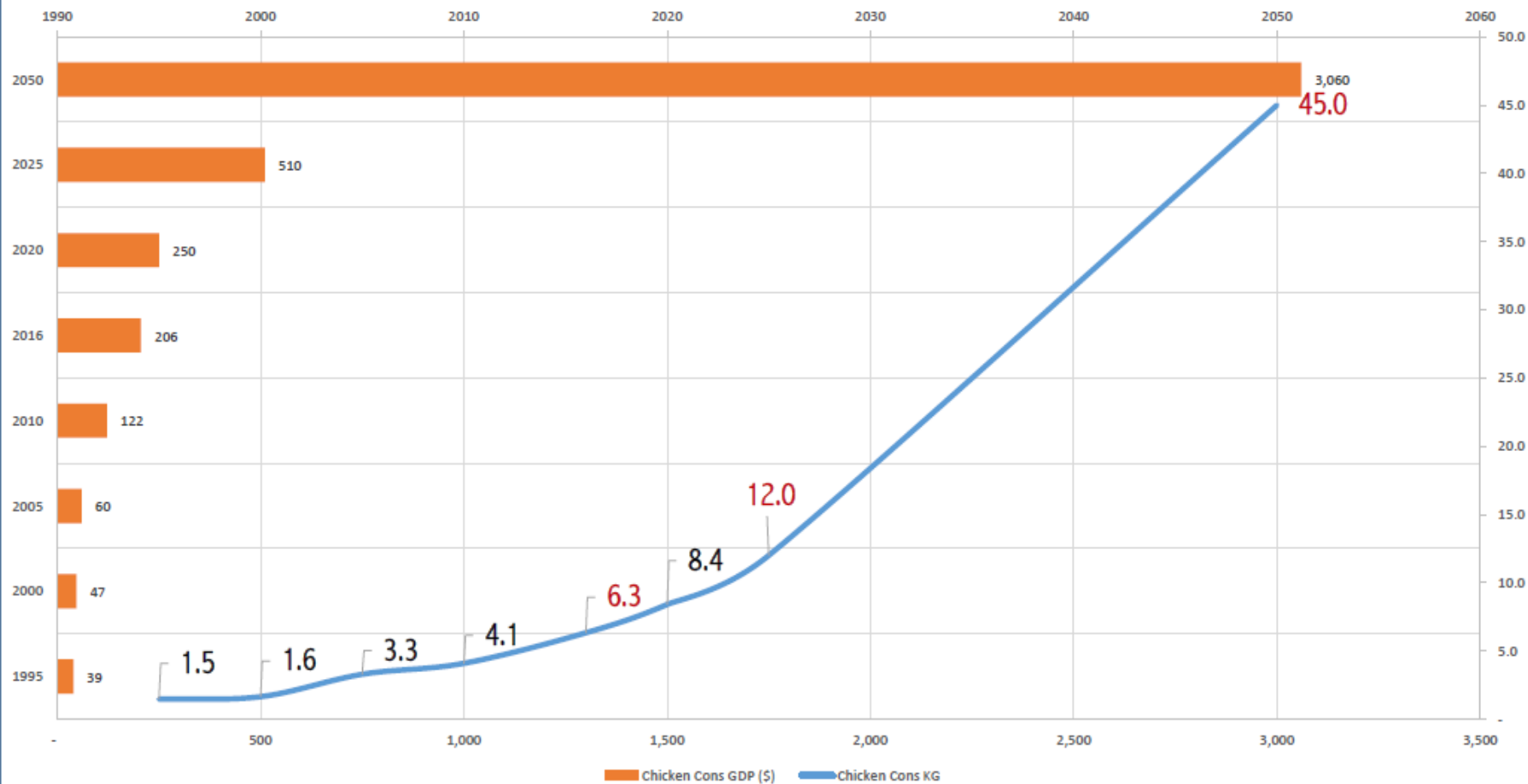
# Current per capita protein consumption

What is Bangladesh purchasing power parity?



Animal proteins	Per person per year
Egg	90
Chicken	6.2 kg
Beef	2.75 kg
Mutton	200gm
Fish	22.84kg

## ESTIMATED GNP & PER CAPITA CHICKEN CONSUMPTION





## Shift in Food habit of Bangladeshi People

### KEY POINTS

Each person now consumes **367gm** of rice daily, down from **416gm** in 2010

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Daily per capita wheat consumption dropped **24pc** to **19.83gm** in 2016 from 2010

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Per capita chicken consumption shot up **54pc** while that of egg almost doubled since 2010

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Intake of vegetables rose marginally but that of fruits, milk and milk products declined

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BBS estimates that the country needs **2.21cr** tonnes of rice a year, far below the annual production of **3.47cr** tonnes

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# Conceiving One Health Concept in Bangladesh

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# Close connection with animal and human



# The Complex River Systems of Bangladesh & vulnerability

1. Unique geographical location
2. Dominance of flood plain
3. Himalayan drainage eco-system



# Threshold of Nature



**Climate  
Change**

**Nitrogen &  
Phosphorus  
Cycle**

**Rate of  
Biodiversity  
Loss**

**Land  
System  
Change**

**Ozone  
Depletion**

**Atmospheric  
Aerosol Loading**

**Ocean  
Acidification**

**Global  
Freshwater Use**

**Chemical  
Pollution**



# Demographic Changes

- Population growth
- Mega cities
- Migration

- Exploitation
- Pollution
- Climate changes
- Disasters

Technology

Globalization

Socio-cultural changes

Urbanization

Land use pattern changes

Farming intensification

Deforestation

Habitat alteration

## ENVIRONMENTAL CHANGES

### Species' Ecological-evolutionary Dynamics

*Opportunistic habitat expansion/ecological release*

Vector (domestication)  
Wildlife/reservoir transport/encroachment

Vector/reservoir species  
Human encroachment

### Host-Pathogen Dynamics

*Emergence Processes of 'Host-Parasite Biology'*

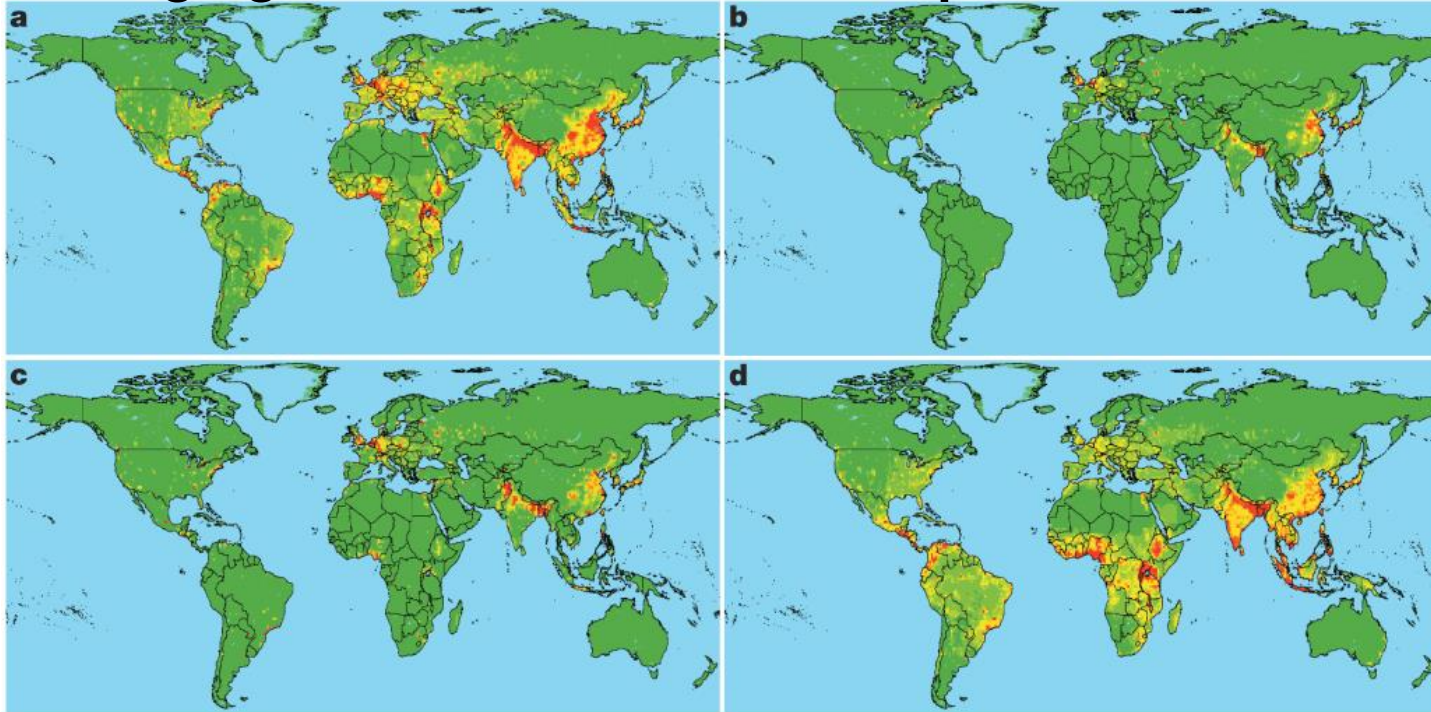
Host switching (host novelty) • Breaching of pathogen persistence thresholds  
Transmission amplification and genetic change (pathogen novelty)

## Disease Emergence

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# Emerging infectious disease “hotspots”



Global risk of EID from a) zoonotic pathogens from wildlife, b) zoonotic pathogens from non-wildlife, c) drug-resistant pathogens, d) vector-borne pathogens

*Jones et al. 2008*



**2003-05**

Outbreak of **NIPAH ENCEPHALITIS**



**2007**

Outbreak of **H5N1** in Bangladesh poultry

**2004-2010**

**2008**

**MELAMINE** contamination in baby milk



**2009-10**

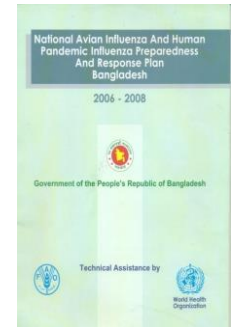
**ANTHRAX** outbreak throughout the country



**First decade  
Of 21<sup>st</sup> Century**



**Panic among policy makers  
and general public**



**Avian influenza preparedness plan for  
Bangladesh 2006**

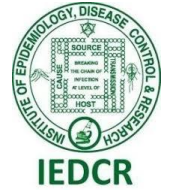
# Pesticide Outbreak in Noagon & Dhaka

## 2008 & 2009

Vill: Somashpara; Upazila: Atrai  
A cluster of 11 children (8 deaths)  
Presented acutely ill with symptoms of

- limb weakness
- respiratory difficulty
- frothy oral discharge
- altered mental status, and loss of consciousness





DGHS, DLS, BAPA  
BAU, BRAC, BSMMU  
BLRI



# One Health Emerged

*Informal discussion began at CVASU in 2007 to broaden collaboration beyond AI*

*Consensus developed among IEDCR, icddr & CVASU to promote One Health approach in Bangladesh in Nov 2007*

*Stakeholder consultations with govt., UN bodies, universities, research, NGOs and civil societies.*

*Formalize the commitment by creating One Health Bangladesh platform to work together in March 2008.*



Chittagong Declaration  
2008

Formation of One Health Bangladesh involving all stakeholders



# *What is One Health?*

## *Harnessing the creative power of diversity*



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# Institutionalization of One Health

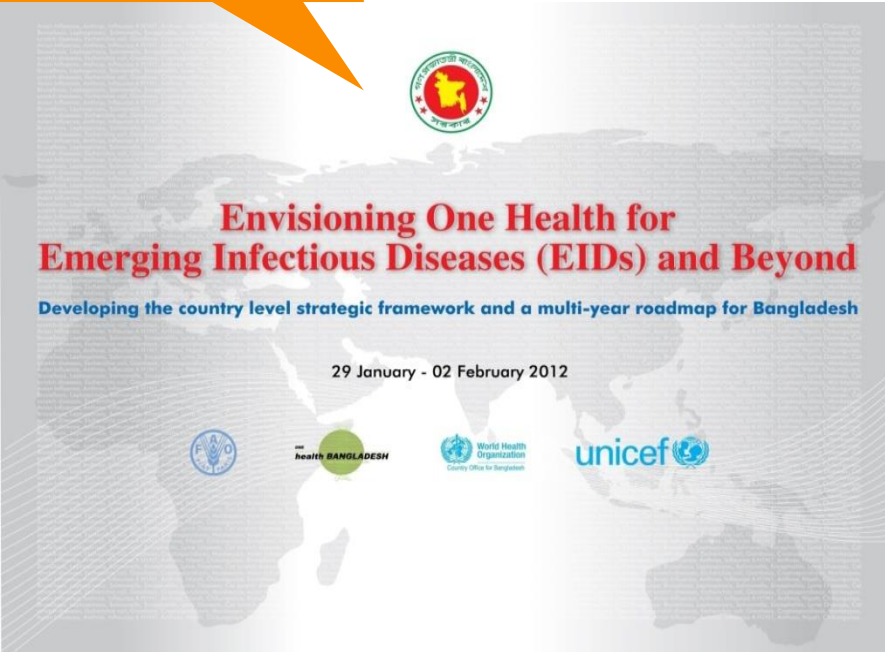
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**He who loves practice without theory is like the sailor who boards a ship without a rudder and compass and never knows where he may cast.----*LEONARDO DA VINCE***



Political  
commitment  
& Policy  
Influence

# Strategic Framework for a One Health Approach



Leo divenci

**অফিসী**  
**ইমেইল/ফ্যাক্স/বিশেষ স্মারক সংক্রান্ত**

পদ্মপ্রজ্ঞাতন্ত্রী বাংলাদেশ সরকার  
মহাশয় ও প্রাণিসম্পদ মন্ত্রণালয়  
প্রাণিসম্পদ পরিকল্পনা-১ শাখা

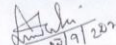
নং-স্মারক/প্রসঙ্গ/১/১২/বিবিধ/২০১২/১৩৩ তারিখ : ০৯/০৭/২০১৩ খ্রিঃ

**বিষয় : "Health strategic framework & action plan for One Health approach to infectious disease in Bangladesh" শীর্ষক কৌশলপত্র এর মীতিগত অনুমোদন প্রদানে।**

সূত্র : প্রাণিসম্পদ অধিদপ্তরের শ্রম নং- শাখা-১/স্মারক/অধিদপ্তর-২০১২/১৩০১ তারিখ: ০৩/৭/২০১৩ খ্রিঃ

উপর্যুক্ত বিষয় ও সূত্রের প্রেক্ষিতে আমি নিম্নোক্তকর্তাকর্তী নির্দেশক্রমে প্রাণিসম্পদ অধিদপ্তরের প্রজ্ঞার মোতাবেক বাংলাদেশ সরকারের স্বাস্থ্য ও পরিবার কল্যাণ মন্ত্রণালয়, মহাশয় ও প্রাণিসম্পদ মন্ত্রণালয় এবং বন ও পরিবেশ মন্ত্রণালয়ের সহযোগিতায় এবং FAO, UNICEF ও WHO এর কারিগরি সহায়তায় বাংলাদেশের মানব স্বাস্থ্য, প্রাণিসম্পদ এবং পরিবেশের মধ্যকার স্বাস্থ্যকর ভারসাম্য রক্ষার জন্য "One Health Approach" প্রতিষ্ঠার লক্ষ্যে "Health strategic framework & action plan for One Health approach to infectious disease in Bangladesh" শীর্ষক দাবিভুক্ত কৌশলপত্রটি বাস্তবায়িত করার লক্ষ্যে অত্র মন্ত্রণালয়ের মীতিগত অনুমোদন আশ্রয় করা হইল।

০২। একই সাথে উক্ত কৌশলপত্রে বর্ণিত Inter-Ministerial Steering Committee for One Health (IMSCOH) শীর্ষক কমিটিতে পরামর্শ প্রদানের লক্ষ্যে গঠিত "Expert Advisory Group" এ বাংলাদেশ সরকারের মন্ত্র/অতিরিক্ত ex officio member তেবেক নিয়োগের বিষয়টি অর্ন্তর্ভুক্ত করণ এবং Action Plan এ বর্ণিত গিয়ারিং কমিটিতে পরিকল্পনা কমিশনের সাদৃশ্য প্রদানের প্রতিনিধি অর্ন্তর্ভুক্তকরণের প্রয়োজনীয় ব্যবস্থা গ্রহণের জন্যও নির্দেশক্রমে অনুরোধ করা হ'ল।

  
(মহা আনুগ্ৰাহক আল মুহাম্মিদ বিদ্যালয়)  
সহকারী প্রধান  
ফোন : ৯২১১৩৭৭

**Approved by  
Three Ministries-  
MOH&FW, MOF&L,  
ME&F**

পদ্মপ্রজ্ঞাতন্ত্রী বাংলাদেশ সরকার  
পরিবেশ ও বন মন্ত্রণালয়  
বন শাখা-২

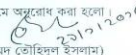
নং- পদস্মারক/বন-২/২/সাইটিস/০৪/২০১২/২৪ তারিখ : ২৯ জানুয়ারী ২০১৩

**বিষয় : Health strategic framework & action plan for One Health Approach to infectious disease in Bangladesh** শীর্ষক কৌশলপত্র এর মীতিগত অনুমোদন প্রদানে।

সূত্র : প্রধান বন সংরক্ষকের স্মারক নং-২২.০১.০০০৩.১০২.২.৩.০০০.১৪.২৫৩৩, তারিখ : ২১/০৮/২০১৪।

উপর্যুক্ত বিষয় ও সূত্রের প্রেক্ষিতে জানানো যাচ্ছে যে, পরিবেশ ও বন মন্ত্রণালয়ের সহযোগিতায় এবং FAO, UNICEF ও WHO এর কারিগরি সহায়তায় বাংলাদেশের মানব স্বাস্থ্য, প্রাণি সম্পদ এবং বনাঞ্চালী ও পরিবেশের মধ্যকার স্বাস্থ্যকর ভারসাম্য রক্ষার জন্য One Health Approach প্রতিষ্ঠার লক্ষ্যে Health strategic framework & action plan for One Health Approach to infectious disease in Bangladesh শীর্ষক দাবিভুক্ত কৌশলপত্রটি বাস্তবায়িত করার লক্ষ্যে অত্র মন্ত্রণালয়ের সম্মতি জ্ঞাপন করা হলো।

একই সাথে উক্ত কৌশলপত্রে বর্ণিত Action Plan এ বর্ণিত গিয়ারিং কমিটিতে বন অধিদপ্তর এবং পরিবেশ অধিদপ্তরের ০১ (এক) জন করে প্রতিনিধি অর্ন্তর্ভুক্তকরণ প্রয়োজনীয় ব্যবস্থা গ্রহণের জন্য নির্দেশক্রমে অনুরোধ করা হলো।

  
(শেখ মুহাম্মদ হোসেন হুসাইন)  
সিনিয়র সহকারী সচিব  
ফোন: ৯৫৫৪০৩৭।

**একই স্মারক ও তারিখে প্রতিস্থাপিত**

পদ্মপ্রজ্ঞাতন্ত্রী বাংলাদেশ সরকার  
স্বাস্থ্য ও পরিবার কল্যাণ মন্ত্রণালয়  
পরিকল্পনা অনুবিভাগ, শাখা-৮ শাখা  
বাংলাদেশ সরকার, ঢাকা  
[www.mohfw.gov.bd](http://www.mohfw.gov.bd)

নং-স্মারক/মসপ (স্বাস্থ্য-৮)-One Health/০২/২০১৩/০৬ তারিখ: ১৪/০২/২০১৪ খ্রিঃ

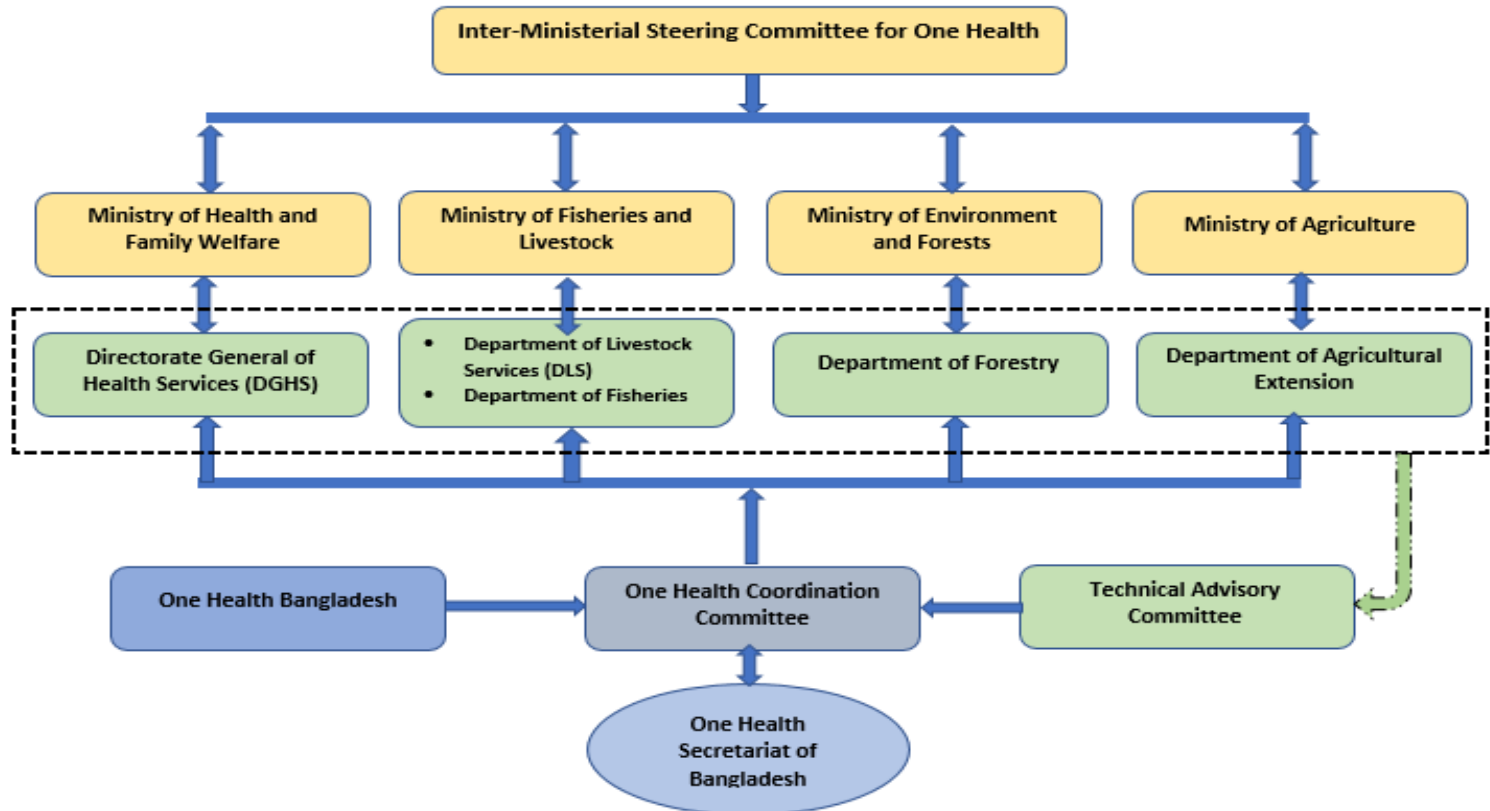
**বিষয়: "Health Strategic Framework & Action Plan for One Health Approach to Infectious Diseases in Bangladesh" শীর্ষক কৌশলপত্র অনুমোদন প্রদানে।**

সূত্র: ডিবিএইচএম/২০১৩/০২২১, তারিখ: ১৪.০২.২০১৩

উপর্যুক্ত বিষয় ও সূত্রের প্রেক্ষিতে স্বাস্থ্য অধিদপ্তরের প্রজ্ঞার মোতাবেক বাংলাদেশ সরকারের স্বাস্থ্য ও পরিবার কল্যাণ মন্ত্রণালয়, মহাশয় ও প্রাণিসম্পদ মন্ত্রণালয় এবং বন ও পরিবেশ মন্ত্রণালয়ের সহযোগিতায় এবং FAO, UNICEF ও WHO-এর কারিগরি সহায়তায় বাংলাদেশে উচ্চমাত্রায় প্রভাবিতকারী সংক্রামক রোগ প্রতিরোধ ও নিয়ন্ত্রণের লক্ষ্যে স্বাস্থ্য, প্রাণিসম্পদ এবং বনাঞ্চালী ও পরিবেশের মধ্যকার স্বাস্থ্যকর ভারসাম্য রক্ষার জন্য "One Health Approach" প্রতিষ্ঠার লক্ষ্যে "Health Strategic Framework and Action Plan for One Health Approach to Infectious Diseases in Bangladesh" শীর্ষক দাবিভুক্ত কৌশলপত্রটি বাস্তবায়িত করার মিত্তিতে নির্দেশক্রমে অনুমোদন আশ্রয় করা হ'ল।

  
(মোহাম্মদ জারিয়ার হোসেন)  
সহকারী প্রধান  
ফোন: ৯৪৩৩১৪২  
ফোন: ০১৯৩৪৩৬১৪২  
e-mail: mzarlab@yahoo.com

# Institutional Governance and programme management



# *Insttutionalization of Multisectoral Collaboration Mechanism*

## **Inter-ministerial Meeting on One Health** **Date 14 June 2016**

### *Decisions*

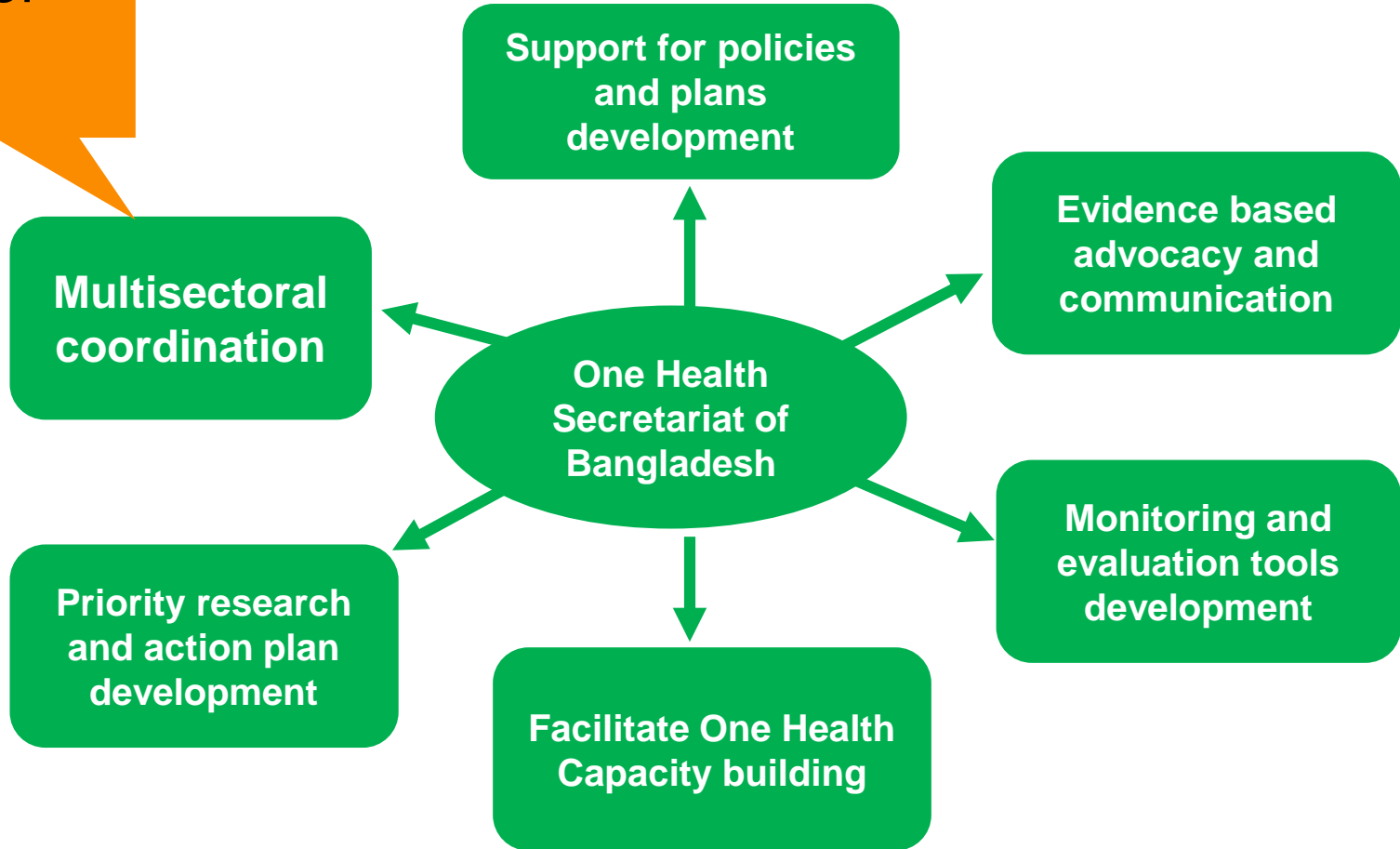
- *Establishment of One Health Secretariat at IEDCR with seconded officers from DGHS, DLS and BFD & OHS Coordination Committee*
- *Technical Advisory Committee*
- *Establishment of Inter-ministerial steering committee,*



### Instructions

- Request ministry/ agencies to depute officers
- Develop TOR engaging OH partners
- **Review and revise the OHSF**

**TORs of  
OHS**



# Revised One Health Strategy & Action Plan 2018-22 Approved in OH Steering Committee.



Special focus on  
**antimicrobial resistance**  
and **prudent use** of  
antibiotics



3 – tier to 4-tier MCM to  
extend up to **DISTRICT  
LEVEL**



Inclusion of **Dept. of  
Agriculture** and **Dept.  
of Fisheries** in One  
Health Secretariat

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# Operalization of One Health

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# **Three** major approaches for **One Health in Bangladesh**

## **Whole of a society movement**

By empowering society to combat the health challenges and drive the changes

## **Whole of a govt. approach**

Advocating govt to plan for sustainable health health solutions by meeting the emerging need

## **Active engagement with global community**

Collaborative and openness approach to exchange knowledge and expereicne with peers



Whole of a  
Govt  
Approach

# One Health Secretariat in action

**03** Inter-ministerial steering  
committee meeting



**04** Technical advisory group  
meeting



**08** coordination meeting among  
technical group



**3** partners coordination meeting

**9** coordinated outbreak investigation

**4** One Health training

**3** One Health Day seminar

**1** issue of One Health Newsletter

Whole of a  
society  
movement

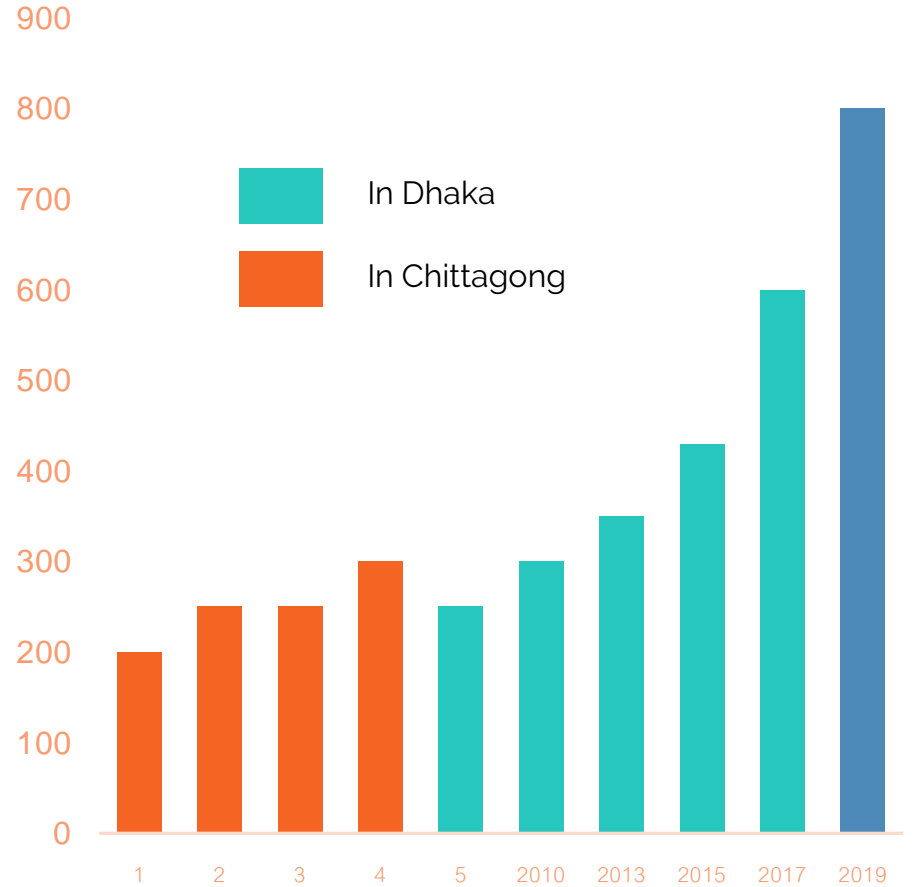
**09 conferences** with  
multidisciplinary  
Participants

**32 extended** meeting

**8 annual** general  
meeting

**800** members

## Conference participants





Whole of a  
society  
movement

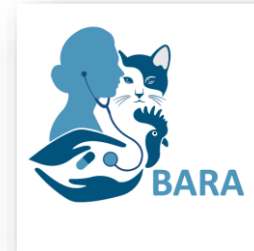
# Networks and institutional engagement

Related  
Govt.  
Agencies

Universities &  
Research Inst.



BSVER



# Networking with International partners and development agencies

The development partners are important drivers for

- One Health advancement in Bangladesh by providing support:
- Technical and strategic aspect of One Health
- Financial support
- Institutional and logistical support
- Capacity building
- Evaluation and monitoring



Whole of a  
society  
Approach

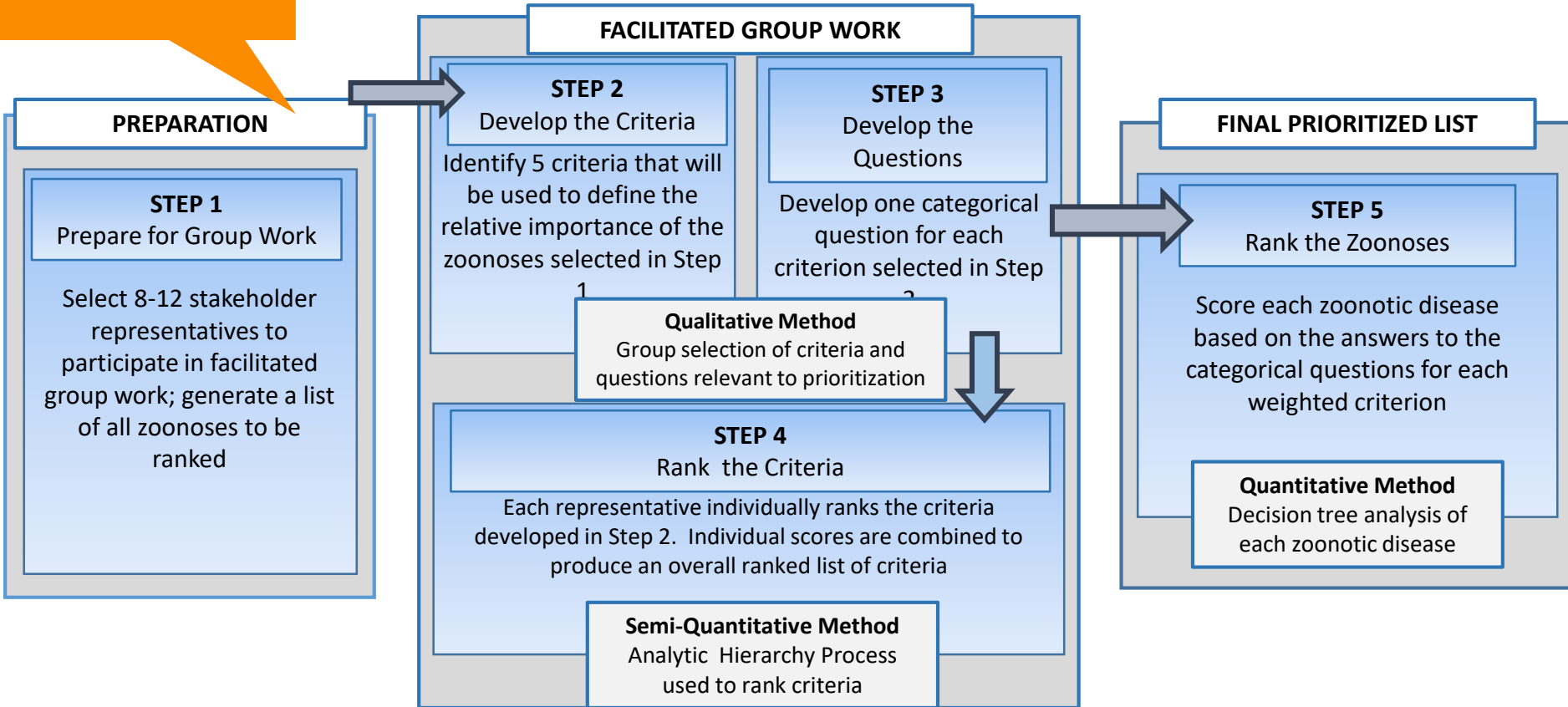
# Activities of One Health Young Voice , Bangladesh



- School kid programme (SKP)
  - Personal hygiene
  - Awareness of zoonosis
- Community awareness about zoonosis
- Rabies vaccination
- Simulated one health disease outbreak investigation
- One Health lectures to multidisciplinary fresher students

Whole of a government movement

# Zoonotic disease prioritization using One Health Tools



Whole of a government movement

# Integrated diseases surveillance in One Health Approach

**Avian influenza** surveillance in Bangladesh FAO-DLS-DCC

- ✓ High Risk Group Surveillance
- ✓ Live bird market
- ✓ Sink surveillance

**Nipah encephalitis** surveillance in Bangladesh (icddr, IEDCR, EcoHealth Alliance )

**Anthrax** surveillance in Bangladesh (IEDCR-DLS)

**Japanese encephalitis** surveillance IEDCR-icddr





Whole of a  
government  
movement

# Joint outbreak investigation & management



Whole of a  
government  
movement

# National Action Plan for AMR containment

- Establish multi-sectoral approach for planning, coordination and implementation of ARC
- Ensure rational use of AMs in human health, Livestock, Fisheries sectors and Environment
- Promote and strengthen infection prevention and control (IPC) measures in both human and animal health sectors
- Establish AMR-surveillance system;
- Promote basic, experimental and operational research in the area of AMR
- Establish advocacy, communication and social mobilization (ACSM)



## ***One Health in Action on AMR: BARA***

- **Fleming Fund supported One Health workshop to develop AMR problem tree, identify solutions jointly with Govt. partners, FAO, WHO, CDC, USAID and develop guideline**
- **Workshop on the development of One Health AMU Guidelines for Bangladesh**
- **Formation of BARA (Bangladesh Antimicrobial Response Alliance): community of practice for veterinary and human medical professionals committed to responsible AMU**
- **Training on responsible AMU for human and animal health practitioners based on the OH AMU guidelines**
- **Lab capacity building in AMR testing (human and animal health collaboration)**
- **AMR Surveillance & Awareness Building**

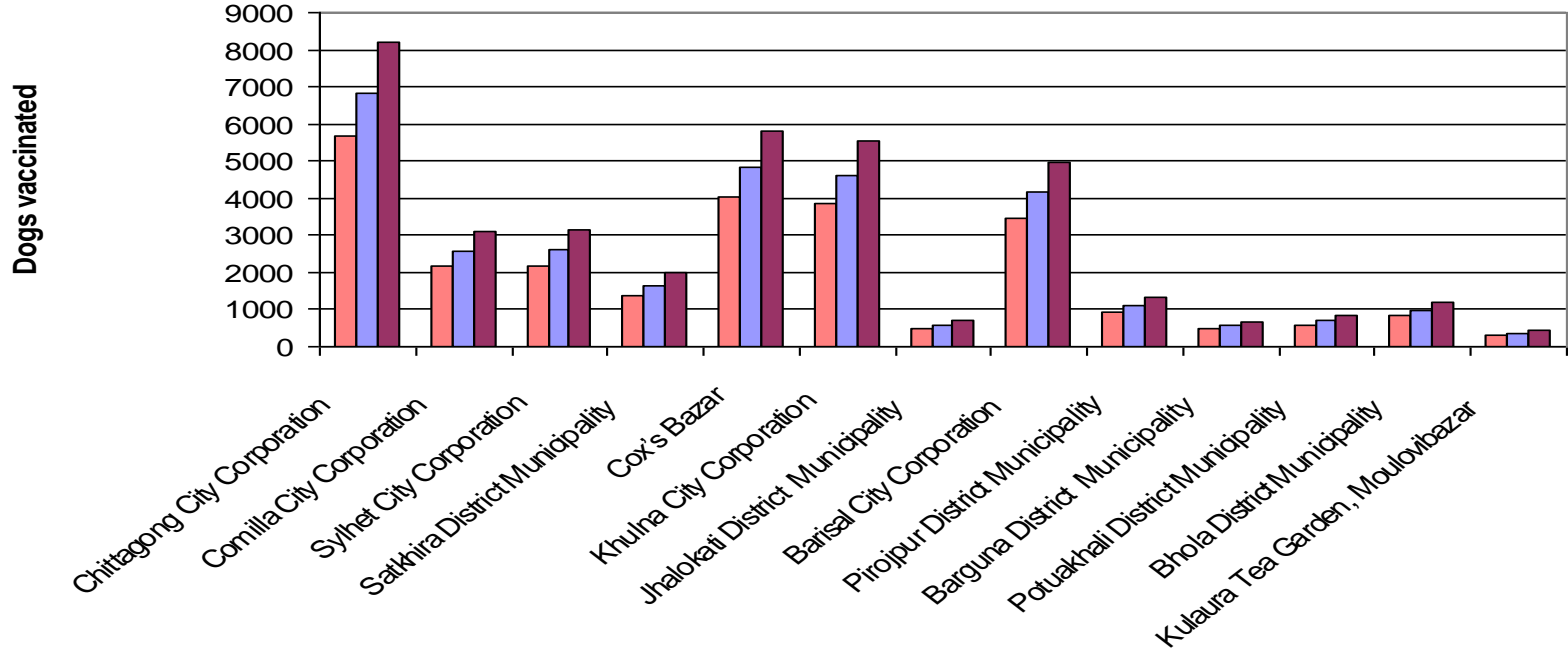


BARA Formation

Disease  
Control at  
Origin

# Mass Dog Vaccination In Bangladesh

Rabies vaccination of dogs in Bangladesh, 2014 + 2 years



# One Health Human Resource development



WILD training



FETP Program



FETPV Program\*\*



One Health Fellowship



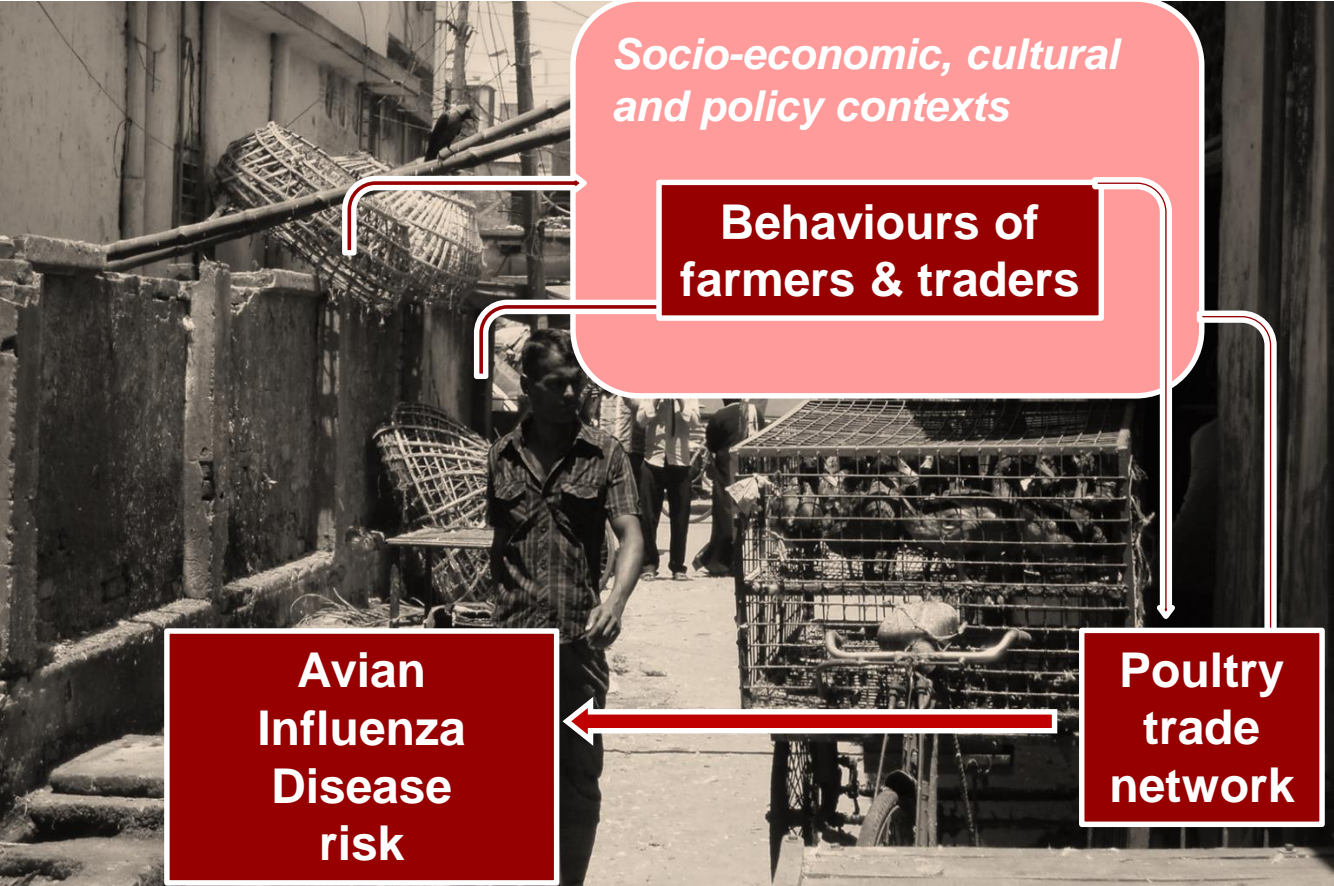
One Health Simulation training



One Health Institute at CVASU

\*\*In progress

# One Health Research: ZEL Project



## Policy Options for Avian Influenza and Other Poultry- related Zoonoses in Bangladesh

Dr Kaushik Chattopadhyay  
Consultant, Chatham House, London

Chattopadhyay et al., 2017, *Ecohealth*

- National avian influenza and pandemic preparedness plan
- One Health secretariat
- Working groups - biosecurity and zoonotic policy development

2016



2018



Engagement  
with Global  
community

# One Health One Chick GCRF Project

## Investigators



55 Investigators  
9 Countries  
30 LMIC  
20 Female, 35 Male  
25 Early career  
(<45 years old)

## Research Advisers



**Andy Tatem,  
Southampton:**  
Spatial demography,  
use of satellite,  
survey, cell phone,  
census data



**Wantanee  
Kalpravidh, Bangkok:**  
FAO ECTAD Asia  
regional manager,  
links to OIE, WHO



**Venugopal Nair,  
Pirbright:** Avian  
viral diseases, links  
to policy actors in  
India and China



**Joergen Schlundt,  
Singapore:**  
Former Director  
Food Safety &  
Zoonoses, WHO;  
"Global Microbial  
Identifier"

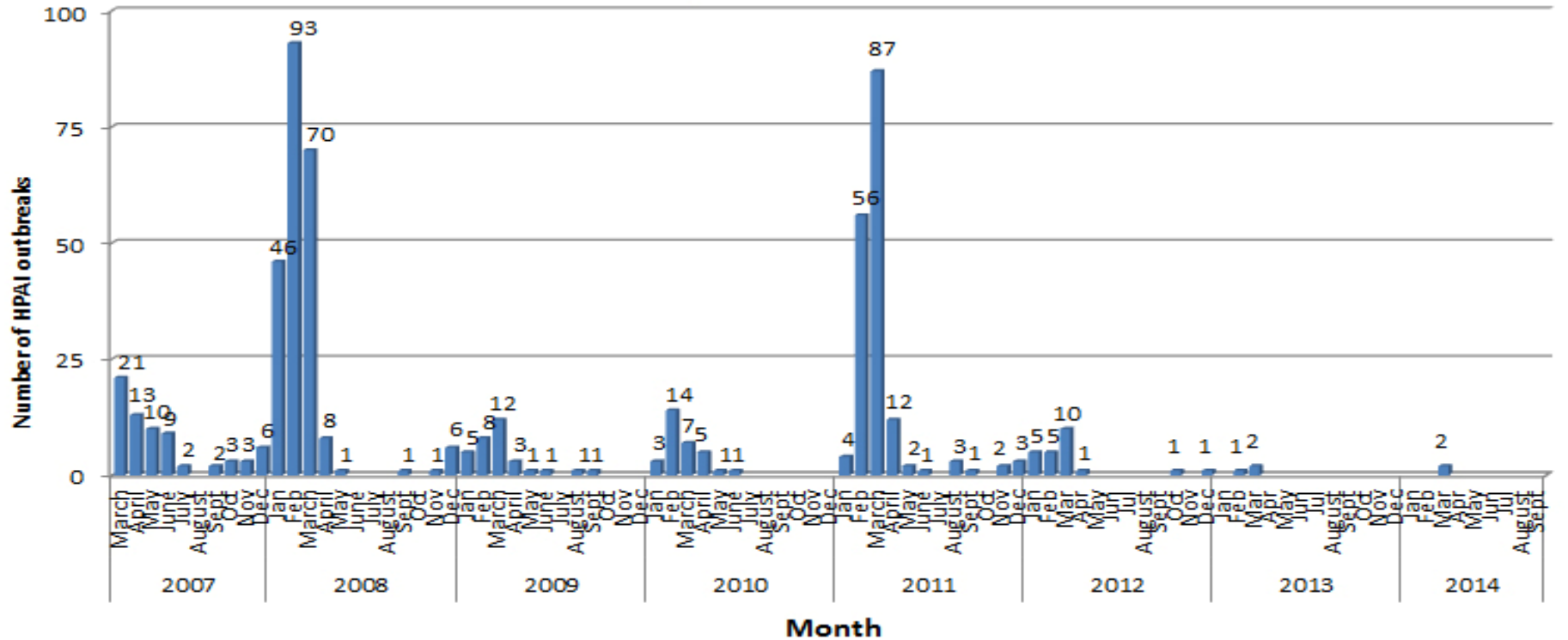


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# Impact of One Health in Bangladesh

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# H5N1 In Bangladesh



# No Nipah Cases in 16 -18

- Health message to avoid raw date palm sap consumption
- Education and training to use bamboo skirt during collection
- Mass awareness and social movement involving stakeholders
- Behaviour/ practices changes resulting the outcome of ZERO Nipah cases

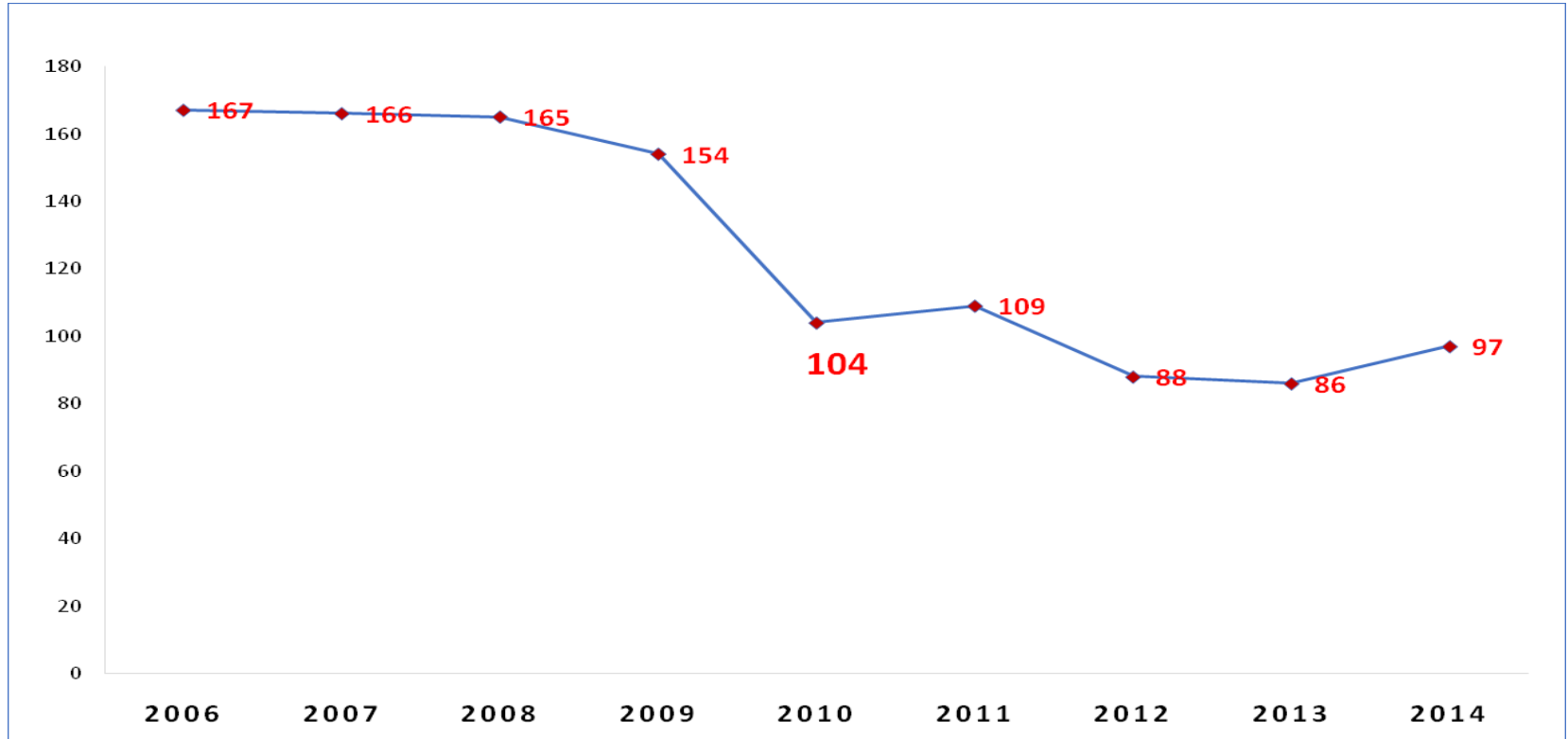


Original Article

Piloting the promotion of bamboo skirt barriers to prevent Nipah virus transmission through date palm sap in Bangladesh



# Death Due to Rabies Decreased



*Recorded Death in National Rabies Prevention & Control Center (NRPCC)*

# তড়কা (অ্যানথ্রাক্স) রোগ

## প্রতিরোধ করণ



অসুস্থ গবাদিপশু জবাই করবেন না, সুস্থ প্রাণীর  
মাংস নিরাপদ

অ্যানথ্রাক্স রোগ গবাদিপশু থেকে মানুষে ছড়ায়  
মানুষ থেকে মানুষে ছড়ায় না

অসুস্থ গবাদিপশুর শ্লেষ্মা, লালার, রক্ত, মাংস, হাড়  
নাড়ীভূঁড়ির সংস্পর্শে এলে মানুষ এ রোগে আক্রান্ত হয়

আপনার শরীরে এ রোগের লক্ষণ দেখা দিলে  
স্থানীয় স্বাস্থ্য কেন্দ্র বা চিকিৎসকের পরামর্শ নিন

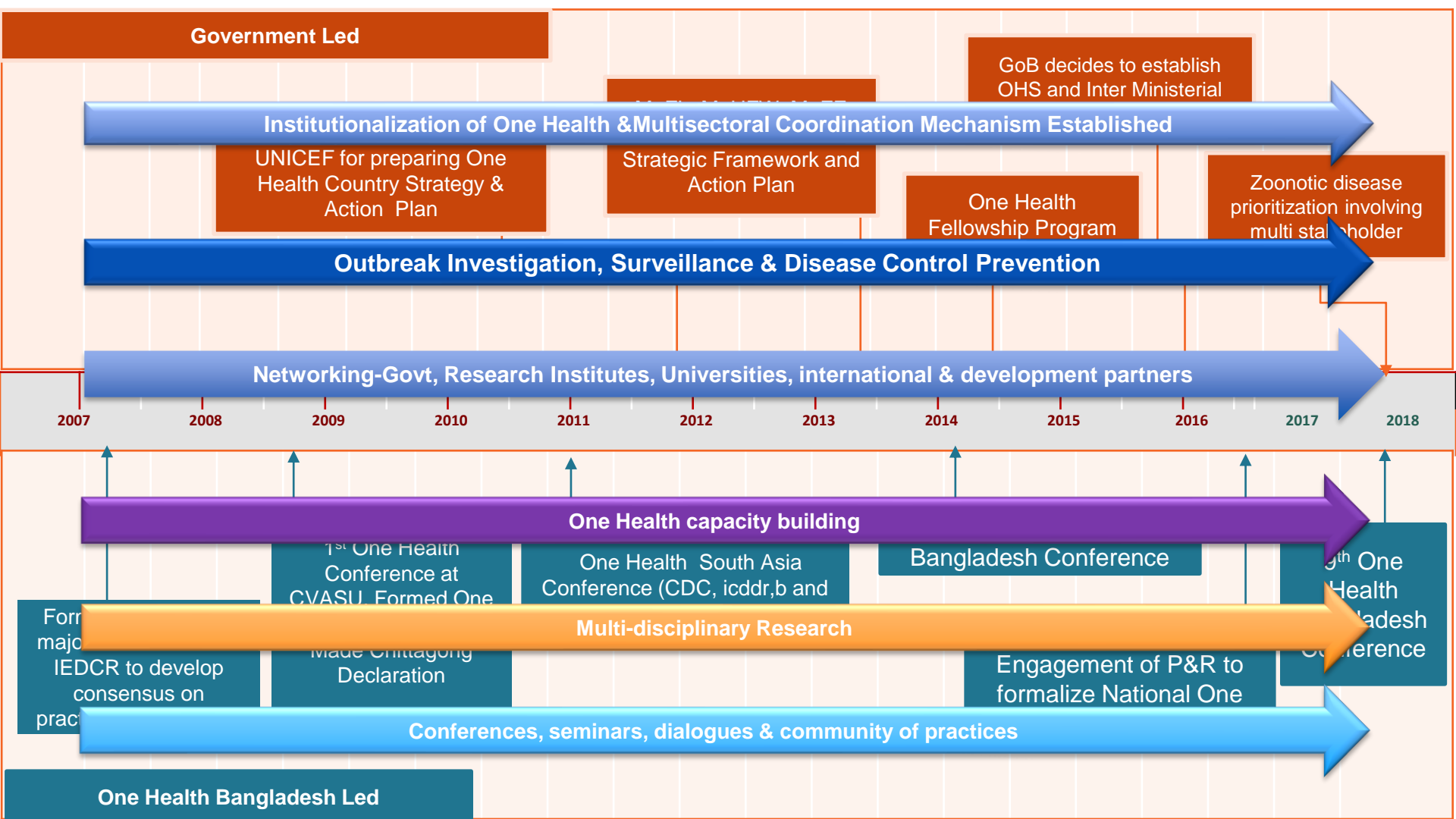


স্বাস্থ্য শিক্ষা বুরো, স্বাস্থ্য অধিদপ্তর  
স্বাস্থ্য ও পরিবার কল্যাণ মন্ত্রণালয়

# Anthrax

- Orientation of field workers
- Advocacy meetings - local leaders, public representative & other professionals
- Inter-ministerial co-ordination
- Livestock anthrax vaccination intensified
- Mass media campaign
- Training of Health Workforce





# Impact of One Health

	Before H5N1 Zoonoses	Sinc e Influenza H5N1	Other zoonoses
Communication	-	+++	++
↓			
Coordination	-	+++	++
↓			
Collaboration	+/-	+++	++
↓			
Integration	-	++	+





# Review

## One Health in South Asia and its challenges in implementation from stakeholder perspective

Chatterjee et al. *Infectious Diseases of Poverty* (2016) 5:87  
DOI 10.1186/s40249-016-0181-2

Infectious Diseases of Poverty

OPINION

Open Access

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INFECTION ECOLOGY &  
EPIDEMIOLOGY  
THE ONE HEALTH JOURNAL



REVIEW ARTICLE

### One Health research and training and government support for One Health in South Asia

*Original Contribution*

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### A Qualitative Stakeholder Analysis of Avian Influenza Policy in Bangladesh

Kaushik Chattopadhyay,<sup>1</sup> Guillaume Fournié,<sup>2</sup> Md. Abul Kalam,<sup>3</sup> Paritosh K. Biswas,<sup>4</sup> Ahasanul Hoque,<sup>4</sup> Nitish C. Debnath,<sup>5</sup> Mahmudur Rahman,<sup>6</sup> Dirk U. Pfeiffer,<sup>2</sup> David Harper,<sup>7</sup> and David L. Heymann<sup>7</sup>

Chatterjee  
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# Lesion learned for One Health in Bangladesh

## Sustainable engagement

- Initially donor driven
- Joint Engagement of Government partners
- Engagement of society with One Health Practices
- Strong Networking

## Sustainable resource

- Govt. budget from Government (Health Sector)

## Sustainable Inst. capacity building

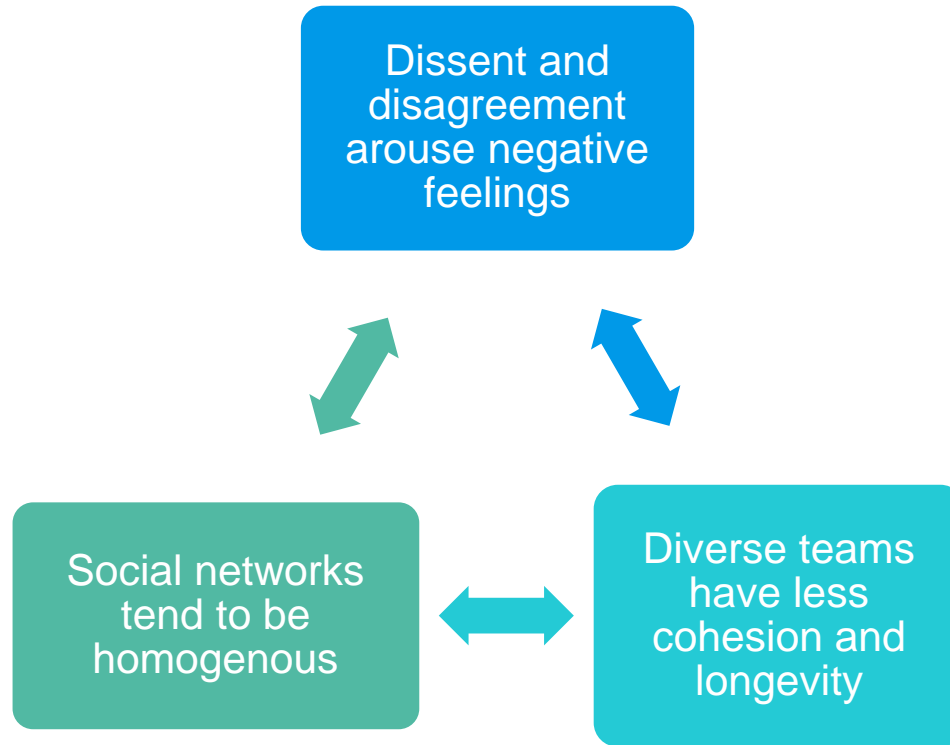
- Functional One Health Secretariat
- One Health Institute at CVASU with MSc course
- Capacity building hub
- FETP,B
- FETPV

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# Challenges of One health in Bangladesh

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# Working in diverse environment



# Professional & institutional barriers

- Different Ministries
  - Ministry of Health & Family Welfare
  - Ministry of Fisheries & Livestock
  - Ministry of Agriculture
  - Ministry of Environment & Forests
- Different objectives
- Different lines of authorities
- Different professional backgrounds
  - Separate personal backgrounds

**It is hardly possible to overstate the value--- of placing human beings in contact with persons dissimilar to themselves, and with modes of thought and action unlike those with which they are familiar.--- Such communication has always been, and is particularly in the present age, one of the primary source of progress.**

**---- John Stuart Mill, Principles of Political Economy**

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# Way forward Towards Diversity

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## Expansion of One health integration in District level

- Horizontal integration within the government system beyond national level (districts)
- Inclusion of relevant stakeholders under the One Health umbrella
- Resource sharing from other stakeholders in addition to health

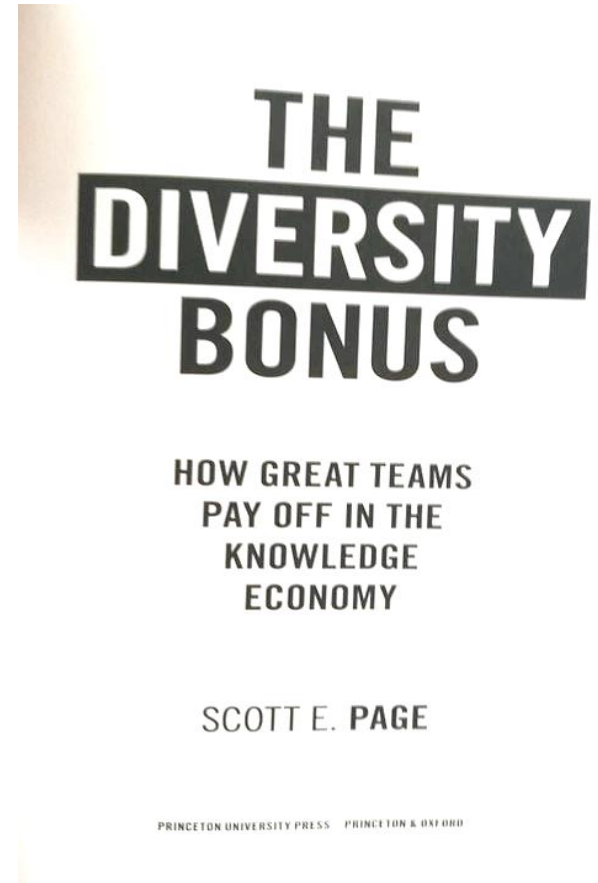
## Dealing with diverse issues

- Food Safety and nutrition
- Non- communicable diseases
- Air and water pollution
- urban planning
- Sustainable resource management
- Forest and wildlife conservation
- Climate change and adaptation
- Salinity and infertility of soil
- Good Agricultural Practice





## Definition of One Health?



A landscape photograph showing a road that curves through a field of dry, golden-brown grass. In the distance, a city skyline is visible under a sky filled with large, white, fluffy clouds. The overall scene is bright and open.

**THE ROAD TO  
SUCCESS IS  
ALWAYS UNDER  
CONSTRUCTION**

-Larry Wall

> *Inspower*