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# Nourishing people & poultry efficiently & sustainably in the 21<sup>st</sup> century: challenges & opportunities

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Credit: Kyeema/Richard Nyonyi



## Overview

An exploration of how **family poultry** can contribute to the complex food security challenges facing governments, industry & civil society in the 21<sup>st</sup> century

# Family poultry: three production systems under one umbrella



**Family poultry** is defined as **small-scale** poultry keeping by households using family labour and, wherever possible, locally available feed resources.

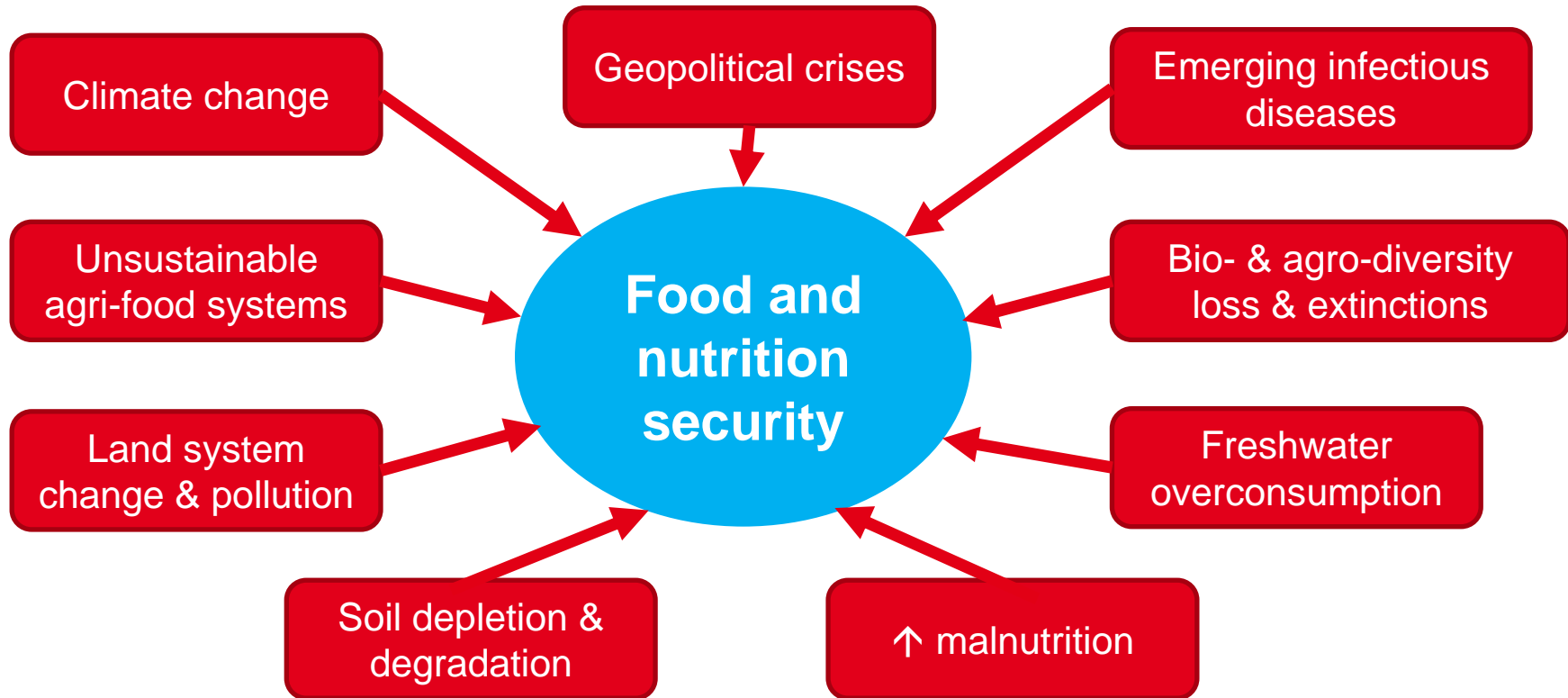
Family poultry employs one of three main production systems and may involve chickens, muscovy, pigeons, mallard ducks, Guinea fowl, quail, turkeys or geese.

(FAO 2014)

## Increasing inputs and risks



# Converging risks in the 21<sup>st</sup> century



# Importance of animal-source food (ASF)



- **An integral, albeit small, part of human diets**, especially for children and women of reproductive age
- Possess a **specific nutrient composition that matches human nutrient requirements**, particularly during the critical first 1,000 days of life (Dror & Allen 2011)
- UNICEF 2019 State of the World's Children Report:
  - poor diets are driving malnutrition in early childhood
  - **59% of children aged 6 to 23 months are not fed eggs, dairy, fish or meat**
- 2021 Global Nutrition Report - anaemia in women of reproductive age has increased over the past decade



# Family Poultry & the Sustainable Development Goals (SDGs)



## INCOME

1 NO POVERTY



8 DECENT WORK AND ECONOMIC GROWTH



## SAFE FOOD & NUTRIENTS; IMPROVED COGNITIVE DEVELOPMENT

2 ZERO HUNGER



3 GOOD HEALTH AND WELL-BEING



4 QUALITY EDUCATION



## GENDER & INEQUALITY

5 GENDER EQUALITY



10 REDUCED INEQUALITIES



## CLIMATE-SMART PRODUCTION

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



## SUSTAINABLE LAND USE

15 LIFE ON LAND

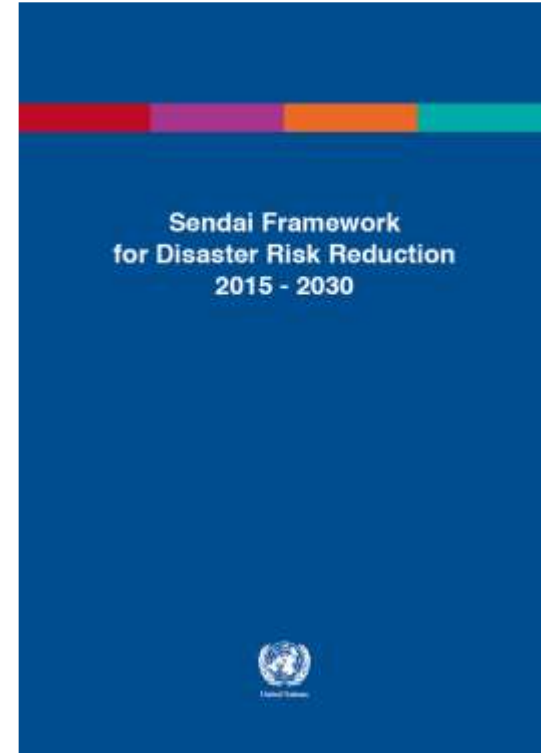




# Family poultry & dealing with shocks



- **Improving production & productivity are no longer the only R&D focus**
- COVID-19 pandemic has highlighted:
  - **need to improve the efficiency and responsiveness of value chains** including feed availability, logistics and storage
  - questions re ecological sustainability, land use change, nutrition, health and social protection (Hashem et al. 2020)
- Going forward:
  - **policies and strategies must be based on an integrated One Health, all hazards approach that works in harmony with national and global commitments**, e.g. SDGs, 2015-2030 Sendai Disaster Risk Reduction Framework (Alders et al. 2020)



# Reducing food-feed competition



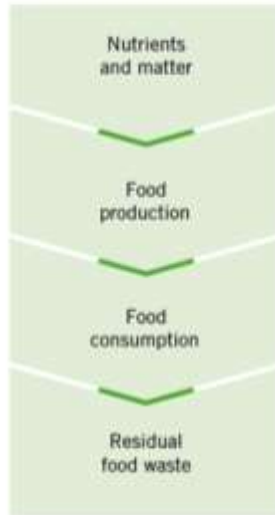
- **Responsible use of available nutrient resources crucial**
- Competition between humans and animals for human-edible crops has increased with intensification of livestock production
- Nutritionists argue there is no nutritional case for feeding human-edible crops to animals (Berners-Lee et al., 2018)
- **Livestock consume 1/3 global cereal production requiring approximately 40 percent of arable land** (Mottet et al., 2017)
- Globally, **1 kg of meat requires 2.8 kg of human-edible feed for ruminants and 3.2 kg for monogastrics** (Mottet et al., 2017)
- Feed alternatives (e.g. black soldier fly larvae) may prove feasible in intensive family poultry units
- Extensive family poultry production converts non-human edible feed into nutritious human food (Alders & Pym, 2009)



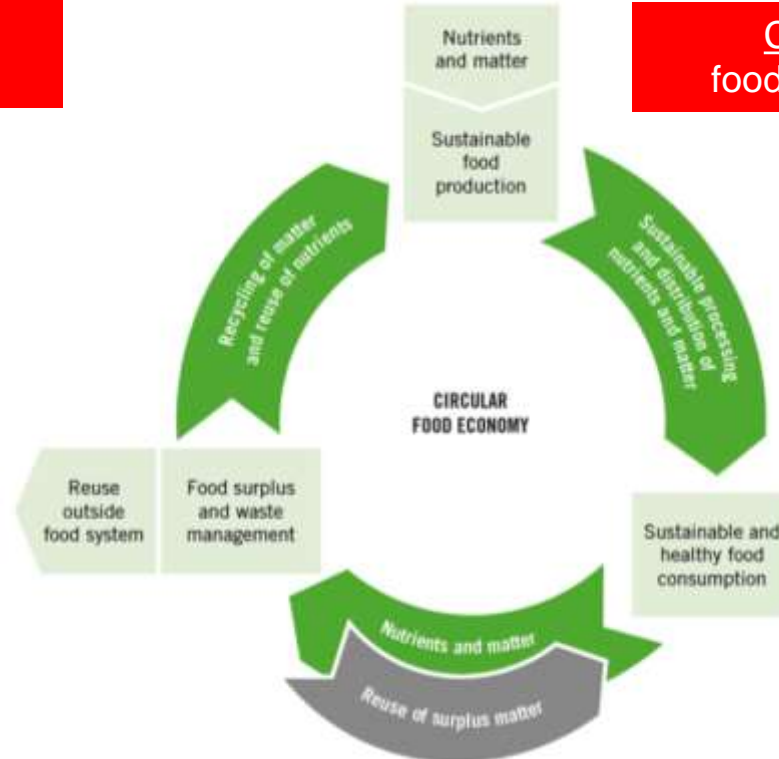
Credit: FAO/Giorgi Chagelishvili, Georgia

# Equitable, sustainable poultry value chains & circular bioeconomies

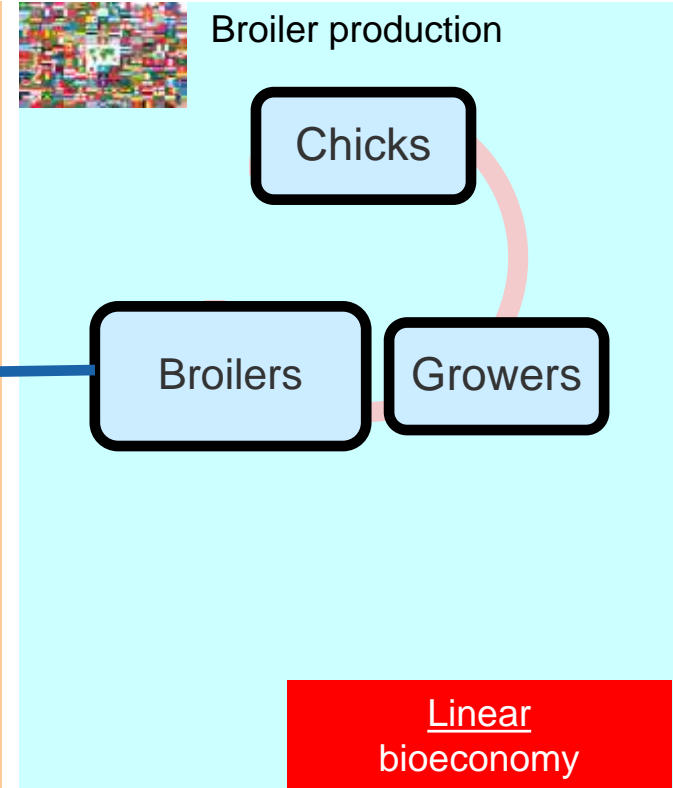
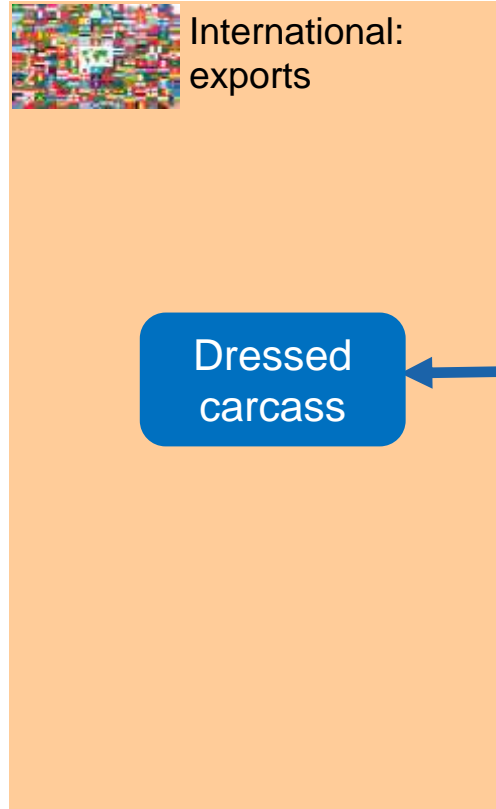
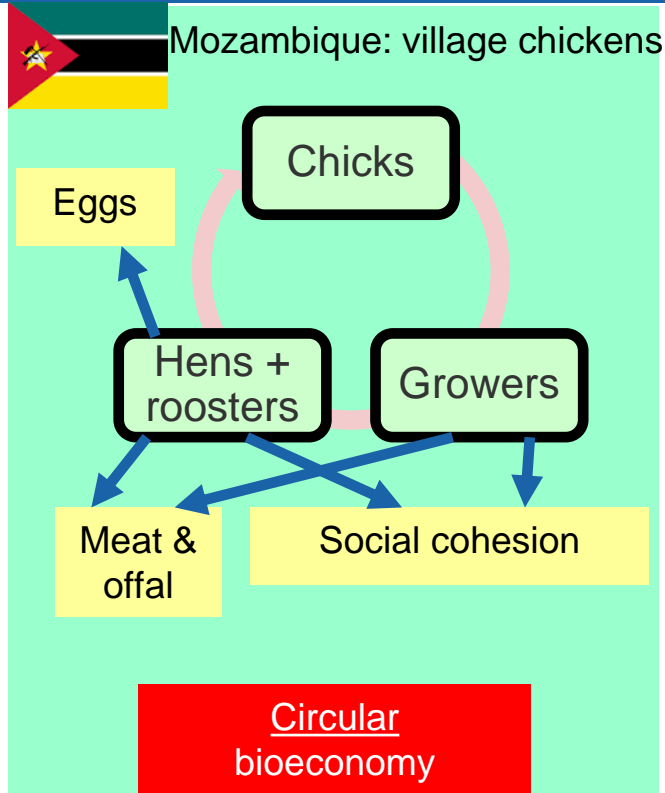
## Linear food economy



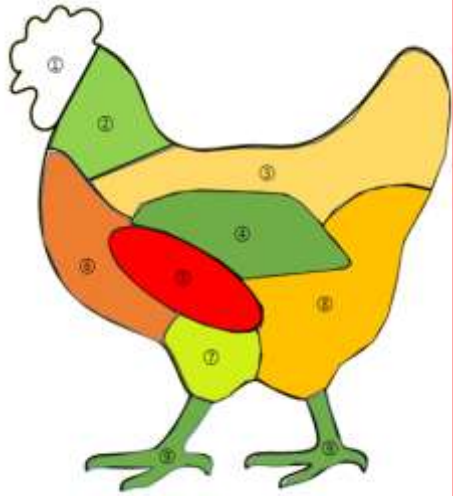
## Circular food economy



# Bioeconomies: two contrasting examples



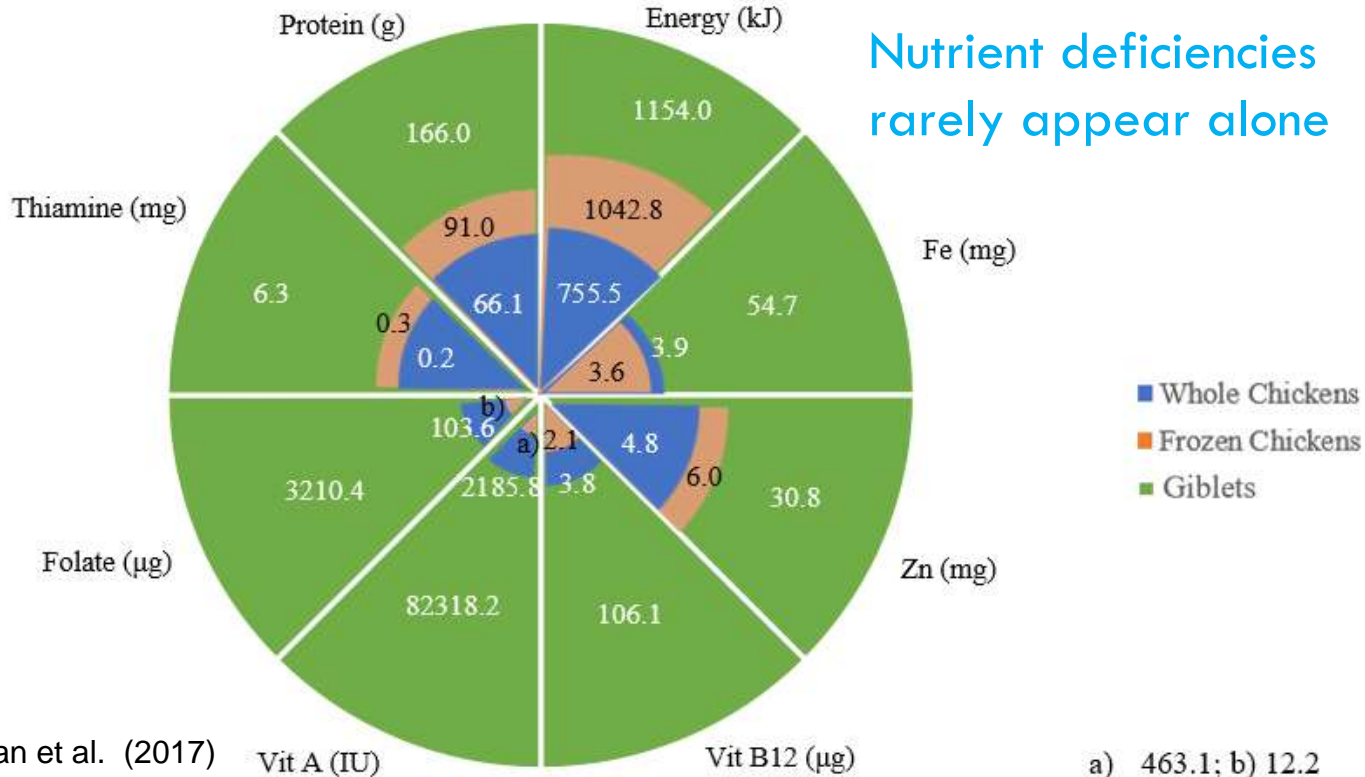
# Efficiently & sustainably meeting macro- & micro-nutrient requirements



Distribution of **iron** within a whole chicken carcass

- ① = Head
- ② = Neck
- ③ = Back
- ④ = Wing
- ⑤ = Giblets
- ⑥ = Breast
- ⑦ = Drumstick
- ⑧ = Thigh
- ⑨ = Feet

Quantity of Nutrients in Whole and Frozen Chickens per USD



# Ensuring optimal food & production safety standards

## Extensive production

- Unsanitary household environment (Gelli et al., 2017)
- Statistical association with environmental enteric dysfunction in some but not all countries

## Intensive production

- Foodborne diseases remain important globally
- Contamination can occur during production, processing, storage and food preparation
- Antimicrobial resistance



Source: <https://www.freepik.com/free-photos-vectors/food-safety-day>

# Key challenges to sustainable family poultry production



- Emergence and spread of **transboundary animal diseases**
- **Limited access to markets, productive quality inputs, advisory and animal health services, education, information, finance, technologies, tools, and processing facilities**, which prevent family poultry producers in LMIC from benefiting from fast poultry sector growth
- **Overuse of natural resources** to increase short-term production → lower productivity and decrease biodiversity and agro-diversity in the long-term
- **Higher overall GHG emissions levels** due to a rise in production, even though emission intensity from the poultry sector is declining
- Greater competition with **higher levels of market concentration**, which will likely keep many small producers from participating in markets
- Efficiently **matching poultry production with the local context** including public health nutrition requirements
- Minimising the **competition between poultry and humans** for human-edible feedstuffs

# Requirements for achieving sustainable poultry production



- An **integrated and holistic approach** to promote the sustainability of poultry systems, jointly taking into consideration socio-cultural, economic, and environmental dimensions
- **Consensus and joint action**, through multi-stakeholder and intersectoral dialogue where the voice of every stakeholder (especially women and men from vulnerable groups) are equally heard
- **Adoption of good practices tested and validated under similar resource-poor environments** to make the poultry sector more resilient and environmentally sustainable
- **Strengthening capacity in support of sustainable practices**
- **Enabling conditions**, including by developing and strengthening policies and legal frameworks that foster sustainable poultry production  
→ requires investment in the sector and creating incentives for good practices and family poultry producers



# Examples of innovative approaches:

Semi-intensive rural poultry production model – Cambodia (IFAD; 2017-2023)



## Inputs

- i. Training and knowledge-sharing program on good poultry production and health practices
- ii. Development of integrated market clusters (i.e. setting-up of indigenous poultry breeding and poultry fattening units) in village

## Achievements

- i. Reduced the mortality rates of indigenous chickens from 80 to 5–10 percent
- ii. Improved producers' income by USD 150–200/month from poultry production (before household consumption and occasional sale); and
- iii. Enhanced producers' access to markets giving the opportunity to sell poultry at higher prices (FAO 2022)

# Rebuilding mixed farmer livelihoods in cyclone affected areas - Mozambique (FAO & Kyeema; 2020-2021)



## Inputs

- i. Distribution of dual purpose chickens
- ii. Establishment of sustainable Newcastle disease vaccination programs

## Achievements

- i. Poultry restocked in over 5330 impacted households
- ii. 114 community vaccinators (38 female) selected and trained
- iii. Farmers paid vaccinators to vaccinate over 130,000 chickens raised by over 14,000 households

Credit: Kyeema/Alders, Mozambique



# Sustainable rural & peri-urban family poultry production – Kyrgyzstan (FAO; 2019-2021)



## Inputs

- i. Technical assistance and training to the rural population through advisory services, rural schools, agricultural service cooperation
- ii. Marketing and development of value chains

## Achievements

- i. Introduction of good practices in small-scale poultry farming across 14 districts
- ii. Enriched diets of the rural population improving nutrition and food security
- iii. Expansion of poultry production provided women with more opportunities to positively influence the financial and nutritional situation of their families

# Conclusions



- **Human civilisation is at a critical confluence**
- Poultry production makes a **significant contribution to livelihoods and human food and nutrition security**
- **Bird welfare and the contributions made by family poultry to local cultures and ecosystems** must be understood and valued
- The challenge for poultry producers and allied sectors is to **identify and promote production systems that enhance the health of people, poultry, and the planet**
- Must **enable producers to transition away** from production systems that are unable to demonstrate a net positive impact



Credit: Kyeema/Aiders, Tanzania

Thank you / *Merci*



Questions & comments welcome

Credit: FAO/Nedžad Hadžialić, Bosnia and Herzegovina



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