# INTERNATIONAL POULTRY COUNCIL Global Macroeconomic Indicators for the Poultry Meat Industry September 2022





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## **1. Executive Summary**

The global poultry industry consists of a combination of large corporate entities with more than 1.9 million large broiler, turkey and duck farms and nearly 91 million household and micro-producer farms that produce chickens. In addition, there are 7.6 million duck farms and 376 thousand turkey farms. Together these farms produce more than 130 million tons of poultry meats annually with a value of more than \$221 billion. The global poultry industry has grown more than 35% since 2010.



There are an estimated 890,694 commercial chicken farms in the 27 countries represented by the International Poultry Council (IPC) membership included in this report and these farms carry an inventory of 11.6 billion chickens.

There are an estimated 36.3 million households in IPC member countries that hold an estimated 1.2 billion chickens.

IPC members are estimated to have 65,622 turkey farms with 276 million head of inventory and 3.77 million duck farms with 827.3 million head of inventory.

Producers in the 27 IPC member countries covered in this report produced 95.7 million metric tons of chicken, duck and turkey meat with a value of \$152.1 billion.

In 2020, poultry trade data is available for 123 countries. Net reported poultry exports were 15.97 million metric tons with a net export value of \$24.62 billion.

Of the 26.7 billion chickens, ducks, and turkeys on farms around the world, Asia has 16.4 billion of them, South America 2.8 billion birds, Europe 2.5 billion birds, Africa 2.1 billion birds, North America 2.0 billion birds, Central America 782 million birds, and Oceania 142 million birds.



Of the 130.5 million metric tons of poultry meat produced, Asia produces 37%, Europe 17%, North America 19%, South America 17%, Africa 5%, Central America 4%, and Oceania 1%.

The poultry production of IPC members is a significant part of world production and value. IPC members have 41% of world chicken meat farms, carry 51% of world chicken meat stocks, produce 72% of world chicken meat and account for 67% of the value of world chicken meat production.

#### 

 $rac{1}{2}$  global macroeconomic indicators for the poultry meat industry

IPC members have 50% of world duck farms, 71% of world duck stocks, produce 83% of world duck meat and account for 88% of the value of world duck meat production.

IPC members have 17% of world turkey farms, carry 85% of world turkey stocks, produce 96% of world turkey meat and account for 94% of the value of world turkey meat production.

IPC members account for 69% of the value of world poultry meat production.

World GDP in 2020 was \$85.5 trillion with \$61.4 trillion (72%) in the 27 IPC member countries. The total economic contribution of agricultural in the IPC countries was \$5.3 trillion with \$1.8 trillion of economic contribution coming from livestock (34% of agriculture).

| IPC MEMBER CONTRIBUTIONS TO WORLD POULTRY INDUSTRY |            |  |  |
|--|------------|--|--|
| category   | % of world |  |  |
| chicken meat farms                                 | 40.7%      |  |  |
| chicken meat stocks                                | 50.6%      |  |  |
| chicken meat production                            | 71.9%      |  |  |
| chicken meat value of production                   | 67.0%      |  |  |
| duck farms   | 49.6%      |  |  |
| duck stocks  | 70.9%      |  |  |
| duck production                                    | 82.9%      |  |  |
| duck meat value of production                      | 88.0%      |  |  |
| turkey farms                                       | 17.4%      |  |  |
| turkey stocks                                      | 84.9%      |  |  |
| turkey production                                  | 95.9%      |  |  |
| turkey meat value of production                    | 93.6%      |  |  |
| poultry meat total value of production             | 68.7%      |  |  |
| Source: FAO STAT, DIS estimates                    |            |  |  |

The economic contribution of the poultry industry was \$388 billion and that accounts for 22% of the economic contribution of the livestock industry, 7% of the economic contribution of agriculture.

IPC members account for 41% of world poultry farms, 52% of world poultry (broilers, ducks, and turkeys) stocks, 73% of world poultry meat production, 86% of world poultry meat exports, and 40% of world poultry meat imports.

| ECONOMIC CONTRIBUTION EFFECTS (MILLION USD) |              |             |                 |               |  |
|---|--------------|-------------|-----------------|---------------|--|
| Country                                     | GDP          | Ag Total    | Livestock Total | Poultry Total |  |
| U.S.  | \$20'936'000 | \$765'076   | \$347'092       | \$94'970      |  |
| China                                       | \$14'722'731 | \$2'110'277 | \$483'637       | \$82'768      |  |
| Brazil                                      | \$1'444'733  | \$304'635   | \$119'600       | \$39'923      |  |
| India                                       | \$2'622'984  | \$679'988   | \$189'828       | \$27'092      |  |
| Russia                                      | \$1'483'498  | \$158'119   | \$79'410        | \$20'449      |  |
| Mexico                                      | \$1'076'163  | \$94'913    | \$42'977        | \$11'559      |  |
| Poland                                      | \$594'165    | \$56'272    | \$31'413        | \$10'196      |  |
| Turkey                                      | \$720'101    | \$107'452   | \$39'458        | \$9'990       |  |
| South Africa                                | \$301'924    | \$53'905    | \$27'065        | \$9'643       |  |
| France                                      | \$2'603'004  | \$163'713   | \$59'382        | \$8'451       |  |
| Thailand                                    | \$501'795    | \$58'424    | \$15'791        | \$8'311       |  |
| United Kingdom                              | \$2'707'744  | \$63'063    | \$39'138        | \$7'676       |  |
| Canada                                      | \$1'643'408  | \$99'855    | \$42'511        | \$7'287       |  |
| Italy                                       | \$1'886'445  | \$112'120   | \$41'496        | \$7'191       |  |
| Colombia                                    | \$271'347    | \$49'506    | \$27'257        | \$7'035       |  |
| Germany                                     | \$3'806'060  | \$110'769   | \$68'333        | \$6'165       |  |
| Argentina                                   | \$383'067    | \$44'564    | \$26'163        | \$5'712       |  |
| Australia                                   | \$1'330'901  | \$86'258    | \$35'221        | \$5'056       |  |
| Egypt                                       | \$363'069    | \$31'245    | \$13'391        | \$4'541       |  |
| Netherlands                                 | \$912'242    | \$40'284    | \$26'315        | \$3'808       |  |
| Morocco                                     | \$112'871    | \$22'754    | \$9'948         | \$2'975       |  |
| Chile                                       | \$252'940    | \$38'100    | \$10'090        | \$2'929       |  |
| Panama                                      | \$52'938     | \$3'896     | \$2'682         | \$2'253       |  |
| New Zealand                                 | \$212'482    | \$38'867    | \$31'673        | \$1'019       |  |
| Honduras                                    | \$23'828     | \$4'527     | \$1'560         | \$657         |  |
| Nicaragua                                   | \$12'261     | \$2'818     | \$1'133         | \$537         |  |
| Nigeria                                     | \$432'294    | \$25'510    | \$2'049         | \$293         |  |

Sources: GDP, World Bank 2020 | DIS Estimates of Total Economic Contribution | OECD and some country-specific multipliers | Nigeria Ag, Livestock and Poultry Totals are Value of Production | Note: Countries Sorted by Poultry Contribution to their country's GDP

## 

CO GLOBAL MACROECONOMIC INDICATORS FOR THE POULTRY MEAT INDUSTRY

| IPC MEMBER CONTRIBUT |               |                |                       |                         |                         |
|----------------------|---------------|----------------|-----------------------|-------------------------|-------------------------|
|                      | Poultry farms | Poultry stocks | Poultry<br>production | Poultry meat<br>exports | Poultry meat<br>imports |
| IPC MEMBERS          | 41.31%        | 51.92%         | 73.44%                | 86.07%                  | 40.31%                  |
| Argentina            | 0.07%         | 0.46%          | 1.74%                 | 1.00%                   | 0.03%                   |
| Australia            | 0.01%         | 0.39%          | 0.98%                 | 0.22%                   | 0.01%                   |
| Brazil               | 2.90%         | 5.66%          | 11.02%                | 22.17%                  | 0.03%                   |
| Canada               | 0.02%         | 0.67%          | 1.13%                 | 0.85%                   | 1.07%                   |
| Chile                | 0.01%         | 0.55%          | 0.59%                 | 0.95%                   | 0.04%                   |
| China                | 25.27%        | 18.15%         | 14.82%                | 2.85%                   | 11.63%                  |
| Colombia             | 0.47%         | 0.80%          | 1.24%                 | 0.00%                   | 0.53%                   |
| Egypt                | 3.89%         | 0.77%          | 1.10%                 | 0.00%                   | 0.24%                   |
| France               | 0.03%         | 0.64%          | 1.26%                 | 2.09%                   | 2.83%                   |
| Germany              | 0.01%         | 0.33%          | 1.20%                 | 3.36%                   | 4.40%                   |
| Honduras             | 0.60%         | 0.31%          | 0.15%                 | 0.01%                   | 0.11%                   |
| India                | 0.13%         | 3.01%          | 2.76%                 | 0.02%                   | 0.00%                   |
| Italy                | 0.01%         | 0.40%          | 1.06%                 | 0.99%                   | 0.46%                   |
| Mexico               | 0.38%         | 2.25%          | 2.77%                 | 0.02%                   | 5.34%                   |
| Morocco              | 0.01%         | 0.82%          | 0.68%                 | 0.01%                   | 0.03%                   |
| Netherlands          | 0.00%         | 0.18%          | 0.90%                 | 8.60%                   | 3.79%                   |
| New Zealand          | 0.00%         | 0.09%          | 0.17%                 | 0.07%                   | 0.00%                   |
| Nicaragua            | 0.22%         | 0.09%          | 0.11%                 | 0.00%                   | 0.05%                   |
| Nigeria              | 6.69%         | 0.62%          | 0.18%                 | 0.00%                   | 0.00%                   |
| Panama               | 0.02%         | 0.18%          | 0.16%                 | 0.00%                   | 0.16%                   |
| Poland               | 0.20%         | 0.80%          | 2.05%                 | 8.99%                   | 0.42%                   |
| Russia               | 0.11%         | 1.86%          | 3.61%                 | 1.70%                   | 1.29%                   |
| South Africa         | 0.01%         | 0.72%          | 1.44%                 | 0.30%                   | 2.67%                   |
| Thailand             | 0.19%         | 1.09%          | 1.41%                 | 4.93%                   | 0.01%                   |
| Turkey               | 0.01%         | 1.44%          | 1.68%                 | 3.08%                   | 0.24%                   |
| United Kingdom       | 0.01%         | 0.81%          | 1.49%                 | 2.65%                   | 4.22%                   |
| United States        | 0.05%         | 8.83%          | 17.74%                | 21.23%                  | 0.71%                   |

Sources: FAOStat, Comtrade, DIS estimates & other sources. Note: China trade percentages include Mainland China & China, Hong Kong SAR

## 2. Introduction

## 2.1 Goal of this Study

The International Poultry Council (IPC) is the recognized voice of the global poultry meat industry. In that capacity it represents the sector on a wide range of subjects from polity to communications on the economic impact and contribution of the sector. The goal of this study is to provide a overview of the global poultry meat industry (chickens, ducks and turkeys) with an emphasis on the contributions of the poultry meat output of IPC members to regional and global economies. The report focuses on three major areas: demographics, economics and market analytics.

## 2.2 Objective

The objective of this study is to provide economic analysis and market analytics focused on the global poultry meat industry sector. We have organized the report into logical groupings as follows:

### **Demographics**:

- » Number of poultry meat farms / holdings (global, by region, and to extent available, by country)
- » Average farm size
- » Workforce

#### Economics:

- » Gross Domestic Production (GDP) from agriculture (global), breakout by food animals and other
- » GDP Contribution (global and by region total poultry meat sector)
- » Direct Economic Impact: employment, taxes, GDP (global)

#### Market analytics:

- Poultry meat production value and volume (total per species broiler, turkey, and duck)
- Poultry meat export (total and top 20 exporters and top 20 importers)
- On a "percent of total" basis, cost of poultry production (by region, percentage among feed, primary production, slaughtering, transformation, transport)

## 2.3 Report Structure

This report is structured in three major geographic areas: global, regional and country-specific subsections. Each of these geographic areas contains information on poultry industry demographics, market analytics, and economics.

### **2.4 General Comments and Notes**

- » The data for this report comes from a number of sources and from a variety of time periods. In general, the most recent data available was used. For value of production, the most recent data was 2018 whereas the most recent data for GDP was 2020. Information on the number of farms and categories of farms, in most cases, was obtained from the most recent country-specific census of agriculture, with these dating from 2007 to 2020 depending on the country. If no census of agriculture data was available, then a variety of sources was used to estimate the number of farms based on the best data available.
- » Due to the multiplicity of data sources used for similar variables across the countries, there may be data discrepancies. For example, the data on chicken and turkey stocks reported for the U.S. by FAOSTAT differ from the data reported by USDA. In this report, we used the data reported by USDA for chicken and turkey stocks and doing so resulted in U.S., North American, and World stocks for chickens and turkeys differing from the numbers reported by FAOSTAT.
- » Trade data in this report was primarily drawn from the UN Comtrade database and subject to the limitations of data being reported (or not reported) by the exporting and importing countries. Total exports and imports should

be equal, but in the reported data exported quantities and values exceed reported imported quantities and values.

- » The maps included in this report were either from published, refereed journal articles and from "resourcetrade. earth." The country boundaries in these maps may differ from currently recognized boundaries and labeling convention in these maps was determined by the creators of the maps.
- » Country labels and definitions: With the historical aspect of the data incorporated into this report, from various data sources such as FAOSTAT and others, the specific country labels and definitions are derived from the information source and how they referenced the data. The People's Republic of China and special administrative regions (SARs) are labeled per the information source label. However, normal labeling for the People's Republic of China is inclusive of the various SARS.

## 3. Global Poultry Industry

The global poultry sector (poultry meat and egg production), which has a market value of \$310.7 billion in 2020, is expected to grow to \$322.55 billion in 2021 and see a compound annual growth rate (CAGR) of 3.8 in 2021. The market is expected to hit \$422.97 billion in 2025 with a CAGR of 7%<sup>1</sup> from 2020 through 2025. Among poultry species, chicken is the primary species of production throughout the world representing more than 90% of the poultry sector. Other major species include duck, especially in Asian countries, and turkey in North American countries.

Historically, small farms and family businesses have been responsible for much of the production in the developing world but in recent years, much of the growth in the developing world is coming from large-scale operations. Large-scale poultry production systems have been the dominant farm structure in the United States and Canada for decades and now account for significant shares of production in South America, Europe, Asia and Oceania.

### **3.1 Production and Demographics**







While the exact number of farms that produce poultry is unknown, DIS estimates that in 2020 there were 98.8 million poultry farms across the world. DIS estimates that there are 89.0 million household chicken farms, 1.9 million commercial chicken farms, 7.6 million duck farms, and 376,403 turkey farms (Figure 1).

World poultry production is increasing, having grown every year since 2010 and having increased 35% since 2010 (Figure 2). In 2021, world poultry production exceeded 135 million metric tons. Asia is the leading producer of poultry meat, followed by Latin America, North America, European Union, Africa, and Oceania.

In 2020, the 100 million poultry farms across the world that produced an estimated 70.7 billion chickens, 617.9 million turkeys, and 3.0 billion ducks from an overall inventory of 27.3 billion birds.

There are an estimated 1.9 million commercial chicken producers who hold an inventory of 23.1 billion chickens (Figure 3). There are an estimated 90.6 million household producers of chicken with an estimated global inventory of 2.1 billion chickens.

## Figure 2. World & regional poultry production

### 

 $rac{1}{2}$  global macroeconomic indicators for the poultry meat industry

<sup>1</sup> Global Poultry Industry and Trends, Feed Additive, March 11, 2021



There are an estimated 7.6 million duck farms carrying an inventory of 1.15 billion ducks, and 376,403 turkey farms carrying an inventory of 325.1 million turkeys.

For IPC member countries, where large, modern, integrated poultry production systems have become primary producers of chicken meat, average inventory on commercial broiler farms is 13,022 head per farm. In 18 of the 27 IPC countries covered in this report, the average inventory per commercial broiler farm is greater than 40,000 head per farm.

#### Figure 3. World poultry stocks

Individually, at the farm level, poultry inventory numbers run from less than 100 head for most of the household and micro producers to more than a million birds at some of very large commercial farms. There are 7 large vertically-integrated poultry production firms that run more than a billion birds through their facilities on an annual basis with the largest producer estimated to process more than 4.4 billion birds per year.

There are an estimated 890,694 commercial chicken farms<sup>2</sup> in the 27 countries represented by International Poultry Council (IPC) membership included in this report and these farms carry an inventory of 11.6 billion chickens. There are an estimated 36.3 million households in IPC member countries that hold an estimated 1.2 billion chickens. IPC member countries are estimated to have 65,622 turkey farms with 276 million head of inventory and 3.77 million duck farms with 827.3 million head of inventory.

Total global poultry meat production (chicken, duck and turkey) in 2020 was 130.5 million metric tons with a value of \$221 billion, growing by 35 percent since 2010. Producers in the 27 IPC member countries covered in this report produced 95.7 million metric tons of chicken, duck and turkey meat with a value of \$152.1 billion.

<sup>2</sup> The term "Commercial Chicken Farm" varies country to country. In China and the U.S., the two largest chicken meat producers, commercial producers are categorized as producers who producer more than 2,000 chickens per year.

#### 3.1.1 Chicken

There are an estimated 1.9 million commercial chicken producers who hold an inventory of 23.1 billion chickens. There are an estimated 101.6 million household producers of chicken with an estimated global inventory of 2.1 billion chickens.

The number of chickens on world farms in 2020 was 25.2 billion birds (Figure 4). This is a 29.3% increase since 2010. farms with an average inventory of about 450 birds.

On an annual basis, global chicken production has grown from 56.6 billion head in 2010 to 70.8 billion head in 2020 (Figure 5). This is a 25 percent increase in the number of chickens produced since 2010.







Figure 5. World chicken production 2010-2020

**World Chicken Meat Production** 2010-2020 140'000 Metric Tons Thousands 120'000 100'000 80'000 60'000 40'000 20'000 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 Decision Source: FAOSTAT Innovation Solutions

Figure 6. World chicken meat production 2010-2020

Global chicken meat production grew 37 percent from 2010 through 2020, rising from 87 million metric tons in 2010 to 120 million metric tons in 2020 (Figure 6). The 27 IPC member countries highlighted in this study account for 72 percent of global chicken meat production.

#### 3.1.2 Duck

World production of ducks for meat has increased 12.6% since 2010. In 2020, 3.02 billion ducks were processed for meat (Figure 7). Data on duck production was available for 18 of the 27 IPC member countries highlighted in this study and account for 85% of world duck production. Census data for the 7 IPC member countries that report farm data on duck production indicate that there are 3.8 million duck farms<sup>3</sup>. Across all the duck farms reporting, the average inventory of ducks on a farm was 13 head, but the range was from 7 head in Panama to 10,989 head in France.

Duck meat production has increased 23% since 2010. Total production of duck meat was 5 million metric tons in 2020 and IPC member countries produced 87% of world duck meat (Figure 8).



Figure 7. World duck production 2010-2020



Figure 8. World duck meat production 2010-2020

<sup>3</sup> No data on the number of duck farms in China was reported. DIS estimated that there are 3.5 million duck farms in China. Duck farms in China account for 60% of the ducks raised for duck meat in the world.

#### 3.1.3 Turkey

World production of turkeys has declined in recent years (Figure 9). In 2016, production of turkeys reached 660 million head, but by 2020 had declined to 618 million head, down 6.4% from the peak. The United States of America is the dominant producer of turkeys in the world accounting for 44% of world production. IPC member countries have 84.9% of world turkey inventory.



Figure 9. World turkey production 2010-2020

World turkey meat production has increased 9% since 2010 and has remained relatively stable despite the drop in the number of turkeys produced. This would suggest that the average dressed weight of turkeys being produced has increased from 9.1 kgs per head to 9.7 kgs per head in the past 5 years. IPC member countries account for 91.3% of world turkey meat production (Figure 10).



Figure 10. World turkey meat production 2010-2020

### **3.2 Global Economics**

The gross value of production of the world poultry industry (chicken, ducks, and turkey) was \$221 billion in 2018 with chicken meat accounting for 93% of the value, turkey meat 5%, and duck meat 1% (Figure 11).

The gross value of production of the ag sector in 2018 was \$3.5 trillion, with crops accounting for \$2.3 trillion, red meat \$984 billion, and poultry \$221 billion. In 2018, Asia produced 42% of the \$221.3 billion in global gross value of poultry production. It is followed by North America with 18%, Europe with 16%, South America with 13%, Africa with 6%, Central America with 4%, and Oceania with 1%. The GDP of the 27 IPC countries in 2020 was \$61 trillion. Agriculture contributed \$2.5 trillion of that with poultry meat contributing \$150 billion in value of production (Table 1).



Figure 11. Global gross value of production

| COMPARISON OF GDP & VALUE OF AGRICULTURAL SECTORS (\$1 MILLION USD) |                   |                   |                  |                   |              |              |           |             |
|---|-------------------|-------------------|------------------|-------------------|--------------|--------------|-----------|-------------|
| COUNTRIES   | GDP               | AGRICULTURE       | LIVESTOCK        | RED MEAT          | POULTRY MEAT | CHICKEN MEAT | DUCK MEAT | TURKEY MEAT |
| Argentina   | 383'067           | \$23'442          | \$13'763         | \$7'343           | \$2'556      | \$2'548      | \$2       | \$5         |
| Australia   | 1'330'901         | \$37'129          | \$15'160         | \$7'888           | \$1'882      | \$1'830      | \$24      | \$27        |
| Brazil  | 1'444'733         | \$142'681         | \$56'017         | \$25'908          | \$15'918     | \$14'847     | \$8       | \$1'064     |
| Canada  | 1'643'408         | \$46'056          | \$19'607         | \$10'234          | \$2'944      | \$2'545      | \$30      | \$370       |
| Chile   | 252'940           | \$18'246          | \$4'832          | \$2'216           | \$1'240      | \$1'075      |           | \$165       |
| China   | 14'722'731        | \$883'658         | \$202'518        | \$116'106         | \$27'793     | \$27'789     | \$4       |             |
| Colombia  | 271'347           | \$25'650          | \$14'123         | \$2'666           | \$3'014      | \$3'014      |           |             |
| Egypt   | 363'069           | \$19'954          | \$8'896          | \$2'189           | \$2'133      | \$1'927      | \$172     | \$34        |
| France  | 2'603'004         | \$74'010          | \$26'845         | \$10'435          | \$3'374      | \$2'011      | \$761     | \$602       |
| Germany   | 3'806'060         | \$48'593          | \$29'977         | \$13'707          | \$2'472      | \$1'408      | \$234     | \$831       |
| Honduras  | 23'828            | \$3'065           | \$870            | \$231             | \$304        | \$304        |           |             |
| India   | 2'622'984         | \$418'541         | \$116'841        | \$2'393           | \$11'583     | \$11'447     | \$136     |             |
| Italy   | 1'886'445         | \$49'308          | \$18'249         | \$10'209          | \$2'620      | \$2'154      | \$0       | \$466       |
| Mexico  | 1'076'163         | \$52'171          | \$23'623         | \$10'711          | \$5'652      | \$5'569      | \$32      | \$52        |
| Morocco   | 112'871           | \$13'142          | \$5'745          | \$2'731           | \$1'369      | \$1'200      |           | \$169       |
| Netherlands   | 912'242           | \$17'415          | \$11'376         | \$4'306           | \$1'437      | \$1'348      |           | \$89        |
| New Zealand   | 212'482           | \$17'126          | \$13'956         | \$4'395           | \$391        | \$387        | \$2       | \$2         |
| Nicaragua   | 12'621            | \$1'854           | \$745            | \$286             | \$256        | \$256        |           |             |
| Nigeria   | 432'294           | \$25'510          | \$2'049          | \$824             | \$293        | \$293        |           |             |
| Panama  | 52'938            | \$2'469           | \$1'700          | \$252             | \$1'272      | \$1'272      |           |             |
| Poland  | 594'165           | \$24'0501         | \$13'426         | \$5'350           | \$3'813      | \$2'904      | \$154     | \$755       |
| Russia  | 1'483'498         | \$76'242          | \$38'290         | \$16'840          | \$7'075      | \$7'075      |           |             |
| South Africa  | 301'924           | \$21'677          | \$10'884         | \$4'716           | \$3'659      | \$3'653      | \$1       | \$5         |
| Thailand  | 501'795           | \$29'146          | \$1'636          | \$3'125           | \$3'376      | \$3"130      | \$242     | \$4         |
| Turkey  | 720'101           | \$54'094          | \$19'864         | \$8'394           | \$3'999      | \$3'790      | \$2       | \$208       |
| United Kingdom  | 2'707'744         | \$29'309          | \$18'190         | \$8'343           | \$3'217      | \$2'785      | \$113     | \$319       |
| United States   | 20'936'600        | \$341'538         | \$154'946        | \$73'143          | \$37'156     | \$32'156     | \$94      | 4'906       |
| IPC Countries   | 61'411'955        | \$2'496'079       | \$844'129        | \$354'941         | \$150'797    | \$138'716    | \$2'009   | \$10'072    |
| Sources: 2020 &   | 2018 World Bank G | DP estimates / 20 | 18 FAOSTAT value | of agricultural r | roduction    |              |           |             |

 Table 1. Comparison of GDP and value of agricultural sectors

#### **3.3 Global Cost of Production**

Across the world, the cost of feed is the largest component of broilers/ poultry production. Countries shown in Figure 12 include similar inputs, same year, and common activity (broiler production), allowing for an opportunity to compare countries across regions. In 2017, feed share of total production cost hovered around 64%, ranging from 69% in Brazil to 57% in France. The share of day-old chick cost varied from 14% in Argentina and Brazil to 22% in the United Kingdom. The share of labor cost relative to total cost averaged 3% across these regions.

Figure 13 includes countries around the world with limited cost of production information poultry (except for the South Africa). As the figure indicates the share of feed cost relative to total cost of poultry production for these countries largest fraction represents the despite differences in years of data presented. In China the cost of feed for broilers production in 2018 had a share of total cost equal to 75%, while for Turkey in 2021, 80% of total cost of poultry production was due to feed cost. In Morocco (2012), India (2016), and Panama (2020) the cost of feed represented 70% of total production cost. For South Africa (2021), the cost of feed accounted for 68% of production cost.

#### **3.4 Global Poultry Trade**





Figure 12. Feed, day-old chicks, and labor share of broiler production cost, selected IPC members



Figure 13. Feed & other production costs share of production costs, selected IPC members

| TOP 20 POULTRY EXF        |                        |                   |                      |             |              |
|---------------------------|------------------------|-------------------|----------------------|-------------|--------------|
|                           |                        | Exports           |                      |             | Imports      |
| Country                   | Export qty             | Export value      | Country              | Import qty  | Import value |
|                           | Metric Tons            | \$1,000 USD       |                      | Metric Tons | \$1,000 USD  |
| Brazil                    | 4'036'458              | \$5'817'681       | China                | 1'553'941   | \$3'501'247  |
| USA                       | 3'865'985              | \$4'106'311       | Japan                | 1'012'428   | \$3'369'020  |
| Thailand                  | 896'927                | \$3'356'696       | United Kingdom       | 768'903     | \$2'678'802  |
| Poland                    | 1'636'962              | \$3'140'133       | Germany              | 801'853     | \$2'117'439  |
| Netherlands               | 1'565'569              | \$3'081'569       | France               | 515'177     | \$1'543'701  |
| Germany                   | 612'331                | \$1'705'424       | Netherlands          | 690'112     | \$1'460'227  |
| China                     | 428'401                | \$1'470'360       | China, Hong Kong SAR | 563'797     | \$1'155'799  |
| Belgium                   | 534'062                | \$1'124'369       | United Arab Emirates | 496'303     | \$750'825    |
| France                    | 380'774                | \$1'032'592       | Belgium              | 36'353      | \$687'241    |
| Hungary                   | 46'204                 | \$634'058         | United States        | 129'691     | \$573'785    |
| Turkey                    | 560'011                | \$588'374         | Ireland              | 117'140     | \$435'020    |
| Ukraine                   | 435'561                | \$563'940         | Canada               | 194'998     | \$426'828    |
| United Kingdom            | 481'961                | \$516'682         | Rep. of Korea        | 171'475     | \$406'014    |
| <b>Russian Federation</b> | 310'165                | \$451'566         | Singapore            | 195'078     | \$397'475    |
| Italy                     | 179'867                | \$435'066         | Spain                | 153'818     | \$391'190    |
| Canada                    | 155'311                | \$428'941         | Austria              | 121'029     | \$377'912    |
| Spain                     | 224'860                | \$428'932         | Denmark              | 118'140     | \$351'497    |
| Chile                     | 172'879                | \$382'373         | Philippines          | 342'646     | \$336'202    |
| Denmark                   | 64'666                 | \$378'537         | Russian Federation   | 234'654     | \$335'762    |
| Austria                   | 89'085                 | \$322'187         | Kuwait               | 141'816     | \$315'266    |
| Source: UNFAO Comtrad     | e for 2020. Codes 0207 | 7. 160231. 160232 |                      |             |              |

Table 2. Top 20 poultry exporters & importers

| IPC POULTRY EXPORTER      | S & IMPORTERS |              |            |              |               |                 |
|---------------------------|---------------|--------------|------------|--------------|---------------|-----------------|
| Country                   | Export qty    | Export value | Import qty | Import value | Re-export qty | Re-export value |
|                           | Qty (MT)      | \$1,000 USD  | Qty (MT)   | \$1,000 USD  | Qty (MT)      | \$1,000 USD     |
| Argentina                 | 181'968       | \$254'009    | 6'225      | \$7'890      |               | \$0             |
| Australia                 | 39'491        | \$58'383     | 1'639      | \$7'370      |               | \$O             |
| Brazil                    | 4'036'458     | \$5'817'681  | 5'171      | \$10'378     |               | \$O             |
| Canada                    | 155'311       | \$428'941    | 194'998    | \$426'828    | 128           | \$119           |
| Chile                     | 172'879       | \$382'373    | 6'685      | \$171'746    |               | \$0             |
| China                     | 428'401       | \$1'470'360  | 1'553'941  | \$3'501'247  |               | \$O             |
| China Hong Kong SAR       | 90'696        | \$149'121    | 563'797    | \$1'155'799  |               | \$0             |
| Colombia                  | 5             | \$23         | 95'875     | \$97'857     |               | \$0             |
| Egypt                     | 557           | \$2'621      | 42'819     | \$67'010     |               | \$O             |
| France                    | 380'774       | \$1'032'592  | 515'177    | \$1'543'701  |               | \$O             |
| Germany                   | 612'331       | \$1'705'424  | 801'853    | \$2'117'439  |               | \$O             |
| Honduras                  | 1'433         | \$2'161      | 19'970     | \$36'091     |               | \$O             |
| India                     | 3'662         | \$5'367      | 203        | \$262        |               | \$0             |
| Italy                     | 179'867       | \$435'066    | 83'285     | \$208'401    |               | \$O             |
| Mexico                    | 3'921         | \$16'232     | 972'925    | \$1'057'276  |               | \$0             |
| Morocco                   | 991           | \$1'234      | 4'625      | \$12'883     |               | \$0             |
| Netherlands               | 1'565'569     | \$3'081'569  | 690'112    | \$1'460'227  |               | \$O             |
| New Zealand               | 12'142        | \$26'485     | 583        | \$2'775      |               | \$O             |
| Nicaragua                 | 99            | \$79         | 9'511      | \$13'613     |               | \$O             |
| Nigeria                   | 597           | \$794        | 629        | \$421        |               | \$0             |
| Panama                    | 23            | \$17         | 29'082     | \$22'822     |               | \$O             |
| Poland                    | 1'636'962     | \$3'140'133  | 75'861     | \$140'835    |               | \$O             |
| <b>Russian Federation</b> | 310'165       | \$451'566    | 234'654    | \$335'762    |               | \$O             |
| South Africa              | 54'317        | \$77'158     | 485'426    | \$314'528    | 284           | \$358           |
| Thailand                  | 896'927       | \$3'356'696  | 1'963      | \$7'105      |               | \$O             |
| Turkey                    | 560'011       | \$588'374    | 44'589     | \$37'421     |               | \$0             |
| UK                        | 481'961       | \$516'682    | 768'903    | \$2'678'802  |               | \$O             |
| USA                       | 3'865'985     | \$4'106'311  | 129'691    | \$573'785    | 36949         | \$35'828        |
| IPC members               | 15'673'503    | \$27'107'453 | 7'340'195  | \$16'010'273 | 37'361        | \$36'305        |
| World                     | 18'210'000    | \$32'830'000 | 18'210'000 | \$32'830'00  |               |                 |

Sources: UNFAO Comtrade for 2020, Codes: 0207, 160231, 160232

Table 3. IPC poultry exporters & importers

A map of the major trade flows (poultry flows shown indicate poultry global trade represents 19% of meat global trade) is in Figure 14.



Figure 14. Major global poultry trade flows, 2020

A note about trade data for all Countries:

Data for all export and import figures (for example, Table 3) for all countries included in this report was sourced from the UN Comtrade Database. The Harmonized System (HS) commodity codes included in these figures were code numbers: 0207<sup>4</sup>, 160231<sup>5</sup>, and 160232<sup>6</sup>. In contrast, all the trade flow charts (for example, Figure 14) for all countries, which were sourced from Resource Trade Earth, use a different description of commodities<sup>7</sup>.

<sup>4</sup> HS code 0207= Meat and edible offal of poultry; of the poultry of heading no. 0105, (i.e., fowls of the species Gallus domesticus), fresh, chilled or frozen.

<sup>5</sup> HS code 160231= Meat preparations; of turkeys, prepared or preserved meat or meat offal (excluding livers and homogenised preparations).

<sup>6</sup> HS code 160232= Meat preparations; of the poultry of heading no. 0105, (i.e., of fowls of the species Gallus domesticus).

<sup>7</sup> Commodities used in the trade flows graphics, which were sourced from "Resource Trade Earth" include the following: Ducks geese, not cut fresh; ducks geese, not cut frozen; fatty livers of ducks, geese or guinea fowls, fresh or chilled; fowls cuts & offal, fresh; fowls cuts & offal, frozen; fowls, domestic, not cut in pieces, fresh or chilled; fowls, domestic, not cut in pieces, fresh or chilled; fowls, domestic, not cut in pieces, frozen; poultry cuts & offal, frozen; turkey cuts & offal, frozen; turkey cuts & offal, frozen; turkey, not cut, fresh; turkeys, not cut, frozen.

## 4. Regional and Country Data



Figure 15. World poultry stocks by region

Of the 26.7 billion<sup>8</sup> chickens, ducks, and turkeys on farms around the world, Asia has 16.4 billion of them, South America 2.8 billion, Europe 2.5 billion, Africa 2.1 billion, North America 2.0 billion, Central America 782 million, and Oceania 142 million (Figure 15).



Figure 16. World chicken stocks by region

Of the 25.3 billion chickens on farms around the world, Asia has 15.4 billion of them, South America 2.7 billion, Europe 2.3 billion, Africa 2.1 billion, North America 1.8 billion, Central America 769 million, and Oceania 139 million (Figure 16).





Of the 325 million turkeys on farms, Asia has 15.6 million of them, South America 67 million, Europe 103 million, Africa 29.8 million, North America 104.8 million, Central America 3.8 million, and Oceania 1.2 million (Figure 17).



Figure 18. World duck stocks by region

Of the 1.2 billion ducks on farms, Asia has 1.0 billion of them, South America 9.3 million, Europe 75 million, Africa 18.3 million, North America 9.2 million, Central America 8.6 million, and Oceania 1.6 million (Figure 18).

<sup>8</sup> This number is based on the FAOSTAT data for stocks except for U.S. chickens and turkeys for which the USDA 2017 Census of Agriculture stocks numbers were adjusted to 2020 levels. The FAOSTAT stocks numbers for U.S. chickens and turkeys are production numbers and overstate U.S., North American and world stocks chicken levels by 7.544 billion birds and turkey stocks by 128.697 million birds.



Figure 19. World poultry meat production by region

Of the 130.5 million metric tons of poultry meat produced, Asia produces 37%, Europe 17%, North America 19%, South America 17%, Africa 5%, Central America 4%, and Oceania 1% (Figure 19).



Figure 21. World turkey meat production by region

Of the 6 million metric tons of turkey meat produced, Asia produces 3%, Europe 36%, North America 46%, South America 12%, Africa 3%, and Central American and Oceania less than 1% (Figure 21).



Figure 20. World chicken meat production by region

Of the 119.5 million metric tons of chicken meat produced, Asia produces 37%, Europe 17%, North America 18%, South America 18%, Africa 5%, Central America 4%, and Oceania 1% (Figure 20).





Of the 5.0 million metric tons of duck meat produced, Asia produces 86%, Europe 9%, North America 1%, South America 1%, Africa 3%, and Oceania less than 1% (Figure 22).



As shown in Figure 23, world GDP was \$85.5 trillion. The gross value of production of the ag sector was \$3.5 trillion, with crops accounting for \$2.3 trillion, red meat \$984 billion, and poultry \$221 billion.

Figure 23. World GDP value of production by sector



Asia produces 42% of the\$221.3 billion in global gross value of poultry production. Asia is followed by North America with 18%, Europe with 16%, South America with 13%, Central America with 4%, and Oceania with 1% (Figure 24).

Figure 24. Global gross value of poultry production

### 4.1 North America

In the FAO data, North America is defined as Canada and the United States.

#### 4.1.1 Regional Demographics and Poultry Stocks

The North American poultry industry has an estimated 73,335 farms. Duck farms account for a significant share of the total poultry farms but it should be noted that the average duck farm is much smaller than the typical commercial broiler or turkey farm (Figure 25).

The North American broiler industry has 46,824 farms with 22,601 (48.3%) of those being commercial farms and 24,222 (51.7%) being household or micro-producer farms. North American broiler farms have stocks of 1.72 billion chickens with 93.2% being on commercial farms and 6.8% being on household or micro-producer farms.

The average size of commercial broiler farms is 76,292 head. The average size of the household or micro-producer farms is 148 head.

There are 12,667 duck farms in North America with an inventory of 9.185 million head. The average size duck farm is 725 head.

There are 13,844 turkey farms in North America with 104.8 million head of inventory. The average turkey farm has an inventory of 7,567 head.

In 2020, there were 1.96 billion stocks of poultry. Chicken stocks were 1.84 billion birds and there were 9.2 million ducks and 104.8 million turkeys.



*Figure 25. North America number of poultry farms by type* 





Overall poultry stocks in North America have increased by 7.8% since 2010. Chicken stocks are up 8.4%, duck stocks up 12%, and turkey stocks down 2.4% (Figure 26).

#### 4.1.2 Regional Economics

North American GDP in 2020 was \$22.3 trillion with 98% of that coming from non-ag sectors. The value of agricultural production in 2018 was \$387.6 billion with \$213 billion coming from the crops sector, \$134.4 billion from red meat production, and \$40.1 billion from the poultry sector. Within the poultry sector, the value of chicken production was \$34.7 billion, turkey value of production was \$5.3 billion and duck production was \$123.7 million (Figure 27).



Figure 27. North American GDP & value of production by sector

#### 4.1.3 Regional Poultry Production Volume and Value

Poultry production is increasing in North America. North American poultry production was 24.6 million metric tons with 89% being chicken meat, 11% turkey meat, and less than 1% duck meat (Figure 28).



Figure 28. North America poultry meat production

North American poultry production in 2020 was valued at \$40.1 billion with 87% due to chicken production, 13% due to turkey production and less than 0.5% due to duck production (Figure 29).



Figure 29. North America value of poultry production

#### 4.1.4 Regional Cost of Production

As indicated in Figure 30, in the USA feed for broiler production is the largest component of total production cost at 68%, followed by day-old chicks at 14%.





For Ontario, Canada, data was from Chicken Farmers of Ontario. This data shown in the figure below, the cost of feed represented 45.4% of total costs during April 2021 to March 2022. The second largest input in poultry production was day-old chicks with 22.8% of total costs. As indicated by USDA, Ontario is the largest chicken producing province in Canada, accounting for about one-third of the market, and therefore Ontario live bird prices are the basis for the calculation of prices in other provinces.

### 4.1.5 United States

#### 4.1.5.1 Demographics

The USA had an estimated 51,349 poultry farms in 2020. Commercial chicken farms accounted for the largest share of poultry farms with 30% or 15,348 of the total poultry farms. Duck farms accounted for the fewest number of poultry farms with a share of 14% or 7,444 duck farms. An estimated 11,154 turkey farms were 22% of the total poultry farms for the USA (see Figure 31). On average, a commercial chicken farm in the USA contained 1,677,479 chickens. USA turkey farms had an average of 8,544 turkeys on the farm. A microproducer chicken farm typically had about 12 chickens. On the average duck farm there were 1,033 ducks.

Poultry production and consumption are both rising in the USA. Poultry production in 2021 totaled 22.6 million metric tons (Figure 32). Poultry consumption in 2021 was 19.2 million metric tons. Poultry production has increased 17% since 2010. Consumption of poultry in the USA has increased 20%.

The USA has the world's largest poultry production and poultry slaughter production by volume. In 2020, there were nearly 1.7 billion chickens, 95.3 million turkeys, and 7.7 million ducks reported in stocks (see Table 4).



Figure 31. United States number of poultry farms



Figure 32. United State poultry production & consumption

Nearly 9.6 billion chicken, ducks, and turkeys were slaughtered in 2020. Chickens accounted for 97% of poultry slaughter. Turkeys represented 2% of poultry slaughter, and ducks represented less than 1% of poultry slaughter.

| UNITED STATES POULTRY STOCKS, S                     |                         |                       |                                  |           |
|---|-------------------------|-----------------------|----------------------------------|-----------|
| 1,000 head  | Chickens                | Ducks                 | Turkeys                          | Total     |
| Stocks  | 1'677'479               | 7'689                 | 95'303                           | 1'780'471 |
| Producing Animals/Slaughtered                       | 9'346'660               | 22'484                | 223'003                          | 9'592'147 |
| Production (1,000 MT)                               | 20'490                  | 52                    | 2'607                            | 23'150    |
| Sources: USDA 2017 COA Adjusted to 2020 by DIS (chi | chan and turkou stocks) | · EAO 2020 Ducks Stor | lice EAO 2020 Slaughter and Proc | duction   |

Table 4. IPC poultry exporters & importers

Poultry production in the USA included 205 million metric tons of chickens, 2.6 million metric tons of turkey, and 52,000 metric tons of ducks. Since 2010, chicken stocks increased 9%. Turkey stocks decreased 3% since 2010.

# **4.1.5.2 GDP and Value of Production**

The GDP in the USA was valued at \$20.9 trillion in 2020. An estimated 98% of the total GDP was derived non-agricultural from sectors. Agricultural production represented 2% of the total GDP with crop production valued at \$186.6 billion and 1% of the total GDP. The share of red meat production was valued at \$73.1 billion. Chicken meat production was valued at \$32 billion, duck production at \$93 million, and turkey production at \$4.9 billion. Other livestock products were valued at \$44.6 billion (see Figure 33).



Figure 33. United States GDP & value of production sector

The combined (direct and indirect) effects of agricultural production in the USA are estimated to be \$765.1 billion. Of this amount, \$95 billion comes from the poultry industry, with \$82.2 billion from chicken meat production, \$239 million from duck production, and \$12.6 billion from turkey production. Agriculture pays a net value of \$2.3 billion in taxes, \$266 million of which is estimated to be from the poultry industry (Table 5).

| ECONOMIC EFFECTS - UNITED STA  |                |                |                |              |  |  |
|--|----------------|----------------|----------------|--------------|--|--|
|  | Direct         | Indirect       | Total          | Taxes paid*  |  |  |
| All agriculture  | \$ 341'538'431 | \$ 423'538'006 | \$ 765'076'437 | \$ 2'282'463 |  |  |
| Livestock  | \$ 154'945'589 | \$ 192'146'300 | \$ 347'091'889 | \$ 1'035'484 |  |  |
| Poultry  | \$ 37'155'836  | \$ 57'814'481  | \$ 94'970'317  | \$ 265'670   |  |  |
| Chicken  | \$ 32'156'359  | \$ 50'035'295  | \$ 82'191'654  | \$ 229'923   |  |  |
| Duck   | \$ 93'505      | \$ 145'494     | \$ 238'999     | \$ 669       |  |  |
| Turkey   | \$ 4'905'972   | \$ 7'633'692   | \$ 12'539'664  | \$ 35'079    |  |  |
| Source: FAOSTAT, OECD Input-Output Tables. *taxes is equal to taxes on production net of subsidies |                |                |                |              |  |  |

Table 5. Economic effects - United States of America

### 4.1.5.3 Labor

In the US, agricultural labor<sup>9</sup> is estimated to be 2.4 million people and makes up approximately 1.4% of the workforce (Table 6). The USA workforce is 46% female and 54% male.

The agricultural labor force is 27% female and 73% male. There are an estimated 14,099 people directly involved in poultry production with 7,386 involved with chicken production, 5,015 doing turkey production and 1,698 involved with production of other poultry products such as duck.

<sup>9</sup> U.S. labor data from U.S. Bureau of Labor Statistics (BLS).

In 2020, an estimated 529,337 people worked in USA meat processing with 55% in red meat processing and an estimated 240,007 working in poultry processing. Wages earned in the USA meat processing sector totaled \$25.1 billion. Livestock processing accounted 55% of the labor from meat processing and \$15.6 billion in total wages. An estimated 240,007 people worked in poultry processing. Wages earned from poultry processing totaled \$9.5 million.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS- UNITED STATES                            |             |              |            |  |  |  |
|--|-------------|--------------|------------|--|--|--|
|  | Total       | Female       | Male       |  |  |  |
| Total Country Labor  | 163'738'061 | 75'803'373   | 87'934'688 |  |  |  |
| Non-Agricultural Labor   | 161'343'601 | 75'161'642   | 86'181'959 |  |  |  |
| Agricultural Labor   | 2'394'460   | 641'731      | 1'752'729  |  |  |  |
| Total Non-Poultry Agricultural Labor   | 2'380'361   |              |            |  |  |  |
| Total Poultry Labor  | 14'099      |              |            |  |  |  |
| Chicken Labor  | 7'386       |              |            |  |  |  |
| Turkey Labor   | 5'015       |              |            |  |  |  |
| Other Poultry Labor  | 1'698       |              |            |  |  |  |
|  |             | Wages (\$1,0 | )00 USD)   |  |  |  |
| Total Meat Processing Labor  | 529'337     | \$25'07      | 1'913      |  |  |  |
| Livestock Processing Labor   | 289'330     | \$15'578     | 030        |  |  |  |
| Poultry Processing Labor   | 240'007     | \$9'493      | '883       |  |  |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |             |              |            |  |  |  |

Table 6. Agricultural labor force characteristics - United States of America

#### **4.1.5.4 Cost of Production**

By far the largest component of the cost of broiler production in the USA is feed at 68% of total costs. Three components together, day-old chicks, other variables cost (heating, electricity, litter, and animal health) and housing, make up 28% of total costs. Labor and general costs (i.e., insurance, booking, consultancy, telephone, and transport) represent the lowest share of total cost (see Figure 34).



*Figure 34. United States broiler production cost structure* 

#### 4.1.5.5 Trade

The USA is the largest broiler producer in the world and the second largest exporter of broiler meat, after Brazil. In 2020 the USA exported about 3.866 million MT of poultry meat valued at \$4.106 billion. The top destinations for USA poultry meat were Mexico (\$907.7 million), China (\$766.2), and Canada (\$339.5 million) (see Figure 35 and Figure 36).



Figure 35. United States top 10 poultry exports, trade value



*Figure 36. United States poultry export flows* 



The USA imported 129,691 MT of poultry meat valued at \$573.8 million in 2020. Canada (\$350.7 million) and Chile (\$190.5 million) were the main suppliers of poultry meat to the USA (see Figure 37 and Figure 38).

Figure 37. United States top 10 poultry imports, trade value



*Figure 38. United States poultry import flows* 

#### 4.1.6 Canada

#### 4.1.6.1 Demographics

Of Canada's 15,162 poultry farms, 34%, or 5,223 were small duck farms or other poultry farms and 34% are small, household chicken farms. The 2,175commercial chicken farms comprised 14% of poultry operations in Canada and the 2,690 turkey farms (294 commercial turkey farms) account for 18% of Canada's poultry farms. Even though duck and household chicken farms make up 52% of poultry farms in Canada, they only account for 2.5% of total poultry inventory in Canada (Figure 39). Duck farms in Canada had on average, 286 ducks. Turkey farms had an average 2,120 turkeys. A commercial chicken operation, in Canada, had 47,310 chickens compared to 595 chickens on the average household or microproducer chicken operation.

Poultry production and consumption are both rising in Canada. Poultry production in 2021 totaled 1.46 million metric tons. Poultry consumption in 2021 was 1.51 million metric tons. Poultry production has increased 21% since 2010. Consumption of poultry in Canada has increased 24% (Figure 40).

Canada's poultry inventory consisted of 178.9 million head in 2020 with 96% of inventory being chickens, 3% being turkeys, and less than 1% being ducks (see Table 7). Since 2010, Canada's chicken stocks increased 4%, duck stocks increased 15%, and turkey stocks increased 6% since 2010.









| CANADA STOCKS, SLAUGHTER, AND |          |       |         |         |
|-------------------------------|----------|-------|---------|---------|
| 1,000 head                    | Chickens | Ducks | Turkeys | Total   |
| Stocks                        | 171'718  | 1'496 | 5'703   | 178'917 |
| Producing Animals/Slaughtered | 754'946  | 4'484 | 18'732  | 778'162 |
| Production (1,000 MT)         | 1'305    | 9     | 158     | 1'472   |
|                               |          |       |         |         |

Sources: FAO, 2020

Table 7. Canada poultry stocks, slaughter & production



 $rac{5}{2}$  global macroeconomic indicators for the poultry meat industry
Canada's poultry slaughter totaled 778.2 million head in 2020. Approximately, 97% or 754.9 million head of poultry slaughter was chickens. More than 18.7 million head were turkeys, which accounted for 2% of Canada's poultry slaughter. Ducks were the smallest share of poultry slaughter with 4.5 million head and less than 1% of total poultry slaughter. Turkey production Canada's chicken slaughter increased 18%, duck slaughter increased 21%, and turkey slaughter decreased 9% from 2010.

Canada's poultry production in 2020 included 1.3 million metric tons of chicken, 158,000 metric tons of turkey, and 9,000 metric tons of duck. Since 2010, chicken production increased 24%, duck production increased 20%, and turkey production increased 82%.

## 4.1.6.2 GDP and Value of Production

For Canada, the GDP was an estimated \$1.6 trillion in 2020 (Figure 41). The agricultural production of crops and red meat contributed a combined 3% of the total. Crop production was estimated at \$26.4 billion and was 2% of the total GDP. Red meat production was nearly \$10.2 billion or 1% of the total. Other livestock products were valued at \$6.4 billion. Although chicken production contributed less than 1% to the total GDP, it was valued at \$2.5 billion. Turkey and duck production followed with \$369.6 million and \$30.2 million, respectively.



Figure 41. Canada GPD & value of production by sector

The combined (direct and indirect) effects of agricultural production in Canada are estimated to be \$99.9 billion. Of this amount, \$7.3 billion comes from the poultry industry, with \$6.3 billion from chicken meat production, \$75 million from duck production, and \$915 million from turkey production. Agriculture pays a net value of \$617 million in taxes, \$33 million of which is estimated to be from the poultry industry (Table 8).

| ECONOMIC EFFECTS - CANADA (\$1,000 USD)  |              |              |              |             |
|--|--------------|--------------|--------------|-------------|
|  | Direct       | Indirect     | Total        | Taxes paid* |
| All agriculture  | \$46'056'449 | \$53'789'470 | \$99'854'919 | \$617'418   |
| Livestock  | \$19'607'410 | \$22'903'387 | \$42'510'797 | \$262'851   |
| Poultry  | \$2'944'368  | \$4'342'943  | \$7'287'311  | \$32'622    |
| Chicken  | \$2'544'585  | \$3'753'263  | \$6'297'848  | \$28'193    |
| Duck   | \$30'180     | \$44'516     | \$74'696     | \$334       |
| Turkey   | \$369'603    | \$545'164    | \$914'767    | \$4'095     |
| Source: FAOSTAT, OECD Input-Output Tables. *taxes is equal to taxes on production net of subsidies |              |              |              |             |

Table 8. Economic effects - Canada

### 4.1.6.3 Labor

The Canadian labor force numbered about 20.5 million people with an estimated 47% being female and 53 % being male.

The agricultural production labor force is estimated to be 285,582 people with 31% being female and 69% being male. Poultry production labor is estimated to be 20,750 people with 2,304 involved with chicken production, 188 in turkey production, and 18,257 reported to be working with other poultry production.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - CANADA                             |            |            |                |  |
|---|------------|------------|----------------|--|
|   | Total      | Female     | Male           |  |
| Total Country Labor   | 20'492'683 | 9'650'490  | 10'842'193     |  |
| Non-Agricultural Labor  | 20'207'101 | 9'562'814  | 10'644'287     |  |
| Agricultural Labor  | 285'582    | 87'676     | 197'906        |  |
| Total Non-Poultry Agricultural Labor  | 264'832    |            |                |  |
| Total Poultry Labor   | 20'750     |            |                |  |
| Chicken Labor   | 2'304      |            |                |  |
| Turkey Labor  | 188        |            |                |  |
| Other Poultry Labor   | 18'257     |            |                |  |
|   |            | Wages (\$* | 1,000 USD)     |  |
| Total Meat Processing Labor   | 68'469     | \$2'42     | 20'832         |  |
| Livestock Processing Labor  | 53'171     | \$1'87     | <b>'</b> 9'948 |  |
| Poultry Processing Labor  | 15'298     | \$54       | 0'884          |  |
| Source: ILO, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |            |            |                |  |

Table 9. Agricultural labor force characteristic - Canada

The meat processing sector in Canada employed 68,469 people in 2020 (Table 9). Total wages earned from meat processing were more than \$2.4 billion. Approximately, 78% or 53,171 meat processing jobs were from livestock meat processing. Wages earned from livestock meat processing was \$1.9 billion. An estimated 15,298 people worked in poultry processing. Wages earned from poultry processing totaled \$540.9 million.

#### 4.1.6.4 Cost of Production

Data from the Chicken Farmers of Ontario provides some insight into relative cost of production in Canada. Data from quota periods A-169 through A-174 shows that feed cost averages 45.4% of total cost of production with the cost of day-old chicks making up 22.8% of cost, operational and capital costs being 29.8% of cost of production, other costs being 2%. These cost of production factors are used to calculate the Farm-Gate Minimum Live Price in Ontario (Figure 42).

## 4.1.6.5 Trade

The USA was the largest market for Canada's poultry meat, which were valued at \$350.6 million in 2020. Canada also exported \$14.3 million and \$5.3 million worth of poultry meat to the Philippines and South Africa, respectively. Note that Canada exported 20,404 MT of poultry products valued at \$16.8 million, which were shipped to "Other" Asia countries, which were not specified in the data (Figure 43 and Figure 44).



Figure 42. Ontario broiler production cost structure



Figure 43. Canada top 10 poultry exports, trade value



GLOBAL MACROECONOMIC INDICATORS FOR THE POULTRY MEAT INDUSTRY



Figure 44. Canada poultry export flows



Canada's main supplier of poultry meat was the USA at \$331.5 million, equivalent to 166,129 MT in 2020. Thailand shipped to Canada 7,590 MT of poultry products (meat preparations) valued at \$33. 2 million. Canada also imported 10,657 MT from Brazil and 3,628 MT from Hungary, which consisted mostly of fresh poultry. Imports from those two countries were valued at \$27.9 million and \$9.5 million, respectively (see Figure 45 and Figure 46).





*Figure 46. Canada poultry import flows* 

## **4.2 Central America**

## 4.2.1 Regional Demographics and Poultry Stocks

The Central American broiler industry has 2.1 million farms with 21,792 (1.1%) of those being commercial farms and 1.97 million (98.9%) being household or micro-producer farms. Central American broiler farms have stocks of 769 million chickens with 85.7% being on commercial farms and 14.3% being on household or micro-producer farms (Figure 47). The average size of commercial broiler farms is 30,270 head. The average size of the household or micro-producer farms is 56 head. There are 98,607 duck farms in Central America with an inventory of 8.6 million head. The average size duck farm is 88 head. There are 10,411 turkey farms in Central America with 3.8 million head of inventory. The average turkey farm has an inventory of 368 head.

Overall poultry stocks in Central America have steadily increased since 2010. Chicken stocks are up 16.7%, duck stocks are up 2.6%, and turkey stocks are down 6.5% (Figure 48).







Figure 48. Central America poultry stocks

## 4.2.2 Regional Economics

The total GDP for Central America was valued at \$1.48 trillion in 2020. An estimated 4 percent of the total was derived from agricultural production sectors such as crops, red meat, and poultry production. Crop production was the largest of the agricultural production sectors and was valued at \$35.5 billion. Red meat production was the second largest agricultural production sector, contributing nearly \$20.5 billion (Figure 49).



Figure 49. Central America GDP & value of production by sector

## 4.2.3 Regional Poultry Production Volume and Value

In 2020, Central American poultry production totaled 4.7 million metric tons (Figure 50). Chicken meat production represented 99% (4.7 million metric tons) of poultry production in Central America. Duck meat production represented 1% (21,141 metric tons) and turkey meat production accounted for less than 1% (17,305 metric tons) of poultry production (21,141 metric tons).

Central America poultry production has increased 16.4% since 2010. Central American poultry production in 2020 totaled \$7.9 billion with 99% due to chicken production, 1% due to turkey production and less than 0.5% due to duck production. Central America produced 4.7 million metric tons of poultry meat in 2020 with 99% being chicken meat, 1% being duck meat and less than 0.5% being turkey meat (Figure 51).



Figure 50. Central America poultry meat production



Figure 51. Central America value of poultry production

# **4.2.4 Regional Cost of Production**

Within the Central American region (for the countries with available data), feed cost share of total production ranges from 66% in Mexico to 70% in Panama (see Figure 52).



Figure 52. Feed share of poultry production costs: Central America

### 4.2.5 Honduras

#### 4.2.5.1 Demographics

Household or micro-producer chicken farms are the most common poultry farm in Honduras with 99.95% or 594,282 of the total 594,551 poultry farms. The remaining 0.05% or 269 poultry farms were commercial chicken farms (see Figure 53). The average household chicken farm in Honduras had 52 chickens, while the average commercial chicken operation contained an average 61,969 chickens.

Poultry production and consumption in Honduras is increasing. Poultry production reached 212,596 metric tons in 2019 and has increased 58% since 2010. Poultry consumption reached 227,998 metric tons in 2019 and has increased 58% since 2010 (Figure 54).

In 2020, stocks of chicken in Honduras totaled 47.6 million head (see Table 10). Since 2010, chicken stocks in Honduras have increased 10%. Poultry slaughter totaled 99.4 million head and were comprised of chickens only. Chicken slaughter increased 34% compared to 2010. Total chicken production amounted to 194,000 metric tons. Since 2010, chicken production increased 44%.



Figure 53. Honduras number of poultry farms



Figure 54. Honduras poultry production & consumption

| HONDURAS POULTRY STOCKS, SLAUGHTER, AND PRODUCTION |          |       |         |        |
|--|----------|-------|---------|--------|
| 1,000 head   | Chickens | Ducks | Turkeys | Total  |
| Stocks   | 47'601   | -     | -       | 47'601 |
| Producing Animals/Slaughtered                      | 99'365   | -     | -       | 99'365 |
| Production (1,000 MT)                              | 194      | -     | -       | 194    |
| Sources: FAO, 2020                                 |          |       |         |        |

Table 10. Honduras poultry stocks, slaughter & production

## 4.2.5.2 GDP and Value of Production

The GDP in Honduras was valued at \$23.8 billion in 2020. Approximately, 13% of GDP was derived from the agricultural production sector. Crop production was 9% or \$2.2 billion. Red meat production was the third largest in the sector with 1% or \$230.7 million of the total. Other livestock products account for about 2% of GDP being valued at \$336 million About 1% of the total GDP was contributed by the production of chicken with a value of \$303.6 million. Data was not available for duck or turkey production in Honduras (Figure 55).



Figure 55. Honduras GDP & value of production by sector

The combined (direct and indirect) effects of agricultural production in Honduras are estimated to be \$4.5 billion. Of this amount, \$657 million comes from chicken meat production. Agriculture pays a net value of \$24 million in taxes, \$2 million of which is estimated to be from chicken meat production. Data was not available for duck or turkey production in Honduras (Table 11).

| ECONOMIC EFFECTS - HONDURAS                   |                             |                          |             |             |
|---|-----------------------------|--------------------------|-------------|-------------|
|   | Direct                      | Indirect                 | Total       | Taxes paid* |
| All agriculture                               | \$3'064'705                 | \$1'462'439              | \$4'527'144 | \$23'678    |
| Livestock                                     | \$870'318                   | \$689'752                | \$1'560'070 | \$6'724     |
| Poultry                                       | \$303'595                   | \$353'408                | \$657'003   | \$2'346     |
| Chicken                                       | \$303'595                   | \$353'408                | \$657'003   | \$2'346     |
| Duck  | -                           | -                        | -           | -           |
| Turkey  | -                           | -                        | -           | -           |
| Source: FAOSTAT Central Rank of Honduras *tax | es is equal to taxes on pro | duction net of subsidies |             |             |

Source: FAOSTAT, Central Bank of Honduras. \*taxes is equal to taxes on production net of

Table 11. Economic effects - Honduras

## 4.2.5.3 Labor

The labor force total in Honduras was reported at 4.1 million in 2020, according to the World Bank.

Based on data from the International Labour Organization (ILO), an estimated 1.0 million people comprised the total agricultural labor sector. Of that total, 109,665 were employed in the poultry industry (see Table 12).

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - HONDURAS |  |           |            |  |  |
|---|--|-----------|------------|--|--|
|   | Total  | Female    | Male       |  |  |
| Total Country Labor                                 | 4'089'919  | 1'436'033 | 2'653'886  |  |  |
| Non-Agricultural Labor                              | 3'045'615  | 1'301'947 | 1'743'667  |  |  |
| Agricultural Labor                                  | 1'044'304  | 134'086   | 910'219    |  |  |
| Total Non-Poultry Agricultural Labor                | 934'639  |           |            |  |  |
| Total Poultry Labor                                 | 109'665  |           |            |  |  |
| Chicken Labor                                       | 109'665  |           |            |  |  |
| Turkey Labor  |  |           |            |  |  |
| Other Poultry Labor                                 |  |           |            |  |  |
|   |  | Wages (\$ | 1,000 USD) |  |  |
| Total Meat Processing Labor                         | -  |           | -          |  |  |
| Livestock Processing Labor                          | -  |           | -          |  |  |
| Poultry Processing Labor                            | -  |           | -          |  |  |
| Source: ILO 2020, World Bank 2020, UNIDO Dat        | Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |           |            |  |  |

Table 12. Agricultural labor force characteristics - Honduras

### 4.2.5.4 Trade

El Salvador was the largest market for Honduras' poultry exports in 2019. Honduras exported more than \$1.7 million in poultry products to El Salvador. The second largest market for Honduran poultry exports was Guatemala which imported \$69,000 in poultry exports. The USA also ranked in the top 3 destinations for poultry exports from Honduras in 2019 with \$60,000 of Honduran Neighboring poultry exports. country, Costa Rica was the fourth largest market for poultry exports from Honduras (see Figure 56 and Figure 57).



Figure 56. Honduras top 10 poultry exports, trade value



Figure 57. Honduras poultry export flows

The USA was the largest supplier of poultry products to Honduras with nearly \$29.5 million in 2019. Honduras' imports from Guatemala were the second largest in value (\$3.9 million). Poultry imports from Costa Rica totaled \$2.0 million (Figure 58 & Figure 59).



Figure 58. Honduras top 10 poultry imports, trade value



Figure 59. Honduras poultry import flows

#### 4.2.6 Mexico

#### 4.2.6.1 Demographics

Of the 370,730 poultry farms in Mexico, approximately 95% or 353.520 were household or microproducer chicken farms. There were 11,082 commercial chicken farms which comprised 3% of the total poultry farms in Mexico. About 4,069 turkey farms made up 1% share of the total poultry farms. The remaining 1% or 2,059 poultry farms were duck farms (see Figure 60). The average farm sizes by number of animals were as follows: 100 chickens per household/microproducer farm, 50,193 chickens per commercial chicken operation, 1,368 ducks per duck farm, and 923 turkeys per turkey farm.

Mexican poultry production and consumption are increasing. In 2021, poultry production in Mexico exceeded 3.6 4 million metric tons and increased 34% since 2010. Poultry consumption in Mexico topped 4.66 million metric tons in 2021 and has increased 36% since 2010 (Figure 61).

The total number of poultry stocks in Mexico was nearly 598.2 million head (see Table 13). About 98.9% or 591.6 of Mexico's poultry stocks were chickens. Turkeys (3.8 million) and ducks (2.8 million) each accounted for less than 1% of poultry stocks. Since 2010, Mexico's chicken stocks increased 17%, duck stocks increased 2%, and turkey stocks decreased 7% since 2010.



Figure 60. Mexico number of poultry farms





| MEXICO POULTRY STOCKS, SLAUGHTER, AND PRODUCTION |           |       |         |           |  |
|--|-----------|-------|---------|-----------|--|
| 1,000 head                                       | Chickens  | Ducks | Turkeys | Total     |  |
| Stocks   | 591'596   | 2'817 | 3'757   | 598'170   |  |
| Producing Animals/Slaughtered                    | 1'961'066 | 8'451 | 2'910   | 1'972'427 |  |
| Production (1,000 MT)                            | 3'579     | 21    | 17      | 3'617     |  |
| Sources FAO 2020                                 |           |       |         |           |  |

Table 13. Mexico poultry stocks, slaughter & production

Poultry slaughter in Mexico totaled 1.97 billion in 2020. An estimated 99% or 1.96 billion head of poultry slaughter was chickens. Duck slaughter outnumbered turkey slaughter and represented 8.5 million head of poultry slaughter. Approximately, 2.9 million turkeys were slaughtered in 2020. Chicken and duck slaughter also increased by 27% and 2%, respectively. Turkey slaughter declined 16% from 2010.

Poultry production included 3.6 million chickens, 21,000 ducks, and 17,000 turkeys. Since 2010, poultry production increased 33% and turkey production declined 18%.

# **4.2.6.2 GDP** and Value of **Production**

The GDP of Mexico was valued at nearly \$1.1 trillion in 2020. The agricultural production sector supported 5% of the total GDP. Crop production was an estimated 3% or \$28.5 billion. Red meat production was nearly \$10.7 billion. Other livestock products were \$7.3 billion. Chicken production was less than 1% of the total and was estimated at \$5.6 billion. Duck production is valued at \$32 million and turkey production at \$51.9 million. (Figure 62).

The combined (direct and indirect) effects of agricultural production in Mexico are estimated to be \$94.9 billion. Of this amount, \$11.6 billion



Figure 62. Mexico GDP & value of production by sector

comes from the poultry industry, with \$11.4 billion from chicken meat production, \$65 million from duck production, and \$106 million from turkey production. Agriculture pays a net value of \$185 million in taxes, \$23 million of which is estimated to be from the poultry industry (Table 14).

| ECONOMIC EFFECTS - MEXICO (\$"               |                            |                           |              |             |
|--|----------------------------|---------------------------|--------------|-------------|
|  | Direct                     | Indirect                  | Total        | Taxes paid* |
| All agriculture                              | \$52'171'485               | \$42'741'946              | \$94'913'431 | \$184'734   |
| Livestock                                    | \$23'623'279               | \$19'353'578              | \$42'976'857 | \$83'648    |
| Poultry                                      | \$5'652'340                | \$5'906'695               | \$11'559'035 | \$22'624    |
| Chicken                                      | \$5'568'513                | \$5'819'096               | \$11'387'609 | \$22'289    |
| Duck   | \$31'920                   | \$33'356                  | \$65'276     | \$128       |
| Turkey                                       | \$51'907                   | \$54'243                  | \$106'150    | \$208       |
| Source EAOSTAT OFCD Input-Output Tables *tax | es is equal to taxes on pr | oduction net of subsidies |              |             |

Table 14. Economic effects - Mexico

## 4.2.6.3 Labor

2020 data from the World Bank and ILO reflects 53.1 million people in Mexico's labor force (see Table 15). Nonagricultural labor totaled 46.5 million. Among the agricultural sector, there were 5.9 million males, and 739,486 females, totaling 6.6 million workers in the agricultural sector. Poultry production labor totaled 729,352 people in 2020. Meat processing labor accounted for 77,001 jobs in 2020. Wages earned from meat processing in Mexico totaled \$420.4 million. About 65% of the total meat processing labor was from livestock processing, and the remaining 35% was from poultry processing labor.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - MEXICO                                  |            |            |            |  |
|--|------------|------------|------------|--|
|  | Total      | Female     | Male       |  |
| Total Country Labor  | 53'080'123 | 20'230'808 | 32'849'315 |  |
| Non-Agricultural Labor   | 46'453'674 | 19'491'322 | 26'962'352 |  |
| Agricultural Labor   | 6'626'449  | 739'486    | 5'886'963  |  |
| Total Non-Poultry Agricultural Labor   | 5'897'097  |            |            |  |
| Total Poultry Labor  | 729'352    |            |            |  |
| Chicken Labor  | 718'535    |            |            |  |
| Turkey Labor   | 6'698      |            |            |  |
| Other Poultry Labor  | 4'119      |            |            |  |
|  |            | Wages (\$1 | ,000 USD)  |  |
| Total Meat Processing Labor  | 77'001     | \$420      | 0'391      |  |
| Livestock Processing Labor   | 50'404     | \$27       | 5'181      |  |
| Poultry Processing Labor   | 26'597     | \$145      | 5'210      |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |            |            |            |  |

Table 15. Agricultural labor force characteristic - Mexico

## 4.2.6.4 Cost of Production

After feed cost, which is the largest proportion of broiler production cost in Mexico (66%), chick cost (17%) is the second largest cost of production component in this industry, while labor and electricity represent each 6.5% of total costs. Medication and management have the lowest share of production costs at 2% each (see Figure 63).



Figure 63. Mexico broiler production cost structure

## 4.2.6.5 Trade

Mexico has observed limited access to poultry export markets due to restrictions imposed by other countries. These restrictions are generally towards fresh poultry; however, efforts have been made to establish disease-free recognition in recent years. Mexico exported an estimated \$15.9 million and \$198,639 in poultry meat to the USA and Ghana, respectively in 2020 (see Figure 64). Poultry meat export partners in 2021 included Hong Kong, Namibia, and Georgia, among other countries (Figure 65).



Figure 64. Mexico top 10 poultry exports, trade value



Figure 65. Mexico poultry export flows



At \$1.1 billion in poultry exports to Mexico, the USA was Mexico's top supplier of poultry in 2020 (\$986.5 million). Chile ranked number two, supplying \$57.5 million worth of poultry to Mexico in 2020. Mexico imported \$10.5 million in poultry products from Brazil. The fourth largest import value of poultry was shipped from Canada with \$2.8 million (see Figure 66 and Figure 67).





Figure 67. Mexico poultry import flows

#### 4.2.7 Nicaragua

### 4.2.7.1 Demographics

Nearly all the 217,136 poultry farms in Nicaragua are household, microproducer chicken farms. Commercial chicken farms accounted for 381 or less than 1% of the total poultry farms (see Figure 68). On average, chicken farms household had an estimated 59 chickens, while commercial farms had 31,895 chickens.

Poultry production in Nicaragua has increased 36% since 2010 but has seen little growth in the past 3 years. Poultry production in Nicaragua reached 142,712 metric tons in 2017 and was at 139,508 metric tons in 2019. Poultry consumption in Nicaragua is up 31% since 2010 at 129,628 metric tons but was at 136,793 metric tons in 2017 (Figure 69).

In 2020, poultry inventory/stocks in Nicaragua were comprised of chicken and totaled 25.0 million head (see Table 16). Since 2010, chicken stocks increased 32%. Chicken slaughter totaled 63.1 million head, and production totaled 140,000 metric tons. Since 2010, chicken slaughter increased 18%. Chicken production increased 37% compared to 2010.



Figure 68. Nicaragua number of poultry farms



Figure 69. Nicaragua poultry production & consumption

| NICARAGUA POULTRY STOCKS, SLA |          |       |         |        |
|-------------------------------|----------|-------|---------|--------|
| 1,000 head                    | Chickens | Ducks | Turkeys | Total  |
| Stocks                        | 25'015   |       |         | 25'015 |
| Producing Animals/Slaughtered | 63'062   |       |         | 63'062 |
| Production (1,000 MT)         | 140      |       |         | 140    |
| Sources: FAO, 2020            |          |       |         |        |

Table 16.Nicaragua poultry stocks, slaughter & production

## **4.2.7.2 GDP and Value of Production**

The GDP of Nicaragua was valued at \$12.6 billion in 2020. The agricultural production sector was 15% of the total GDP. Within the agricultural production sector, crop production ranked highest with an estimated \$1.1 billion contribution to the total GDP. Red meat production was the second highest with \$285.9 million in contribution. Chicken production followed with \$256.2 million or 2% of the total GDP. Other livestock products were valued at \$203 million. (Figure 70).



Figure 70. Nicaragua GDP & value of production by sector

| ECONOMIC EFFECTS - NICARAGUA (\$1,000 USD)       |                                  |             |              |             |
|--|----------------------------------|-------------|--------------|-------------|
|  | Direct                           | Indirect    | Total        | Taxes paid* |
| All agriculture                                  | \$ 1'854'308                     | \$ 963'862  | \$ 2'818'170 | \$ 12'780   |
| Livestock  | \$ 745'171                       | \$ 387'337  | \$ 1'132'508 | \$ 5'136    |
| Poultry  | \$ 256'206                       | \$ 281'089  | \$ 537'295   | \$ 1'220    |
| Chicken  | \$ 256'206                       | \$ 281'089  | \$ 537'295'  | \$ 1'220    |
| Duck   | -                                | -           | -            | -           |
| Turkey   | -                                | -           | -            | -           |
| Source: FAOSTAT. Central Bank of Nicaraaua *Taxe | es is eaual to total taxes net o | f subsidies |              |             |

Table 17. Economic effects - Nicaragua

The combined (direct and indirect) effects of agricultural production in the Nicaragua are estimated to be \$2.8 billion. Of this amount, \$537 million comes from the poultry industry, all of which is from chicken meat production. Agriculture pays a net value of \$13 million in taxes, \$1 million of which is estimated to be from the poultry industry (Table 17).

## 4.2.7.3 Labor

In 2020, the total number of individuals in Nicaragua's labor force was 2.9 million. Of that total, an estimated 2.1 million worked in non-agricultural sectors. The remaining 846,086 individuals were employed in the agricultural sector. An estimated 752,706 labor force participants were men in the agricultural sector, compared to the 93,381 females. Poultry production employed 117,681 in 2020 (see Table 18).

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - NICARAGUA |  |            |            |  |  |
|--|--|------------|------------|--|--|
|  | Total  | Female     | Male       |  |  |
| Total Country Labor                                  | 2'948'386  | 1'118'164  | 1'830'222  |  |  |
| Non-Agricultural Labor                               | 2'102'300  | 1'024'783  | 1'077'516  |  |  |
| Agricultural Labor                                   | 846'086  | 93'381     | 752'706    |  |  |
| Total Non-Poultry Agricultural Labor                 | 728'405  |            |            |  |  |
| Total Poultry Labor                                  | 117'681  |            |            |  |  |
| Chicken Labor  | 117'681  |            |            |  |  |
| Turkey Labor   | -  |            |            |  |  |
| Other Poultry Labor                                  | -  |            |            |  |  |
|  |  | Wages (\$* | 1,000 USD) |  |  |
| Total Meat Processing Labor                          | -  |            | -          |  |  |
| Livestock Processing Labor                           | -  |            | -          |  |  |
| Poultry Processing Labor                             | -  |            | -          |  |  |
| Source: ILO 2020, World Bank 2020, UNIDO Date        | Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |            |            |  |  |

Table 18. Agricultural labor force characteristics - Nicaragua

## 4.2.7.4 Trade

UN Comtrade and Resource Trade databases both suggest Nicaragua does not have a large poultry export market. In 2020, Nicaragua exported 98,543 MT of poultry meat to Guatemala, which was valued at \$79,017 (see Figure 71 and Figure 72). No other trading partners were reported.







Figure 72. Nicaragua poultry export flows

In 2020 the main supplier of poultry meat to Nicaragua was the USA. About 8,319 MT of poultry meat were imported from the USA valued at \$9.9 million. Costa Rica supplied 1,163 MT of poultry meat valued at \$3.6 million. The third leading poultry exporter to Nicaragua was Guatemala which exported less than 28 metric ton of poultry meat (Figure 73 and Figure 74).



Figure 73. Nicaragua top 10 poultry imports, trade value



Figure 74. Nicaragua poultry import flows

### 4.2.8 Panama

#### 4.2.8.1 Demographics

Panama has an estimated 21,796 poultry farms with duck<sup>10</sup> and other poultry farms accounting for 73% or 15,830 poultry farms. The second largest share of poultry farms were turkey farms. Approximately 24%, or 5,207 farms were turkey farms. Household chicken farms or microproducers account for 2% or 475 poultry farms. Commercial chicken farms were the smallest share of poultry farms with 1% or 284 farms (Figure 75).

The average farm sizes by number of animals were as follows: 9,969 chickens per household/microproducer farm, 73,417 chickens per commercial chicken operation, 7 ducks per duck farm, and 19 turkeys per turkey farm.

Poultry production and consumption are both increasing in Panama. Poultry production reached 229,622 metric tons in 2019, an increase of 82% since 2010. Poultry consumption reached 234,900 tons in 2019, an increase of 127% since 2010 (Figure 76).

Panama's poultry inventory/stocks totaled 25.6 million in 2020 (Table 19). Approximately, 99% or 25.6 million head of poultry stocks were chicken. Less than 1% , or 114,000 head of Panama's poultry stocks







Figure 76. Panama poultry production & consumption

| PANAMA POULTRY STOCKS, SLAUGH |          |       |         |         |
|-------------------------------|----------|-------|---------|---------|
| 1,000 head                    | Chickens | Ducks | Turkeys | Total   |
| Stocks                        | 25'586   | 114   | 19      | 25'719  |
| Producing Animals/Slaughtered | 121'221  |       |         | 121'221 |
| Production (1,000 MT)         | 212      |       |         | 212     |
| Sources EAO 2020              |          |       |         |         |

Table 19. Panama poultry stocks, slaughter & production

10 Duck and turkey farm numbers are from 2011.

were ducks. Turkeys also comprised Panama's poultry stocks, accounting for 19,000 head. Since 2010, chicken stocks in Panama increased 48% from 2010. Duck stocks increased 14%, and turkey stocks remained the same since 2010.

Poultry slaughter in Panama included 121.2 million chickens in 2020. Since 2010, poultry slaughter in Panama increased 62%. According to FAO, Panama's poultry production totaled 212,000 metric tons and was 100% chicken. Compared to 2010, chicken production increased 68%.

## 4.2.8.2 GDP and Value of Production

The GDP in Panama was worth \$52.9 billion in 2020. An estimated 2% or \$769.3 million was derived from the crop production sector. An estimated 2%, or 1.2 billion was derived from the chicken production sector. Approximately, 1% or \$251.7 million was derived from red meat production \$175.9 million from other livestock products. (Figure 77).

The combined (direct and indirect) effects of agricultural production in Panama are estimated to be \$3.8 billion. Of this amount, \$2.3 billion comes from the poultry industry, all of which is from chicken meat production. Agriculture pays a net value of \$15 million in taxes, \$8 million of which is estimated to be from the poultry industry (Table 20).



Figure 77. Panama GDP & value of production by sector

| ECONOMIC EFFECTS - PANAMA (\$                    |                            |              |             |             |
|--|----------------------------|--------------|-------------|-------------|
|  | Direct                     | Indirect     | Total       | Taxes paid* |
| All agriculture                                  | \$2'468'879                | \$1'426'688  | \$3'895'567 | \$15'041    |
| Livestock  | \$1'699'528                | \$982'104    | \$2'681'632 | \$10'354    |
| Poultry  | \$1'271'680                | \$981'737    | \$2'253'417 | \$7'748     |
| Chicken  | \$1'271'680                | \$981'737    | \$2'253'417 | \$7'748     |
| Duck   | -                          | -            | -           | -           |
| Turkey   | -                          | -            | -           | -           |
| Source: FAOSTAT, CFES Central America. *Taxes is | equal to total taxes net o | of subsidies |             |             |

Table 20. Economic effects - Panama

### 4.2.8.3 Labor

The total number of people in Panama's labor force totaled 1.8 million in 2020 (Table 21). Of that total, nearly 1.6 million people were employed in non-agricultural labor sectors, and 254,470 were employed in agricultural labor sectors. Men constitute most of the agricultural labor force with an estimated 195,215 males and 59,255 females. Among those employed in the agricultural sector, 135,371 worked in poultry production, specifically chicken production. Approximately 8,616 people worked in meat processing, collectively earning \$76.6 million in wages.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - PANAMA                                  |           |            |            |  |  |  |
|--|-----------|------------|------------|--|--|--|
|  | Total     | Female     | Male       |  |  |  |
| Total Country Labor  | 1'836'789 | 745'429    | 1'091'360  |  |  |  |
| Non-Agricultural Labor   | 1'582'319 | 686'174    | 896'145    |  |  |  |
| Agricultural Labor   | 254'470   | 59'255     | 195'215    |  |  |  |
| Total Non-Poultry Agricultural Labor   | 119'099   |            |            |  |  |  |
| Total Poultry Labor  | 135'371   |            |            |  |  |  |
| Chicken Labor  | 135'371   |            |            |  |  |  |
| Turkey Labor   |           |            |            |  |  |  |
| Other Poultry Labor  |           |            |            |  |  |  |
|  |           | Wages (\$1 | 1,000 USD) |  |  |  |
| Total Meat Processing Labor  | 8'616     | \$76       | '635       |  |  |  |
| Livestock Processing Labor   | 1'424     | \$12       | '662       |  |  |  |
| Poultry Processing Labor   | 7'192     | \$63       | 973        |  |  |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |           |            |            |  |  |  |

Table 21. Agricultural labor force characteristics - Panama



## 4.2.8.4 Trade

In 2020, Panama's main destination for poultry meat was Gambia, which received \$16,800 in poultry meat from Panama. Slovakia reportedly received less than \$100 in poultry exports from Panama in 2020 (see Figure 78 and Figure 79).





Figure 79. Panama top 10 poultry exports, trade value

The leading source for poultry meat imports to Panama was the USA which exported \$22.3 million worth of poultry meat to Panama in 2020. Turkey was the second leading source for poultry imports, shipping \$127,000 in poultry meat to Panama. Peru exported an estimated \$96,000 in poultry meat to Panama. Brazil and Germany ranked fourth and fifth, respectively, for supplying poultry meat to Panama. Approximately \$33,000 of poultry meat was imported from Brazil. An estimated \$31,000 of poultry meat was imported from Germany (see Figure 80 and Figure 81).







Figure 81. Panama poultry import flows

## 4.3 South America

## 4.3.1 Regional Demographics and Poultry Stocks

Overall poultry stocks in South America have increased since 2010. Chicken stocks have increased 21.5%, duck stocks have increased 4.4%, and turkey stocks have increased 10.4% (Figure 82).

The South American broiler industry has 3.7 million farms with 171,927 (4.6%) of those being commercial farms and 3.5 million (95.4%) being household or micro-producer farms. South American broiler farms have stocks of 2.7 billion chickens with 93.5% being on commercial farms and 6.5% being on household or micro-producer farms. The average size of commercial broiler farms is 14,731 head.

The average size of the household or micro-producer farms is 50 head. There are 94,477 duck farms in South America with an inventory of 9.3 million head. The average size duck farm is 99 head. There are 57,798 turkey farms in South America with 66.9 million head of inventory. The average turkey farm has an inventory of 1,159 head (Figure 83).



Figure 82. South America number of poultry farms by type



Figure 83. South America poultry stocks

## **4.3.2 Regional Economics**

The total GDP for South America was an estimated \$3.72 trillion in 2020. Approximately, 6% of the total GDP was derived from Agricultural Production. Of that 6%, crop production was an estimated \$146.3 billion or 4% of the total GDP in South America. Red meat production was the second largest agricultural production sector, valued at \$78 billion (Figure 84)



Figure 84. South America GDP & value of production by sector

### 4.3.3 Regional Poultry Production Volume and Value

South America produced 22.1 million metric tons of poultry meat in 2020 with 97% being chicken meat, less than 1% being duck meat and 3% being turkey meat (Figure 85).



Figure 85. South America poultry meat production

South American poultry production has increased 21.2% since 2010. South American poultry production in 2020 totaled \$29.5 billion with 96% due to chicken production, 4% due to turkey production, and less than 0.5% due to duck production (Figure 86).



Figure 86. South America value of poultry production

## **4.3.4 Regional Cost of Production**

In the region of South America, as it is the case in other regions, feed cost accounts for the largest cost in broilers total production cost. In the countries included in this region, the share of feed cost averaged 66% of total costs in 2017. This share ranged from 69% in Brazil to 63% in Colombia (see Figure 87).



Figure 87. Feed share of broiler production costs: South America

## 4.3.5 Argentina

### 4.3.5.1 Demographics

Of the 66,428 poultry farms in Argentina, household chicken farms represented 85% of the total poultry operations. Approximately 7%, or 4.325 were duck farms. Commercial chicken farms accounted for 2% or 1,499 of the total poultry farms in Argentina (Figure 88). The average farms size by number of animals were as follows: 70 chickens per household/micro-producer farm. 76,978 chickens per commercial chicken operation, 607 ducks per duck farm, and 698 turkeys per turkey farm.

Poultry production and consumption are increasing in Argentina. Poultry production in 2021 was 2.25 million metric tons and represents an increase of 35% since 2010. Poultry consumption in Argentina in 2021 was 2.01 million metric tons and was 37% greater than in 2010 (Figure 89).

Total poultry stocks in Argentina were an estimated 124.1 million head. The largest share of poultry stocks were chickens, representing nearly 95.5% or 118.5 million head of poultry stocks (see Table 22). Turkey stocks were 2.4% or 3.1 million head of Argentina's total poultry. Duck stocks represented 2.1% or 2.6 million. Since 2010, chicken stocks increased 21%, duck stocks increased 5%, and turkey stocks increased 1%.



Figure 88. Argentina number of poultry farms by type





| ARGENTINA POULTRY STOCKS, SLAU |          |       |         |         |
|--------------------------------|----------|-------|---------|---------|
| 1,000 head                     | Chickens | Ducks | Turkeys | Total   |
| Stocks                         | 118'463  | 2'625 | 3'017   | 124'105 |
| Producing Animals/Slaughtered  | 757'488  | 3'774 | 6'980   | 768'242 |
| Production (1,000 MT)          | 2'219    | 10    | 36      | 2'265   |
| Sources: FAO, 2020             |          |       |         |         |

Table 22. Argentina poultry stocks, slaughter & production

Poultry slaughter totaled 768.2 million head in 2020. An estimated 98% or 757.5 million head of poultry slaughter were chicken. Approximately, 7.0 million head were turkeys and 3.8 million were ducks. Since 2010, chicken slaughter 23%, duck slaughter increased 6%, and turkey slaughter remained about the same.

Argentina's poultry production in 2020 included 2.2 million metric tons of chicken, 36,000 metric tons of turkey, and 10,000 metric tons of ducks. Compared to 2010, poultry production in Argentina increased 39%, duck production increased 6%, and turkey production remained about the same.

# **4.3.5.2 GDP** and Value of **Production**

The total value of Argentina's GDP was \$383 billion in 2020. Approximately, 6% of the total was derived from agricultural production. Red meat production was 3% or \$11.2 billion of the total GDP. Argentina's crop production sector was valued at \$9.8 billion. The poultry production sector was about 1% of the total GDP for Argentina. Chicken production was valued at \$2.5 billion, while duck and turkey production contributed less than 1% to the total GDP (see Figure 90).



Figure 90. Argentina GDP & value of production by sector

The combined (direct and indirect) effects of agricultural production in the Argentina are estimated to be \$44.6 billion. Of this amount, \$5.7 billion comes from the poultry industry, with \$5.7 billion from chicken meat production, \$4 million from duck production, and \$12.2 million from turkey production. Agriculture pays a net value of \$1.2 billion in taxes, \$155.9 million of which is estimated to be from the poultry industry (Table 23).

| ECONOMIC EFFECTS - ARGENTINA |               |               |               |              |
|------------------------------|---------------|---------------|---------------|--------------|
|                              | Direct        | Indirect      | Total         | Taxes paid*  |
| All agriculture              | \$ 23'441'758 | \$ 21'122'489 | \$ 44'564'247 | \$ 1'247'370 |
| Livestock                    | \$ 13'762'558 | \$ 12'400'925 | \$ 26'163'483 | \$ 732'326   |
| Poultry                      | \$ 2'555'519  | \$ 3'156'066  | \$ 5'711'585  | \$ 155'933   |
| Chicken                      | \$ 2'548'245  | \$ 3'147'083  | \$ 5'695'328  | \$ 155'489   |
| Duck                         | \$ 1'808      | \$ 2'233      | \$ 4'041      | \$ 110       |
| Turkey                       | \$ 5'466      | \$ 6'751      | \$ 12'217'    | \$ 334       |



## 4.3.5.3 Labor

Over 19.2 million people comprised the total labor force in Argentina in 2020 (Table 24). Of that total, about 10.9 million were male, 8.3 million were female. Approximately 18.0 million people worked in non-agricultural sectors. Within the agricultural sector, 1.2 million people were employed. Poultry production employed an estimated 136,161 people. In 2020, Argentina's labor from meat processing totaled 42,253 people and \$176.0 million in wages earned. Livestock processing accounted for nearly 74% of the labor from meat processing and \$130.6 million in total wages.

An estimated 10,909 people worked in poultry processing. Wages earned from poultry processing totaled \$45.4 million.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - ARGENTINA                               |            |           |            |  |  |
|--|------------|-----------|------------|--|--|
|  | Total      | Female    | Male       |  |  |
| Total Country Labor  | 19'208'592 | 8'301'186 | 10'907'406 |  |  |
| Non-Agricultural Labor   | 17'959'592 | 8'089'213 | 9'870'379  |  |  |
| Agricultural Labor   | 1'249'000  | 211'973   | 1'037'027  |  |  |
| Total Non-Poultry Agricultural Labor   | 1'112'839  |           |            |  |  |
| Total Poultry Labor  | 136'161    |           |            |  |  |
| Chicken Labor  | 135'773    |           |            |  |  |
| Turkey Labor   | 291        |           |            |  |  |
| Other Poultry Labor  | 96         |           |            |  |  |
|  |            | Wages (\$ | 1,000 USD) |  |  |
| Total Meat Processing Labor  | 42'253     | \$17      | 6'018      |  |  |
| Livestock Processing Labor   | 31'345     | \$130     | 0'575      |  |  |
| Poultry Processing Labor   | 10'909     | \$45      | 5'443      |  |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |            |           |            |  |  |

Table 24. Agricultural labor force characteristics - Argentina

## 4.3.5.4 Cost of Production

Argentina's feed cost accounted for 67% of broiler production cost in 2017. Twenty nine percent (29%) of total broiler production costs was distributed among day-old chicks (14%), housing (9%), and other variable costs (heating, electricity, litter, and animal health, 6%). Labor costs represented less than 5% of costs (Figure 91).





## 4.3.5.5 Trade

In 2020 the top market for Argentina poultry was China (\$148.9 million). At a distance second and third place were Chile (\$27.5 million) and South Africa (\$13.872) (see Figure 92 and Figure 93). Few companies, including large scale operations, export poultry meat as the poultry industry tends to focus more on the domestic market rather than export markets<sup>11</sup>.



Figure 92. Argentina top 10 poultry exports, trade value

11 USDA Poultry and Products Annual Report- Argentina, October 29, 2019, https://apps.fas.usda.gov/newgainapi/api/Report/ DownloadReportByFileName?fileName=Poultry%20and%20Products%20Annual\_Buenos%20Aires\_Argentina\_09-01-2021



Figure 93. Argentina poultry export flows



As a result of the Mercosur agreement, chicken meat and prepared poultry products imported from Brazil and Uruguay to Argentina enter tariff-free. The top supplier of poultry meat to Argentina was Brazil at \$6.277 million in 2020. Argentina also imported about 337 MT of poultry meat from Uruguay valued at \$351,619. Argentina's remaining import partners' volumes reflect \$1.3 million in poultry meat exported to Argentina during 2020 (Figure 94 & Figure 95).

Figure 94. Argentina top 10 poultry imports, trade value



Figure 95. Argentina top 10 poultry exports, trade value

## 4.3.6 Brazil

## 4.3.6.1 Demographics

Brazil has more than 2.8 million poultry farms and 95% of the farms are household chicken farms. Commercial chicken farms were 5% of the total poultry farms in Brazil, with 143,125 farms classified as commercial (Figure 96). Brazil's 2.7 million household chicken farms had an average 54 chickens. There were an average 9,303 chickens on Brazil's commercial chicken operations. Household chicken farms had 54 chickens per farm, on average in 2020.

Brazil's poultry production and consumption have increased over the last 12 years. Poultry production has grown 16% since 2010. Over the last three years, production has kept a steady pace at 14.2 million metric tons, on average. Consumption of poultry in Brazil has increased 23% since 2010. Poultry consumption has averaged 10.2 million metric tons from 2019 to 2021. The large difference between poultry production and consumption allows Brazil to be the largest broiler exporter in the world.

In 2020, Brazil's poultry stocks included nearly 1.5 billion chickens, 31.3 million turkeys, and 3.4 million ducks. Since 2010, poultry stocks increased 19%, duck production declined 9%, and turkey production increased 16%.



Figure 96. Brazil number of poultry farms by type



Figure 97. Brazil poultry production & consumption

Brazil's poultry slaughter totaled 6.1 billion head. Chicken slaughter was estimated at 6.0 billion head. Turkey slaughter was an estimated 86.7 million head. Brazil is the third largest chicken producer in the world. Brazil's poultry production in 2020 included 13.8 million metric tons of chicken, 584,000 metric tons of turkey, and 7,000 metric tons of duck. Since 2010, chicken production increased 29%, duck production declined 10%, and turkey production increased 20%.

| BRAZIL POULTRY STOCKS, SLAUGHT        |           |       |         |           |
|---------------------------------------|-----------|-------|---------|-----------|
| 1,000 head                            | Chickens  | Ducks | Turkeys | Total     |
| Stocks                                | 1'479'363 | 3'356 | 31'279  | 1'513'998 |
| Producing Animals/Slaughtered         | 6'006'415 | 5'367 | 86'706  | 6'098'488 |
| Production (1,000 MT)                 | 13'845    | 7     | 160     | 14'012    |
| Sources: FAO, 2020 , ABPA 2021 Report |           |       |         |           |

Table 25. Brazil poultry stocks, slaughter & production



GLOBAL MACROECONOMIC INDICATORS FOR THE POULTRY MEAT INDUSTRY

## 4.3.6.2 GDP and Value of Production

The total value of Brazil's GDP was an estimated \$1.4 trillion in 2020. The agricultural production sector represented about 10% of the total Brazilian GDP with nearly \$86.7 billion derived from crop production, alone. Red meat production was valued at \$40 billion and represented 3% of the total GDP. Chicken production was valued at more than \$14.8 billion or 1% of the total GDP in Brazil. Brazil's turkey production was an estimated \$1.01 billion sector contributing less than 1% to the total GDP. Duck production was also less than 1% of the total GDP but valued at \$8 million (Figure 98).



Figure 98. Brazil GDP & value of production by sector

The combined (direct and indirect) effects of agricultural production in Brazil are estimated to be \$304.6 billion. Of this amount, \$39.9 billion comes from the poultry industry, with \$37.2 billion from chicken meat production, \$20.2 million from duck production, and \$2.7 billion from turkey production. Agriculture pays a net value of \$8.0 billion in taxes, \$926.9 million of which is estimated to be from the poultry industry (Table 26).

| ECONOMIC EFFECTS - BRAZIL (\$1 |               |               |               |             |
|--------------------------------|---------------|---------------|---------------|-------------|
|                                | Direct        | Indirect      | Total         | Taxes paid* |
| All agriculture                | \$142'681'112 | \$161'953'976 | \$304'635'088 | \$7'974'552 |
| Livestock                      | \$56'017'042  | \$63'583'627  | \$119'600'669 | \$3'130'833 |
| Poultry                        | \$15'918'438  | \$24'005'005  | \$39'923'443  | \$926'856   |
| Chicken                        | \$14'846'802  | \$22'388'977  | \$37'235'779  | \$864'460   |
| Duck                           | \$8'054       | \$12'145      | \$20'199      | \$469       |
| Turkey                         | \$1'063'582   | \$1'603'882   | \$2'667'464   | \$61'927    |

Source: FAOSTAT, OECD Input-Output tables. \*Taxes is equal to total taxes net of subsidies

Table 26. Economic effects - Brazil

#### 4.3.6.3 Labor

An estimated 96.5 million people were employed in Brazil's labor force in 2020. Of that total, 55.2 million were male and 41.3 million were female. An estimated 88.1 million people were employed in nonagricultural sectors. The agricultural sector employed 8.4 million people in 2020.

#### AGRICULTURAL LABOR FORCE CHARACTERISTICS - BRAZIL

|   | Total              | Female               | Male       |
|---|--------------------|----------------------|------------|
| Total Country Labor                           | 96'539'743         | 41'315'498           | 55'224'245 |
| Non-Agricultural Labor                        | 88'091'461         | 39'666'913           | 48'424'548 |
| Agricultural Labor                            | 8'448'282          | 1'648'585            | 6'799'697  |
| Total Non-Poultry Agricultural Labor          | 7'495'102          |                      |            |
| Total Poultry Labor                           | 953'180            |                      |            |
| Chicken Labor                                 | 889'012            |                      |            |
| Turkey Labor                                  | 63'686             |                      |            |
| Other Poultry Labor                           | 482                |                      |            |
|   |                    | Wages (\$1           | ,000 USD)  |
| Total Meat Processing Labor                   | 577'601            | \$4'40               | 3'079      |
| Livestock Processing Labor                    | 357'777            | \$2'72               | 7'354      |
| Poultry Processing Labor                      | 219'824            | \$1'67               | 5'726      |
| Source: ILO 2020, World Bank 2020, UNIDO Date | abase, INDSTAT 4 2 | 021, ISIC Revision 3 |            |

Table 27. Agricultural labor force characteristics - Brazil

Within the agricultural industry, 953,180 people worked in the poultry sector. Meat processing labor accounted for 577,601 jobs in Brazil. Wages earned from meat processing totaled \$4.4 billion. Livestock processing accounted for most of the labor from meat processing. Livestock meat processing employed 62% of the meat processing sector with 357,777 jobs in total. An estimated \$2.7 billion in wages earned were derived from livestock processing. About 38%, or 219,824 of the meat processing jobs were from poultry processing, collectively earning \$1.7 billion in wages.

### 4.3.6.4 Cost of Production

In Brazil, the cost of feed represents the largest share of broiler production total costs (69% in 2017). Day-old chicks is the second largest cost component at 14%, followed by housing (8%), and other variable costs (heating, electricity, litter, and animal health, 5%). Labor cost accounts for 3% of total costs, which is below Argentina's at 4%. The costs at farm level for insurance, bookkeeping, consultancy, telephone, and transport represent 1% of total costs (see Figure 99).





#### 4.3.6.5 Trade

Brazil is the second largest producer of broiler meat globally, after the USA, and is the top exporter of broiler meat in the world. Overall, the value of poultry meat exported to the world was estimated at \$5.8 billion in 2020. The value of poultry meat shipped to China made up about 22% (\$1.269 billion) of the total value exported by Brazil in 2020. The value of poultry exported to Saudi Arabia and Japan represented 12% (\$688.3 million) and 11.8% (\$667.8) of the total value of Brazil poultry exports, respectively (see Figure 100 and Figure 101).







Brazil poultry export flows



Brazil imported 5,171 MT of poultry meat with an estimated value of \$10.4 million in 2020. About 78% (4,030 MT) of the poultry meat imported by Brazil in 2020 was shipped from Argentina. Chile ranked second for supplying \$1.9 million of poultry meat to Brazil in 2020. Poultry imports from France totaled \$423,000 in 2020 (see Figure 102 and Figure 103).



Figure 103.

Brazil poultry import flows

#### DECISION INNOVATION SOLUTIONS

GLOBAL MACROECONOMIC INDICATORS FOR THE POULTRY MEAT INDUSTRY

## 4.3.7 Chile

#### 4.3.7.1 Demographics

An estimated 12,262 poultry farms are located in Chile. About 53%, or 6,483, of the poultry farms were commercial chicken farms. Turkey farms are the next largest share of poultry farms with 47% or 5,778 farms (see Figure 104). The average number of chickens on commercial farms in Chile was 46,522 head in 2020. Turkey farms had an average 5,536 turkeys per farm.

Chile's poultry production and consumption have been consistently rising during the last 12 years. From 2010 to 2021, poultry production and consumption were up 35% and 28%, respectively. From 2019 to 2021, 93% of poultry produced in Chile was domestically consumed. Note however, that in 2021 poultry production increased 2.4% yearover-year while domestic poultry consumption declined 1.5%, leaving at least 10% of production available for the export market (Figure 105).

The total number of poultry stocks in Chile was 146.5 million head. About 78% or 114.5 million head of poultry stocks were chickens. The remaining 22% or 32.0 million head of poultry stocks were turkeys (see Table 28). Compared to 2010, Chile's chicken stocks increased 141% and turkey stocks increased by 7%.

Duck Farms **Total Poultry Farms:** 12,262 0% **Turkey Farms** 5'778 Commercial 47% **Chicken Farms** 6'483 53% Household **Chicken Farms** 0% Decision Source: FAOSTAT, 2020 GDP, 2018 Value of Poultry Innovation Solutions

Figure 104.

Chile number of poultry farms



Figure 105.

Chile poultry production & consumption

| CHILE POULTRY STOCKS, SLAUGHTE |          |       |         |         |
|--------------------------------|----------|-------|---------|---------|
| 1,000 head                     | Chickens | Ducks | Turkeys | Total   |
| Stocks                         | 114'523  |       | 31'985  | 146'508 |
| Producing Animals/Slaughtered  | 291'985  |       | 5'912   | 297'897 |
| Production (1,000 MT)          | 696      |       | 71      | 767     |
| Sources: FAO, 2020             |          |       |         |         |

Table 28. Chile poultry stocks, slaughter & production

## Chile Number of Poultry Farms by Type

Chickens represented the largest share of Chile's poultry slaughter with an estimated 292.0 million head or 98% of poultry slaughter. Approximately 5.9 million turkeys were slaughtered, accounting for 2% of the total poultry slaughter in Chile. Poultry production included 696,000 metric tons of chicken and 71,000 metric tons of turkey. Since 2010, chicken production increased 38% and turkey production declined 21%.

## 4.3.7.2 GDP and Value of Production

In 2020, GDP for Chile was \$252.9 billion. Non-agricultural GDP was an estimated \$234.7 billion or 93% of the total GDP. The agricultural production sector was an estimated 7% of the total GDP with crop production contributing 5% or \$13.4 billion. Red meat production was valued at \$3.6 billion or 1% of the total GDP. Approximately \$3.6 billion or 1% of the total GDP was derived from chicken production. Turkey production was valued at \$165.4 million or less than 1% of GDP in Chile (Figure 106).



| ECONOMIC EFFECTS - CHILE (\$1,0  |              |              |              |             |
|--|--------------|--------------|--------------|-------------|
|  | Direct       | Indirect     | Total        | Taxes paid* |
| All agriculture  | \$18'245'790 | \$19'854'719 | \$38'100'509 | \$501'493   |
| Livestock  | \$4'831'857  | \$5'257'934  | \$10'089'791 | \$132'806   |
| Poultry  | \$1'240'069  | \$1'688'974  | \$2'929'043  | \$32'583    |
| Chicken  | \$1'074'690  | \$1'463'728  | \$2'538'418  | \$28'238    |
| Duck   | -            | -            | -            | -           |
| Turkey   | \$165'379    | \$225'246    | \$390'625    | \$4'345     |
| Source: FAOSTAT, OECD Input-Output Tables .*Taxes is equal to total taxes net of subsidies |              |              |              |             |

Table 29. Economic effects - Chile

The combined (direct and indirect) effects of agricultural production in Chile are estimated to be \$38.1 billion. Of this amount, \$2.9 billion comes from the poultry industry, with \$2.5 billion from chicken meat production and \$390.6 million from turkey production. Agriculture pays a net value of \$500.1 million in taxes, \$32.6 million of which is estimated to be from the poultry industry (Table 29).

## 4.3.7.3 Labor

In 2020, 8.5 million people worked in the labor force for Chile (Table 30). More than 5.0 million were male, and 3.5 million were female. The non-agricultural sectors employed nearly 7.9 million people in 2020. The agricultural sector employed less than 1% or 670,998 people in the labor force. Of that total, 48,436 jobs were from poultry production.

Meat processing labor accounted for 143,450 jobs and more than \$327.1 million in wages earned during 2020. Approximately 64% or 91,985 jobs in meat processing were derived from livestock meat processing. Wages earned from livestock meat processing totaled \$209.8 million. Poultry processing accounted for the remaining 36% share or 51,465 meat processing jobs in Chile. The value of wages earned from poultry processing was \$117.4 million in 2020.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - CHILE                                   |           |            |           |  |  |  |
|--|-----------|------------|-----------|--|--|--|
|  | Total     | Female     | Male      |  |  |  |
| Total Country Labor  | 8'537'487 | 3'514'251  | 5'023'236 |  |  |  |
| Non-Agricultural Labor   | 7'866'489 | 3'364'870  | 4'501'619 |  |  |  |
| Agricultural Labor   | 670'998   | 149'381    | 521'617   |  |  |  |
| Total Non-Poultry Agricultural Labor   | 622'562   |            |           |  |  |  |
| Total Poultry Labor  | 48'436    |            |           |  |  |  |
| Chicken Labor  | 41'976    |            |           |  |  |  |
| Turkey Labor   | 6'460     |            |           |  |  |  |
| Other Poultry Labor  | -         |            |           |  |  |  |
|  |           | Wages (\$1 | ,000 USD) |  |  |  |
| Total Meat Processing Labor  | 143'450   | \$32       | 7'132     |  |  |  |
| Livestock Processing Labor   | 91'985    | \$209      | 9'768     |  |  |  |
| Poultry Processing Labor   | 51'465    | \$117      | "364      |  |  |  |
| Source: ILO 2020, World Bank 2020; UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |           |            |           |  |  |  |

Table 30. Agricultural labor force characteristics - Chile

#### 4.3.7.4 Trade

The USA, China, and Mexico were the three largest markets for Chile's poultry meat exports in 2020. Chile exported over \$113 million in poultry products to the USA. The value of poultry products shipped to China was estimated at \$85 million, whereas Mexico's shipments reached over \$55 million (Figure 107 and Figure 108).



**Chile Top-10 Poultry Exports** 



Chile top 10 poultry exports, trade value



Figure 108.

Chile poultry export flows


In 2020, most of the poultry meat imported by Chile was shipped from Brazil (92.4 million). Other important suppliers of poultry meat for Chile were the USA (\$53 million), and Argentina (\$25.8 million). Poultry meat imported from the remaining countries totaled \$644,703 in 2020 (see Figure 109 and Figure 110).





Chile poultry import flows

# 4.3.8 Colombia

#### 4.3.8.1 Demographics

The number of poultry farms in Colombia was estimated at 469,140. Of the total number of poultry farms, household or micro-producer chicken farms accounted for the largest share with 99% or 463,113 farms. About 1% or 6,027 of the total poultry farms were commercial chicken farms (Figure 111).

Colombia's poultry production and consumption both increased from 2010 to 2021. Poultry production reached 1.6 million metric tons in 2021, up 54% compared with the volume in 2010. Note, that in 2020 poultry production declined almost 3% year-over-year. Production rebounded in 2021 but still was down from the 2018 level (see Figure 112).

Colombia's poultry consumption had an upward trend from 2010 to 2019. Consumption in 2020 and 2021 remained down 3.4% and 2.2% from the 2019 level (1.8 million metric tons), correspondingly. Overall, 2021 poultry consumption in Colombia rose 59% relative to 2010. From 2019 to 2021, about 7% of poultry consumption was imported. The USA has been the largest supplier of poultry meat to Colombia.



Colombia Number of Poultry Farms by Type



Figure 112.

Colombia poultry production & consumption

In 2020, poultry stocks in Colombia totaled 201.6 million head with 100% of the inventory being chickens (see Table 31). Poultry slaughter totaled 1.0 billion head, with 100% of slaughter being chickens. Chicken production was estimated at 1.6 million metric tons. Since 2010, Colombia's chicken stocks increased 28% and chicken production increased 52%. However, slaughter of chicken declined 5% in the same time period.

| COLOMBIA POULTRY STOCKS, SLAU |           |       |         |           |
|-------------------------------|-----------|-------|---------|-----------|
| 1,000 head                    | Chickens  | Ducks | Turkeys | Total     |
| Stocks                        | 201'601   |       |         | 201'601   |
| Producing Animals/Slaughtered | 1'011'486 |       |         | 1'011'486 |
| Production (1,000 MT)         | 1'620     |       |         | 1'620     |
| Sources: FAO, 2020            |           |       |         |           |

Table 31. Colombia poultry stocks, slaughter & production

# 4.3.8.2 GDP and Value of Production

The GDP of Colombia was valued at \$271.4 billion in 2020. Nonagricultural GDP was estimated at \$245.7 billion. The agricultural production sector represented about 9% of the total GDP. An estimated \$11.5 billion was derived from crop production. Red meat production followed with \$11.1 billion in contributions. Chicken production contributed an estimated \$3.0 billion or 1% of the total GDP (Figure 113).



Figure 113.

Colombia GDP & value of production by sector

| ECONOMIC EFFECTS - COLOMBIA  |              |              |              |             |  |
|--|--------------|--------------|--------------|-------------|--|
|  | Direct       | Indirect     | Total        | Taxes paid* |  |
| All agriculture  | \$25'650'451 | \$23'855'466 | \$49'505'917 | \$578'551   |  |
| Livestock  | \$14'122'891 | \$13'134'590 | \$27'257'481 | \$318'544   |  |
| Poultry  | \$3'014'279  | \$4'021'048  | \$7'035'327  | \$83'443    |  |
| Chicken  | \$3'014'279  | \$4'021'048  | \$7'035'327  | \$83'443    |  |
| Duck   | -            | -            | -            | -           |  |
| Turkey   | -            | -            | -            | -           |  |
| Source: FAOSTAT, OECD Input-Output Tables .*Taxes is equal to total taxes net of subsidies |              |              |              |             |  |

Table 32. Economic effects - Colombia

The combined (direct and indirect) effects of agricultural production in Colombia are estimated to be \$49.5 billion. Of this amount, \$7 billion comes from chicken meat production. Agriculture pays a net value of \$578.5 billion in taxes, \$83.4 million of which is estimated to be from the poultry industry (Table 32).

# 4.3.8.3 Labor

The World Bank and ILO reported that nearly 20.5 million people worked in Colombia's labor force. About 10.2 million were male, and 10.2 million were female. An estimated 16.9 million people were employed in non-agricultural sectors, compared to nearly 3.6 million in agricultural sectors. Approximately 428,964 people were employed in the poultry labor sector (Table 33).

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - COLOMBIA                                |            |            |            |  |  |  |
|--|------------|------------|------------|--|--|--|
|  | Total      | Female     | Male       |  |  |  |
| Total Country Labor  | 20'490'914 | 10'245'457 | 10'245'457 |  |  |  |
| Non-Agricultural Labor   | 16'933'917 | 9'610'870  | 7'323'047  |  |  |  |
| Agricultural Labor   | 3'556'997  | 634'587    | 2'922'410  |  |  |  |
| Total Non-Poultry Agricultural Labor   | 3'128'033  |            |            |  |  |  |
| Total Poultry Labor  | 428'964    |            |            |  |  |  |
| Chicken Labor  | 428'964    |            |            |  |  |  |
| Turkey Labor   | -          |            |            |  |  |  |
| Other Poultry Labor  | -          |            |            |  |  |  |
|  |            | Wages (\$1 | ,000 USD)  |  |  |  |
| Total Meat Processing Labor  | 32'917     | \$159      | 2'842      |  |  |  |
| Livestock Processing Labor   | 15'449     | \$75       | '018       |  |  |  |
| Poultry Processing Labor   | 17'468     | \$84       | '823       |  |  |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |            |            |            |  |  |  |

Table 33. Agricultural labor force characteristics - Colombia

In 2020, labor from meat processing totaled 32,917 jobs. The total value of wages earned from meat processing was \$159.8 million. Poultry meat processing accounted for 53% or 17,468 meat processing jobs, and more than \$84.8 million in wages. The remaining 15,449 jobs in meat processing were from livestock meat processing and were valued at \$75.0 million in wages earned.

# 4.3.8.4 Cost of Production

Feed represented 63% of Colombia's total cost of poultry production in 2017. In addition, 30% of poultry production cost was assigned among labor (12%), day-old chick (11%), and services, which includes electricity, gas, and water (7%). Water treatment and sanitation added each 3%, leaving 1% for transportation costs (Figure 114).



### 4.3.8.5 Trade

The largest market for Colombia's poultry meat was the United Arab Emirates in 2020, with a total value of exports estimated at \$21,108. Poultry meat exports to Vietnam totaled \$1,246 in 2020 (Figure 115 and Figure 116).



Figure 114. Colombia top 10 poultry exports, trade value



Figure 116.

Colombia poultry export flows

Colombia's main supplier of poultry meat was the USA in 2020. Colombia imported 77,539 MT of poultry meat from



the USA valued at \$84.9 million. In 2020, Colombia imported \$12.6 million in poultry meat from Chile. Approximately \$278,316 of poultry meat was imported from Peru (see Figure 117 and Figure 118).





Figure 118.

Colombia poultry import flows

# 4.4 Europe

# 4.4.1 Regional Demographics and Poultry Stocks

The European broiler industry has 6.4 million farms with 62,973 (1.1%) of those being commercial farms

and 5.63 million (98.9%) being household or micro-producer farms. European broiler farms have stocks of 2.3 billion chickens with 97.7% being on commercial farms and 2.3% being on household or microproducer farms (Figure 119). The average size of commercial broiler farms is 36,405 head. The average size of the household or microproducer farms is 10 head. There are 397,187 duck farms in Europe with an inventory of 74.99 million head. The average size duck farm is 189 head. There are 56,992 turkey farms in Europe with 102.9 million head of inventory. The average turkey farm has an inventory of 1,806 head.

Overall poultry stocks have increased in Europe since 2010. Chicken stocks are up 14.6%, duck stocks are down 12.5%, and turkey stocks are up 5.8%. In 2020, Europe had 2.35 billion chickens with 1.86 billion in commercial chicken meat farms and 1.84 billion on household farms. Duck stocks in Europe were 74.99 million head and turkey stocks were 102.9 million head. Total poultry stocks on European farms were 2.53 billion birds (Figure 120).

Total Poultry Farms: 6,406,760 Commercial Chicken Farms 62'973 1% Household Chicken Farms **Duck Farms** 5'627'606 457'400 88% 7% **Turkey Farms** 258'780 4% Source: EuroStat 2016 holdings data Decision Innovation and EuroStat 2013 holdings by size data Solutions

**EUROPE NUMBER OF POULTRY FARMS BY TYPE** 



Europe number of poultry farms by type



# 4.4.2 Regional Economics

In 2020, the value of European GDP was nearly \$22.0 trillion. The agricultural production sector contributed 2% of the total GDP. Crop production in Europe was valued at \$294.6 billion. Red meat production was valued at \$209.6 billion. Poultry production was less than 1% of the total GDP (Figure 121).



# 4.4.3 Regional Production Volume and Value

Europe produced 22.3 million metric tons of poultry meat in 2020 with 88% being chicken meat, 2% being duck meat, and 10% being turkey meat (Figure 122).



European poultry production has increased 12.3% since 2010. European poultry production in 2020 was valued at \$34.7 billion with 85% due to chicken production, 11% due to turkey production and 4% due to duck production (Figure 123).



### 4.4.4 Regional Cost of Production

Within the European region, the share of feed relative to total broiler production cost ranged from 59% in the United Kingdom to 65% in Poland in 2017 (Figure 124). Overall, the cost of day-old chicks was the second largest component in the broiler production cost in Europe, which averaged 18% across these countries. In the United Kingdom the share of day-old chicks (22%) was the highest among the other European countries, followed by France with a share of 19% of total cost.



Figure 124. Feed share of broiler production costs: Europe

France had the highest other variable costs, which includes heating, electricity, and animal health at 10% of total costs, while the United Kingdom had the lowest other variable costs relative to total cost at 8%. For the Netherlands, Germany, Italy, and Poland other variable costs accounted for 9% of total cost of broiler production. Some countries such the Netherlands and Germany, incur in manure disposal expenses. However, other countries such as the United Kingdom and Poland, manure disposal represents a small source of income.

#### 4.4.5 France

#### 4.4.5.1 Demographics

The number of poultry farms in France was estimated at 31,070 with household or micro-producer chicken farms accounting for 39% or 12,212 of the total poultry farms (Figure 125). The share of poultry farms which were commercial farms was an estimated 19% or 5,878 of the total. Duck farms accounted for the second largest share of poultry farms with 29% of the total or 8,870 duck farms, altogether. Turkey farms were the smallest share of poultry farms with 13% or 4,110 farms.

The average size of the household or micro-producer chicken farm was 87 head. Commercial chicken farms had an average 25,467 head. The average size duck farm was 2,478 head. The average turkey farm has an inventory of 4,313 head.

Poultry production has declined since 2010, while poultry consumption has increased. In 2019 poultry production totaled nearly 1.7 million metric tons, a 5% decline compared to 2010 (see Figure 126). Poultry consumption in 2019 was 1.5 million metric tons, an increase of 2% since 2010.

In 2020, France's poultry stocks included 242 million chickens, nearly 22 million ducks, and 17.7 million turkeys (Table 34). Chicken stocks increased 5%, duck stocks decreased 16%, and turkey stocks decreased 27% since 2010.









France poultry production & consumption

| FRANCE POULTRY STOCKS, SLAUGH |          |        |         |         |
|-------------------------------|----------|--------|---------|---------|
| 1,000 head                    | Chickens | Ducks  | Turkeys | Total   |
| Stocks                        | 242'015  | 21'978 | 17'725  | 281'718 |
| Producing Animals/Slaughtered | 770'478  | 61'119 | 39'087  | 870'684 |
| Production (1,000 MT)         | 1'130    | 192    | 321     | 1'643   |
| Sources: FAO, 2020            |          |        |         |         |

Table 34. France poultry stocks, slaughter & production

Overall, poultry slaughter in France decreased for all sectors from 2010 to 2020. Poultry slaughter in France totaled 870.7 million head in 2020. An estimated 88% or 770,478 head of poultry slaughter were chickens. Duck slaughter was the second largest share of poultry slaughter, representing 7% or 61,119 head. Turkey slaughter was the smallest share of poultry slaughter with about 6% or 17.7 million head. Chicken slaughter declined 5%, duck slaughter declined 24%, and turkey slaughter declined 34% from 2010.

Poultry production included 1.1 million metric tons of chicken, 321,000 metric tons of turkey, and 192,000 metric tons of duck. Compared to 2010, chicken production increased 16%, duck production declined 32%, and turkey production declined 21%.

# 4.4.5.2 GDP and Value of Production

The GDP of France was valued at \$2.6 trillion in 2020. Nonagricultural GDP was approximately 97% or \$2.5 billion of the total GDP. The agricultural production sector was estimated to contribute 3% of the total GDP. Crop production represented about 2% or \$47.2 billion of the total GDP. An estimated \$23.5 billion or 1% of GDP was derived from red meat production. Although less than 1%, chicken production was the third largest share of agricultural production with \$2.0 billion in contributions. Following chicken production, duck production was valued at \$760.6 million. Turkey production contributed an estimated \$602 million or less than 1% of the total GDP (Figure 127).



The combined (direct and indirect) effects of agricultural production in France are estimated to be \$163.7 billion. Of this amount, \$8.5 billion comes from the poultry industry, with \$5.0 billion from chicken meat production, \$1.9 billion from duck production, and \$1.5 billion from turkey production. Agriculture pays a net value of \$1.9 billion in taxes, \$73.7 million of which is estimated to be from the poultry industry (Table 35).

| ECONOMIC EFFECTS - FRANCE (\$  |              |              |               |             |  |
|--|--------------|--------------|---------------|-------------|--|
|  | Direct       | Indirect     | Total         | Taxes paid* |  |
| All agriculture  | \$74'010'064 | \$89'702'665 | \$163'712'729 | \$1'927'326 |  |
| Livestock  | \$26'844'884 | \$32'536'895 | \$59'381'779  | \$699'079   |  |
| Poultry  | \$3'373'798  | \$5'077'566  | \$8'451'364   | \$73'653    |  |
| Chicken  | \$2'010'837  | \$3'026'310  | \$5'037'147   | \$43'898    |  |
| Duck   | \$760'637    | \$1'144'759  | \$1'905'396   | \$16'605    |  |
| Turkey   | \$602'324    | \$906'498    | \$1'508'822   | \$13'149    |  |
| Source: FAOSTAT. OFCD Input-Output Tables .*Taxes is equal to total taxes net of subsidies |              |              |               |             |  |

Table 35. Economic effects - France



#### 4.4.5.3 Labor

The labor force in France had an estimated 30.6 million individuals in 2020 (Table 36). Approximately, 29.9 million people worked in nonagricultural labor sectors. Overall, the agricultural labor accounted for 674,058 people. Among those employed in the agricultural sector, 31,418 people were employed in the poultry sector. Of that total, 18,726 people worked in poultry production. The total number of meat processing jobs in France was 130,022 during 2020. Wages earned in meat processing totaled \$4.7 billion. Livestock meat processing accounted for 98,255 jobs and nearly \$3.6 billion in wages earned. Poultry meat processing accounted for 31,767 jobs and nearly \$1.2 billion in wages earned.

### 4.4.5.4 Cost of Production

In France the cost of feed represented the largest share of broiler production total cost at 57% in 2017. Day-old chicks was the second largest cost component of the cost of production structure at 19%, followed by other variable costs (heating, electricity, litter, and animal health, 10%) and housing (7%).

Labor cost accounted for 6% of total costs. France's share of labor relative to total broiler production cost was the highest compared with other European countries included in this study (see Figure 128).

### 4.4.5.5 Trade

Belgium was the largest market for France's poultry exports in 2020. France exported more than \$168 million worth of poultry products to Belgium. The second and third largest markets for France poultry exports were Germany (\$158.6 million) and the UK (\$117.4 million). The value of poultry products exported by France to its top ten markets was over \$824.3 million in 2020.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - FRANCE                                  |            |            |            |  |  |
|--|------------|------------|------------|--|--|
|  | Total      | Female     | Male       |  |  |
| Total Country Labor  | 30'549'303 | 14'661'392 | 15'887'911 |  |  |
| Non-Agricultural Labor   | 29'875'245 | 14'468'438 | 15'406'806 |  |  |
| Agricultural Labor   | 674'058    | 192'954    | 481'105    |  |  |
| Total Non-Poultry Agricultural Labor   | 642'641    |            |            |  |  |
| Total Poultry Labor  | 31'418     |            |            |  |  |
| Chicken Labor  | 18'726     |            |            |  |  |
| Turkey Labor   | 5'609      |            |            |  |  |
| Other Poultry Labor  | 7'083      |            |            |  |  |
|  |            | Wages (\$1 | ,000 USD)  |  |  |
| Total Meat Processing Labor  | 130'022    | \$4'71     | 7'203      |  |  |
| Livestock Processing Labor   | 98'255     | \$3'56     | 4'706      |  |  |
| Poultry Processing Labor 31'767 \$1'152'497  |            |            |            |  |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |            |            |            |  |  |

Table 36. Agricultural labor force characteristics - France



#### Figure 129. France broiler production cost structure



Figure 128.

France top 10 poultry exports, trade value





France poultry export flows



2020, France's top five suppliers of poultry meat were Belgium, Poland, Germany, the Netherlands, and Spain. The total value of poultry meat exported by these five countries to France was estimated at \$1.3 billion (see Figure 131 and Figure 132).





Figure 132.

France poultry import flows

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# 4.4.6 Germany

## 4.4.6.1 Demographics

In Germany, the number of poultry farms totaled 9,040 with the 4,260 duck farms representing the largest share of poultry farms at 47% (Figure 133). Approximately, 24% of the total poultry farms, or 2,116 farms were household chicken farms. The 1,730 turkey farms accounted for 19% of Germany's poultry farms and the 934 commercial chicken farms accounted for 10% of Germany's poultry farms.

The average commercial chicken farm had 171,180 chickens. The average turkey farm had 9,148 head. The average size of the household or micro-producer farm was 71 head. The average size duck farm was 1,019 head.

Poultry production and consumption are both rising in Germany. Poultry production in 2019 totaled 1.5 million metric tons. Poultry consumption in 2019 was 1.5 million metric tons. Poultry production increased 12% since 2010. Consumption of poultry in Germany increased 11% (Figure 134).

In Germany, poultry stocks included 160 million chickens, 15.8 million turkeys, and 4.3 million ducks (Table 37). Poultry slaughter totaled 670.1 million head.





Germany number of poultry farms by type



| Figure | 13 |
|--------|----|
|--------|----|

Germany poultry production & consumption

| GERMANY POULTRY STOCKS, SLAUG |          |       |         |         |
|-------------------------------|----------|-------|---------|---------|
| 1,000 head                    | Chickens | Ducks | Turkeys | Total   |
| Stocks                        | 114'523  |       | 31'985  | 146'508 |
| Producing Animals/Slaughtered | 291'985  |       | 5'912   | 297'897 |
| Production (1,000 MT)         | 696      |       | 71      | 767     |
| Sources: FAO, 2020            |          |       |         |         |

Table 37. Germany poultry stocks, slaughter & production

Chicken slaughter was estimated at 623.2 million head. Turkey slaughter was an estimated 34.9 million head. Germany's chicken slaughter increased from 2010 to 2020 by 1%. Duck and turkey slaughter decreased 55% and 9%, respectively. Poultry production included nearly 1.1 million metric tons of chicken, 476,000 metric tons of turkey, and 27,000 metric tons of duck. Since 2010, chicken production increased 27%, duck production declined 57%, and turkey production declined 1%.

# **4.4.6.2 GDP and Value of Production**

In 2020, the value of GDP in Germany was an estimated \$3.8 trillion. The non-agricultural sector represented approximately 99% of the total GDP. The agricultural production sector was dominated by red meat production. About \$27.5 billion was derived from red meat production. Crop production was the second largest share of agricultural production with \$18.6 billion. An estimated \$1.4 billion was derived from chicken production. Turkey production represented \$830.5 million. The smallest share of agricultural production was duck with production approximately \$233.5 million in contributions.



The combined (direct and indirect) effects of agricultural production in Germany are estimated to be \$110.8 billion. Of this amount, \$6.2 billion comes from the poultry industry, with \$3.5 billion from chicken meat production, \$582 million from duck production, and \$2.1 billion from turkey production. Agriculture pays a net value of \$1.8 billion in taxes, \$95.5 million of which is estimated to be from the poultry industry.

| ECONOMIC EFFECTS - GERMANY (   |           |          |           |             |  |
|--|-----------|----------|-----------|-------------|--|
|  | Direct    | Indirect | Total     | Taxes paid* |  |
| All agriculture  | \$160'000 | \$4'341  | \$ 15'826 | \$180'167   |  |
| Livestock  | \$623'161 | \$12'072 | \$34'901  | \$670'134   |  |
| Poultry  | \$ 1'066  | \$ 27    | \$ 476    | \$ 1'569    |  |
| Chicken  | \$160'000 | \$4'341  | \$ 15'826 | \$180'167   |  |
| Duck   | \$623'161 | \$12'072 | \$34'901  | \$670'134   |  |
| Turkey   | \$ 1'066  | \$ 27    | \$ 476    | \$ 1'569    |  |
| Source: FAOSTAT, OECD Input-Output Tables .*Taxes is equal to total taxes net of subsidies |           |          |           |             |  |

Table 38. Economic effects - Germany

# 4.4.6.3 Labor

According to data from the World Bank, 44.1 million people comprised the labor force in Germany during 2020 (Table 39). Of that total, 43.6 million people worked in non-agricultural labor sectors. Approximately, 534,549 people were in employed in agricultural sectors.

Among those in agriculture, 27,080 people were employed in poultry production.

The total number of meat processing jobs in Germany was 218,275 during 2020. Wages earned in meat processing totaled \$5.7 billion. Livestock meat processing accounted for 184,927 jobs and \$4.8 billion in wages earned. Poultry processing accounted for 33,348 jobs and \$869.5 million in wages earned.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - GERMANY                                 |                     |            |            |  |  |
|--|---------------------|------------|------------|--|--|
|  | Total               | Female     | Male       |  |  |
| Total Country Labor  | 44'120'268          | 20'728'495 | 23'391'773 |  |  |
| Non-Agricultural Labor   | 43'585'719          | 20'560'272 | 23'025'447 |  |  |
| Agricultural Labor   | 534'549             | 168'223    | 366'326    |  |  |
| Total Non-Poultry Agricultural Labor   | 507'468             |            |            |  |  |
| Total Poultry Labor  | 27'080              |            |            |  |  |
| Chicken Labor  | 15'423              |            |            |  |  |
| Turkey Labor   | 9'099               |            |            |  |  |
| Other Poultry Labor  | 2'558               |            |            |  |  |
|  |                     | Wages (\$1 | ,000 USD)  |  |  |
| Total Meat Processing Labor  | 218'275             | \$5'69     | 0'899      |  |  |
| Livestock Processing Labor   | 184'927 \$4'821'448 |            |            |  |  |
| Poultry Processing Labor   | 33'348 \$869'452    |            |            |  |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |                     |            |            |  |  |

Table 39. Agricultural labor force characteristics - Germany

## **4.4.6.4 Cost of Production**

After feed cost (61%), which was the largest proportion of broiler production cost in Germany in 2017, day-old chick cost was the second largest share in the production cost at 17%. Over one fifth of total cost was distributed among variable costs (9%), housing (7%) and labor (5%). General costs relate to the costs at farm level for insurance, bookkeeping, consultancy, telephone, and transport was 1%. Germany also had the added cost of 1% related to manure disposal.

# Germany Broiler Production Cost Structure (2017)



### 4.4.6.5 Trade

The three largest destinations for Germany's poultry meat exports were the Netherlands (\$330.8 million), France (\$270.5), and the United Kingdom (\$220.1) in 2020. The top ten markets for Germany's poultry meat exports were located in Europe (see Figure 137 and Figure 138). Overall, Germany exported poultry meat to 116 countries in 2020.





Germany top 10 poultry exports, trade value





Germany poultry export flows

# **Germany Top-10 Poultry Imports** Trade Value (\$1,000 USD)



26% (\$550.3 million) of the value of poultry meat imported by Germany was shipped from Poland. Four other countries supplied over \$1.1 billion worth of poultry meat to Germany in 2020: The Netherlands, Austria, France, and Italy (see Figure 139 and Figure 140).



Germany top 10 poultry imports, trade value



Figure 140.

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# 4.4.7.1 Demographics

The number of poultry farms in Italy was estimated at 11,690. About 62% or 7,231 poultry farms were household or micro-producer chicken farms (Figure 141). The next largest share of poultry farms were commercial chicken farms, representing 14% or 1,649 of the total poultry farms. Approximately 13% or 1,530 poultry farms were turkey farms. The smallest share of poultry farms were duck farms. About 11% or 1,280 of poultry farms in Italy were duck farms.

The average size duck farm was 201 ducks. The average size turkey farm was 8,723 head. Household or micro-producer chicken farms had an average 53 head. The average number of chickens on commercial farms was 60,164 head.

Poultry production and consumption in Italy has increased since 2010. Poultry production totaled 1.4 million metric tons in 2019, an increase of 17% compared to 2010 (see Figure 142). Poultry consumption in 2019 was 1.1 million metric tons in 2019. Consumption of poultry in Italy has increased 8%.

Of the 167.6 million head in Italy's poultry stocks during 2020, 154 million were chickens, 13.3 million were turkeys, and 257,000 were ducks (Table 40).









Figure 142.

Italy poultry production & consumption

| ITALY POULTRY STOCKS, SLAUGHTER |          |       |         |         |
|---------------------------------|----------|-------|---------|---------|
| 1,000 head                      | Chickens | Ducks | Turkeys | Total   |
| Stocks                          | 154'000  | 257   | 13'346  | 167'603 |
| Producing Animals/Slaughtered   | 573'846  | 714   | 29'431  | 603'991 |
| Production (1,000 MT)           | 1'067    | 2     | 313     | 1'382   |
| Sources: FAO, 2020              |          |       |         |         |

Table 40. Italy poultry stocks, slaughter & production

Poultry slaughter totaled 604.1 head. Chicken slaughter was estimated at 573.8 million head. Turkey slaughter was an estimated 29.4 million head. Duck slaughter was 714,000 head. Since 2010, Italy's chicken slaughter increased 17%. Turkey slaughter increased 4%.

Poultry production included 1.1 million chickens, 313,000 metric tons of turkeys, and 2,000 ducks. Since 2010, chicken production increased 23% and turkey production increased 5%.

# **4.4.7.2 GDP** and Value of **Production**

The total GDP value of Italy was estimated at \$1.9 trillion in 2020. About 97% of the total GDP was produced by non-agricultural sectors. Crop production, valued at \$31.1 billion, represented about 2% of the total GDP. Red meat production represented about 1% or \$15.6 billion. Although less than 1% of Italy's total GDP, chicken production contributed \$2.2 billion to the total. Turkey production was valued at \$465.8 million (Figure 143).



Figure 143.

Italy GDP & value of production by sector

| ECONOMIC EFFECTS - ITALY (\$1,00              |                                |              |               |             |
|---|--------------------------------|--------------|---------------|-------------|
|   | Direct                         | Indirect     | Total         | Taxes paid* |
| All agriculture                               | \$49'308'209                   | \$62'811'518 | \$112'119'727 | \$1'036'492 |
| Livestock                                     | \$18'249'164                   | \$23'246'792 | \$41'495'956  | \$383'610   |
| Poultry                                       | \$2'619'790                    | \$4'571'534  | \$7'191'324   | \$44'027    |
| Chicken                                       | \$2'154'000                    | \$3'758'730  | \$5'912'730   | \$36'199    |
| Duck  | -                              | -            | -             | -           |
| Turkey  | \$465'790                      | \$812'804    | \$1'278'594   | \$7'828     |
| Source: FAOSTAT OFCD Input-Output Tables *Tay | es is equal to total taxes net | ofsubsidies  |               |             |

Table 41. Economic effects - Italy

The combined (direct and indirect) effects of agricultural production in Italy are estimated to be \$112.1 billion. Of this amount, \$7.2 billion comes from the poultry industry, with \$5.9 billion from chicken meat production and \$1.3 billion from turkey production. Agriculture pays a net value of \$1.0 billion in taxes, \$44.0 million of which is estimated to be from the poultry industry (Table 41).

# 4.4.7.3 Labor

The total number of people in Italy's labor force was 25.1 million in 2020 (see Table 42). By gender, males represented 58% or 15.1 million of the total labor force. Females represented 42% of the total labor force. More than 24.2 million individuals worked in non-agricultural sectors. The remaining 898,007 worked in agriculture. Poultry production labor totaled 47,544 in 2020.

In 2020, an estimated 59,796 people were employed in Italy's meat processing sector. The total wages earned from meat processing was \$2.1 billion. Livestock meat processing was the largest share of meat processing with 47,585 jobs and \$1.7 billion in wages earned. Poultry meat processing accounted for 12,211 jobs and \$424.9 million in wages earned.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - ITALY                                   |            |            |            |  |  |
|--|------------|------------|------------|--|--|
|  | Total      | Female     | Male       |  |  |
| Total Country Labor  | 25'137'672 | 10'679'248 | 14'458'424 |  |  |
| Non-Agricultural Labor   | 24'239'665 | 10'445'679 | 13'793'986 |  |  |
| Agricultural Labor   | 898'007    | 233'569    | 664'438    |  |  |
| Total Non-Poultry Agricultural Labor   | 850'464    |            |            |  |  |
| Total Poultry Labor  | 47'544     |            |            |  |  |
| Chicken Labor  | 39'090     |            |            |  |  |
| Turkey Labor   | 8'453      |            |            |  |  |
| Other Poultry Labor  | -          |            |            |  |  |
|  |            | Wages (\$1 | ,000 USD)  |  |  |
| Total Meat Processing Labor  | 59'796     | \$2'08     | 0'723      |  |  |
| Livestock Processing Labor   | 47'585     | \$1'65     | 5'802      |  |  |
| Poultry Processing Labor 12'211 \$424'921  |            |            |            |  |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |            |            |            |  |  |

Table 42. Agricultural labor force characteristics - Italy

#### **4.4.7.4 Cost of Production**

By far the largest component of the cost of broiler production in Italy was feed at 65% of total costs in 2017. Three components together, day-old chicks (17%), other variables cost (heating, electricity, litter, and animal health, 9%) and housing (6%), accounted about one third of total costs. Labor and general costs (i.e., insurance, booking, consultancy, telephone, and transport) made up the lowest share of total cost with a share of 3% and 1%, respectively (see Figure 144).



Figure 144.

Italγ broiler production cost structure

#### 4.4.7.5 Trade

Germany was by far the main market for Italy's poultry meat exports in 2020. Italy exported more than \$183 million in poultry meat to Germany equivalent to about 51,801 MT. The value of poultry products exported by Italy to its top ten destinations reached more than \$348.5 million (see Figure 145 and Figure 146).



**Italy Top-10 Poultry Exports** 







Italy poultry export flows



Italy imported from Germany, its main supplier of poultry meat in 2020, more than 32,656 MT of poultry meat valued at \$76.4 million. Overall, Italy imported 83,285 MT of poultry meat with an estimated value of \$208.4 million. Ninety four percent of those imports were sourced from the top ten suppliers of poultry meat to Italy in 2020 (see Figure 147 and Figure 148).





Figure 148.

Italy top 10 poultry exports, trade value

#### 4.4.8 Netherlands

#### 4.4.8.1 Demographics

Out of an estimated 731 poultry farms in the Netherlands, about 85%, or 619 farms, were commercial chicken farms. The next largest share of poultry farms were duck farms, accounting for 8% or 60 poultry farms. Approximately 5% or 11 of the total poultry farms in the Netherlands were turkey farms. Household or micro-producer chicken farms represented 2% or 11 poultry farms (Figure 149).

Poultry production in the Netherlands increased since 2010, while poultry consumption has declined. In 2019, poultry production totaled 1.0 million metric tons, a 21% gain compared to 2010 (see Figure 150). Consumption totaled 64,753 metric tons in 2019, reflecting a 70% decrease from 2010.

Of the 113.2 million head in the Netherlands' poultry stocks, 101.9 million were chickens, 9.2 million were turkeys, and 2.2 million were ducks (See Table 43). Since 2010, chicken stocks increased 1%, and chicken slaughter increased 25%. Poultry slaughter in the Netherlands totaled 626.0 million head in 2020. An estimated 597.5 million chickens were slaughtered, representing % of the total poultry slaughter. Turkeys represented the second largest share of poultry slaughter with 20.3 million head. Duck slaughter was an estimated 8.2 million head.





Netherlands number of poultry farms by type



Poultry production included 996,000 metric tons of chicken, 167,000 metric tons of turkey, and 18,000 metric tons of ducks.

| NETHERLANDS POULTRY STOCKS, SI |          |       |         |         |
|--------------------------------|----------|-------|---------|---------|
| 1,000 head                     | Chickens | Ducks | Turkeys | Total   |
| Stocks                         | 101'863  | 2'171 | 9'208   | 113'242 |
| Producing Animals/Slaughtered  | 597'529  | 8'197 | 20'305  | 626'031 |
| Production (1,000 MT)          | 996      | 18    | 167     | 1'181   |
| Sources FAO 2020               |          |       |         |         |

Table 43. Netherlands poultry stocks, slaughter & production

# 4.4.8.2 GDP and Value of **Production**

The GDP of the Netherlands was valued at \$912.2 billion in 2020 with agricultural production representing about 2% of the total GDP. More than \$9.9 billion was derived from the red meat production sector which represented 1% of the total GDP. Crop production also represented about 1% of GDP with \$6.0 billion in contributions. Less than 1% of the total GDP was represented by chicken production. Turkey production also represented less than 1% of the total GDP and was valued at \$88.9 million (Figure 151).



#### Figure 151.

The combined (direct and indirect) effects of agricultural production in the Netherlands are estimated to be \$40.3 billion. Of this amount, \$3.8 billion comes from the poultry industry, with \$3.6 billion from chicken meat production and \$235 million from turkey production. Agriculture pays a net value of \$382 million in taxes, \$30 million of which is estimated to be from the poultry industry (Table 44).

| ECONOMIC EFFECTS - NETHERLAN                 |              |              |              |             |
|--|--------------|--------------|--------------|-------------|
|  | Direct       | Indirect     | Total        | Taxes paid* |
| All agriculture                              | \$17'414'605 | \$22'868'972 | \$40'283'577 | \$381'999   |
| Livestock                                    | \$11'375'902 | \$14'938'908 | \$26'314'810 | \$249'536   |
| Poultry                                      | \$1'436'832  | \$2'370'773  | \$3'807'605  | \$29'934    |
| Chicken                                      | \$1'347'963  | \$2'224'139  | \$3'572'102  | \$28'083    |
| Duck   | -            | -            | -            | -           |
| Turkey                                       | \$88'869     | \$146'634    | \$235'503    | \$1'851     |
| Source EAOSTAT OECD Input-Output Tables *Tay |              |              |              |             |

Table 44. Economic effects - Netherlands

### 4.4.8.3 Labor

The total number of individuals in the labor force in the Netherlands was 9.5 million in 2020 (Table 45). Approximately, 53%, or 5.0 million, were male and 47%, or 4.4 million, were female.

The agricultural sector employed individuals 2020. 178.629 in Approximately 72,405 individuals were employed in the poultry production industry.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - NETHERLANDS                             |           |           |            |  |  |
|--|-----------|-----------|------------|--|--|
|  | Total     | Female    | Male       |  |  |
| Total Country Labor  | 9'490'523 | 4'441'774 | 5'048'749  |  |  |
| Non-Agricultural Labor   | 9'311'894 | 4'390'146 | 4'921'748  |  |  |
| Agricultural Labor   | 178'629   | 51'628    | 127'001    |  |  |
| Total Non-Poultry Agricultural Labor   | 106'224   |           |            |  |  |
| Total Poultry Labor  | 72'405    |           |            |  |  |
| Chicken Labor  | 14'101    |           |            |  |  |
| Turkey Labor   | 29'152    |           |            |  |  |
| Other Poultry Labor  | 29'152    |           |            |  |  |
|  |           | Wages (\$ | 1,000 USD) |  |  |
| Total Meat Processing Labor  | 15'731    | \$68      | 0'348      |  |  |
| Livestock Processing Labor   | 11'795    | \$51      | 0'135      |  |  |
| Poultry Processing Labor   | 3'936     | \$17      | 0'213      |  |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |           |           |            |  |  |

Table 45. Agricultural labor force characteristics - Netherlands

Turkey production and "other" poultry labor accounted for the highest shares of jobs within the poultry production industry with 29,152 or 40% of the total for each. The remaining 20% or 14,101 individuals employed in poultry production worked in chicken production.

Meat processing labor totaled 15,731 jobs and \$680.3 million in wages earned. Livestock meat processing was the largest share of meat processing jobs with 11,795 jobs and \$510.1 million in wages earned. Poultry meat processing accounted for 3,936 jobs and \$170.2 million in wages earned.

# 4.4.8.4 Cost of Production

The Netherlands' cost of feed represented the largest share of broiler production total costs (61%). Day-old chicks was the second largest cost component at 17%, followed by the variable costs of heating, electricity, litter, and animal health (10%). Around 10% came from housing (6%) and labor (4%). The costs at farm level for insurance, bookkeeping, telephone, consultancy, and transport represented 1% of total costs. The Netherlands also had an added cost related to manure disposal accounting for 1% of total cost (Figure 152).

### 4.4.8.5 Trade

The United Kingdom was the main destination for the Netherlands' poultry meat exports in 2020. The Netherlands exported about 241,719 MT of poultry meat to the United Kingdom valued at \$772.5 million. The value of poultry meat exported by the Netherlands to its top ten destinations was estimated at \$2.6 billion in 2020, which made up about 86% of its total value of exports that year (see Figure 153 and Figure 154).







Netherlands top 10 poultry exports, trade value





Netherlands poultry export flows



The value of poultry imports by the Netherlands from its top ten suppliers was estimated at \$888.4 million equivalent to 541,393 MT in 2020. Almost 60% of the value of poultry imported by the Netherlands was from three countries Germany, the main supplier, Poland, and Belgium (see Figure 155 and Figure 156).



Netherlands top 10 poultry imports, trade value



Figure 156.

Netherlands poultry import flows



### 4.4.9 Poland

#### 4.4.9.1 Demographics

The total number of poultry farms in Poland is 200,531. Of this total, duck farms comprise the largest percentage with 114,620 farms accounting for 57% of poultry farms in Poland. Household or microproducer chicken farms comprised 63,852 farms which is 32% of poultry farms, the 21,420 turkey farms account for 11% of Poland's poultry farms, and the 638 commercial chicken farms make up less than 1% of Poland's poultry farms (Figure 157).

The average number of chickens on a commercial farm in Poland was 279,151 head. Household or microproducer farms had an average 40 head. Duck farms had an average 56 head. Turkey farms had an average 742 head.

Poultry production and consumption are both rising in Poland. Compared to 2010, poultry production doubled from 1.2 million metric tons to 2.6 million metric tons in 2019. Poultry consumption, totaling 889,419 metric tons in 2019, has fallen 2% since 2010 (Figure 158).

Of the 204.8 million head in Poland's poultry stocks, 182.5 million were chickens, 15.9 million were turkeys, and 6.4 million were ducks (see Table 46). Since 2010, chicken stocks in Poland increased 19%, duck stocks increased 9%, and turkey stocks increased 57% since 2010.



Figure 157.

Poland number of poultry farms by type





Poland poultry production & consumption

| POLAND POULTRY STOCKS, SLAUGH |           |        |         |           |
|-------------------------------|-----------|--------|---------|-----------|
| 1,000 head                    | Chickens  | Ducks  | Turkeys | Total     |
| Stocks                        | 182'473   | 6'406  | 15'892  | 204'771   |
| Producing Animals/Slaughtered | 1'178'807 | 27'429 | 40'905  | 1'247'141 |
| Production (1,000 MT)         | 2'200     | 64     | 407     | 2'671     |
| Sources: FAO, 2020            |           |        |         |           |

Table 46. Poland poultry stocks, slaughter & production

Poultry slaughter in Poland totaled 1.2 billion in 2020. An estimated 95% or 1.18 billion head of poultry slaughter were chickens. Turkey slaughter represented 3% or 40.9 million head of poultry slaughter. Duck slaughter was an estimated 2% or 27.4 million head of poultry slaughter. Poland's poultry slaughter also increased compared to 2010. Chicken slaughter increased 75%, duck slaughter increased 357%, and turkey slaughter increased 75%.

Poland's poultry production included 2.2 million metric tons of chickens, 407,000 metric tons of turkey, and 64,000 metric tons of ducks in 2020. Compared to 2010, chicken production was 96%, duck production was 9% higher, and turkey production was 307% higher in 2020.

# 4.4.9.2 GDP and Value of Production

In 2020, the GDP value in Poland was estimated at \$594.2 billion. Agricultural production sectors represented about 4% of the total GDP. Crop production was the largest share of agricultural production representing 2% or \$10.6 billion of the total GDP. Red meat production also represented 2% or \$9.6 billion of the total GDP. The poultry production sector represented less than 1% of the total GDP. Chicken production was the largest share of poultry production with \$2.9 billion in value. Turkey production followed with \$754.8 million in contributions. The smallest of the poultry production sector was duck production, representing about \$153.8 million of the total GDP in Poland (Figure 159).



The combined (direct and indirect) effects of agricultural production in Poland are estimated to be \$56.3 billion. Of this amount, \$10.2 billion comes from the poultry industry, with \$ 7.8 billion from chicken meat production, \$411 million from duck production, and \$2.0 billion from turkey production. Agriculture pays a net value of \$1.1 billion in taxes, \$163 million of which is estimated to be from the poultry industry (Table 47).

| ECONOMIC EFFECTS - POLAND (\$               |                               |                 |              |             |
|---|-------------------------------|-----------------|--------------|-------------|
|   | Direct                        | Indirect        | Total        | Taxes paid* |
| All agriculture                             | \$24'050'566                  | \$32'221'132    | \$56'271'698 | \$1'144'254 |
| Livestock                                   | \$13'425'791                  | \$17'986'861    | \$31'412'652 | \$628'759   |
| Poultry                                     | \$3'812'986                   | \$6'382'938     | \$10'195'924 | \$213'885   |
| Chicken                                     | \$2'904'431                   | \$4'862'017     | \$7'766'448  | \$162'920   |
| Duck  | \$153'775                     | \$257'419       | \$411'194    | \$8'626     |
| Turkey                                      | \$754'780                     | \$1'263'502     | \$2'018'282  | \$42'338    |
| Source FAOSTAT OFCD Input-Output Tables *Ta | ves is equal to total taxes n | et of subsidies |              |             |

Table 47.Economic effects - Poland

#### 4.4.9.3 Labor

An estimated 18 million people worked in Poland's labor force in 2020, according to the World Bank. Among those working, more than 16.4 million worked for nonagricultural sectors. The total number of people working in the agricultural sector was 1.6 million. Approximately, 337,686 individuals were employed in the poultry production industry. Of that total, chicken production labor accounted for 202,758. Turkey production labor accounted for 52,691 jobs in poultry production. The remaining 82,237 individuals worked in "other" poultry labor sectors.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - POLAND                                  |            |            |            |  |  |  |
|--|------------|------------|------------|--|--|--|
|  | Total      | Female     | Male       |  |  |  |
| Total Country Labor  | 18'047'272 | 8'016'532  | 10'030'740 |  |  |  |
| Non-Agricultural Labor   | 16'395'819 | 7'375'352  | 9'020'468  |  |  |  |
| Agricultural Labor   | 1'651'453  | 641'180    | 1'010'272  |  |  |  |
| Total Non-Poultry Agricultural Labor   | 1'313'767  |            |            |  |  |  |
| Total Poultry Labor  | 337'686    |            |            |  |  |  |
| Chicken Labor  | 202'758    |            |            |  |  |  |
| Turkey Labor   | 52'691     |            |            |  |  |  |
| Other Poultry Labor  | 82'237     |            |            |  |  |  |
|  |            | Wages (\$1 | 1,000 USD) |  |  |  |
| Total Meat Processing Labor  | 120'958    | \$1'51     | 7'954      |  |  |  |
| Livestock Processing Labor   | 70'623     | \$880      | 6'280      |  |  |  |
| Poultry Processing Labor   | 50'335     | \$63       | 1'674      |  |  |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |            |            |            |  |  |  |

Table 48. Agricultural labor force characteristics - Poland

In 2020, an estimated 120,958 people were employed in Poland's meat processing sector. The total wages earned from meat processing was \$1.5 billion. Livestock meat processing accounted for 70,623 jobs and \$886.2 million in wages earned. Poultry meat processing accounted for 50,335 jobs and \$631.7 million in wages earned.

#### 4.4.9.4 Cost of Production

Sixty five percent of Poland's broiler total production cost was due to feed cost in 2017. Day-old chicks, variable costs, and housing accounted for 33% of production costs. Labor cost represented 2% of total costs. Poland's share of labor relative to total broiler production cost was the lowest compared with other European countries included in this study (see Figure 160).



Figure 161.Poland broiler production cost structure







# 4.4.9.5 Trade

Poland exported over 1.6 million MT of poultry meat valued at \$3.1 billion in 2020. The top three markets for Poland's poultry meat exports were Germany (\$612.5 million), the United Kingdom (\$577.1 million), and France (\$350.9 million) (see Figure 161 and Figure 162).



Figure 162.

Poland poultry export flows



Most of the poultry meat imported by Poland was from Germany (\$66.2 million) in 2020. The second and third largest supplier of poultry meat to Poland were the United Kingdom (\$16.4 million) and Austria (\$13.1 million) (see Figure 163 and Figure 164).

Figure 163. Poland top 10 poultry imports, trade value



Figure 164.

Poland poultry import flows

#### DECISION INNOVATION SOLUTIONS

GLOBAL MACROECONOMIC INDICATORS FOR THE POULTRY MEAT INDUSTRY

# 4.4.10 United Kingdom

#### 4.4.10.1 Demographics

Poultry farms accounted for 9,041 farms in the United Kingdom. Duck farms were the largest share of poultry farms with a 60% share, or 5,460 farms. Turkey farms were the second largest share of poultry farms with 18% or 15,900 farms. About 15%, or 1,387 poultry farms, were commercial chicken farms. Household or microproducer farms were 7% or 603 of the total poultry farms in the United Kingdom (Figure 165).

Commercial chicken farms had 82,473 head on average. Household chicken or micro-producer farms had 140 head on average. The average number of turkeys per farm was 2,327. Duck farms had an average of 371 head.

Since 2010, poultry production and consumption have both increased in the United Kingdom. The total production volume of poultry in the United Kingdom was 1.9 million metric tons in 2021, representing a 26% increase compared to 2010 (Figure 166). The total poultry consumption reported in 2021 was 2.1 million metric tons, a 23% increase since 2010.

Of the 177.7 million head in poultry stocks, 172.0 million were chickens, 3.7 million were turkeys, and 2.0 million were ducks. Since 2010, chicken stocks increased 7%, duck stocks increased 11%, and turkey stocks decreased 8% since 2010.





United Kingdom number of poultry farms by type



United Kingdom poultry production & consumption

| UNITED KINGDOM POULTRY STOCKS |           |        |         |           |
|-------------------------------|-----------|--------|---------|-----------|
| 1,000 head                    | Chickens  | Ducks  | Turkeys | Total     |
| Stocks                        | 172'000   | 2'026  | 3'700   | 177'726   |
| Producing Animals/Slaughtered | 1'149'000 | 10'600 | 13'600  | 1'173'200 |
| Production (1,000 MT)         | 1'784     | 22     | 143     | 1'949     |
| с <u>г</u> ло 2020            |           |        |         |           |

Sources: FAO, 2020

Table 49. United Kingdom poultry stocks, slaughter & production



 $rac{5}{2}$  global macroeconomic indicators for the poultry meat industry

In 2020, poultry slaughter in the United Kingdom totaled 1.2 billion head. Chicken slaughter was estimated at 1.1 billion head. Turkey slaughter was an estimated 13.6 million head. Duck slaughter was 10.6 million head. During this time, chicken slaughter increased 27% compared to 2010. Duck slaughter declined 20%. Turkey slaughter declined 13% compared to 2010. Poultry production included nearly 1.8 million metric tons of chicken, 143,000 metric tons of turkeys, and 22,000 metric tons of ducks in 2020. Compared to 2010, chicken production increased 30%, duck production decreased 25% and turkey production decreased 12%.

# 4.4.10.2 GDP and Value of Production

In 2020, the GDP of the United Kingdom was valued at \$2.7 trillion. The agricultural production sectors represented about 1% of the total GDP. Red meat production, estimated at nearly \$15 billion, was the largest share (0.55%) of agricultural production. Crop production was valued at \$11.1 billion and represented about 0.41% of the total GDP. Chicken production represented an estimated 0.1% percent, or \$2.8 billion. About 0.01% or \$319.3 of the total GDP production was derived from turkey production. The smallest share of agricultural production was duck production with \$112.7 or 0.004% of the total GDP (Figure 167).



| ECONOMIC EFFECTS - UNITED KIN  |              |              |              |             |  |
|--|--------------|--------------|--------------|-------------|--|
|  | Direct       | Indirect     | Total        | Taxes paid* |  |
| All agriculture  | \$29'309'238 | \$33'753'815 | \$63'063'053 | \$1'103'350 |  |
| Livestock  | \$18'190'002 | \$20'948'411 | \$39'138'413 | \$684'765   |  |
| Poultry  | \$3'216'995  | \$4'458'755  | \$7'675'750  | \$107'084   |  |
| Chicken  | \$2'785'035  | \$3'860'059  | \$6'645'094  | \$92'705    |  |
| Duck   | \$112'659    | \$156'145    | \$268'804    | \$3'750     |  |
| Turkey   | \$319'301    | \$442'551    | \$761'852    | \$10'629    |  |
| Source: FAOSTAT, OECD Input-Output Tables .*Taxes is equal to total taxes net of subsidies |              |              |              |             |  |

Table 50. Economic effects - United Kingdom

The combined (direct and indirect) effects of agricultural production in the U.K. are estimated to be \$63.1 billion. Of this amount, \$7.7 billion comes from the poultry industry, with \$6.6 billion from chicken meat production, \$269 million from duck production, and \$762 million from turkey production. Agriculture pays a net value of \$1.1 billion in taxes, \$107 million of which is estimated to be from the poultry industry (Table 50).

# 4.4.10.3 Labor

An estimated 34.8 million people worked in the United Kingdom's labor force (Table 51). Approximately 52%, or 18.2 million of the total work force were male. The remaining 48%, or 16.5 million were female. The non-agricultural sectors employed 34.4 million people in 2020.

An estimated 356,588 people worked in the agricultural sector. Among those working in the agricultural sectors, an estimated 39,420 people worked in poultry production. The total number of meat processing jobs was 96,390 in 2020. More than \$3.0 billion in wages earned were derived from meat processing jobs. Livestock meat processing accounted for 69,566 jobs and \$2.2 billion in wages earned. Poultry meat processing accounted for 26,824 jobs and \$843.4 million in wages earned.

# 4.4.10.4 Cost of **Production**

The United Kingdom's cost of feed accounted for the largest share of broiler production total cost at 59% in 2017. Day-old chicks ranked as the second largest cost relative to total broiler production cost at 22%, followed by other variable costs (heating, electricity, litter, and animal health, 8%) and housing (6%). Labor cost accounts for 4% of total costs. The costs at farm level for insurance, bookkeeping, consultancy, telephone, and transport represent 1% of total costs (see Figure 168).

#### AGRICULTURAL LABOR FORCE CHARACTERISTICS - UNITED KINGDOM Female Total Male 16'527'254 18'222'159 Total Country Labor 34'749'413 Non-Agricultural Labor 34'392'825 16'433'124 17'959'700 356'588 94'130 262'459 Agricultural Labor Total Non-Poultry Agricultural Labor 317'169 **Total Poultry Labor** 39'420 Chicken Labor 34'127 Turkey Labor 3'913 Other Poultry Labor 1'380 Wages (\$1,000 USD) Total Meat Processing Labor 96'390 \$3'030'548 Livestock Processing Labor \$2'187'179 69'566 Poultry Processing Labor 26'824 \$843'370 Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3

Table 51. Agricultural labor force characteristics - United Kingdom





Ireland, the Netherlands, and France were the top three markets for the United Kingdom's poultry exports in 2020. The United Kingdom exported \$155.1 million in poultry meat to Ireland. At the same time, the United Kingdom's value of poultry exported to the Netherlands and France was assessed at \$77.5 million and \$43.4 million, correspondingly (see Figure 169 and Figure 170). Overall, the United Kingdom exported 481,961 MT of poultry in 2020.



United Kingdom top 10 poultry exports, trade value



Figure 170.

Africa number of poultry farms by type



The value of poultry meat imports by the United Kingdom from all countries was estimated at \$2.7 billion in 2020. The top supplier of imported poultry meat to United Kingdom were the Netherlands, Poland, and Germany. Exports by three countries to the United Kingdom reached more than \$1.8 billion (see Figure 171 and Figure 172).





Figure 172.

Africa number of poultry farms by type

### DECISION INNOVATION SOLUTIONS

GLOBAL MACROECONOMIC INDICATORS FOR THE POULTRY MEAT INDUSTRY

# 4.5 Africa

# 4.5.1 Regional Demographics and Poultry Stocks

The African broiler industry has 30.3 million farms with 115,872 (<1%) of those being commercial farms and 30 million (99.8%) being household or micro-producer farms (Figure 173). African broiler farms have stocks of 2.1 billion chickens with 83.0% being on commercial farms and 17.0% being on household or micro-producer farms. The average size of commercial broiler farms is 28,646 head. The average size of the household or micro-producer farms is 10 head. There are 99,046 duck farms in Africa with an inventory of 18.2 million head. The average size duck farm is 185 head. There are 22,266 turkey farms in Africa with 29.8 million head of inventory. The average turkey farm has an inventory of 1,337 head.

Chicken stocks have increased 28%, duck stocks have increased 2%, and turkey stocks are up 38.5% (Figure 174).





Figure 174.

Africa poultry stocks

# 4.5.2 Regional Economics

Africa's total GDP was an estimated \$2.37 trillion in 2020. Agricultural sectors contributed an estimated 11 percent of GDP, with the crop sector valued at \$196.6 billion. Red meat was the second highest valued agricultural sector at \$55 billion. Chicken production was the largest contributor to poultry production and valued at \$12.1 billion (Figure 175).

## 4.5.3 Regional Poultry Production Volume and Value

African poultry production has increased 27.4% since 2010. Africa produced 6.7 million metric tons of poultry meat in 2020 with 95% being chicken meat, 2% being duck meat, and 3% being turkey meat (Figure 176).



Figure 175. Africa GDP & value of production by sector



African value of poultry production in 2020 was \$12.9 billion with 94% due to chicken production, 4% due to turkey production and 2% due to duck production (Figure 177).





# **4.5.4 Regional Cost of Production**

Cost of production data from 2012 for Morocco, Nigeria 2020, and 2021 for South Africa indicates that similarly to the rest of the countries included in this study, feed is the largest cost in poultry production. This input accounted for 68% of total cost in these countries, on average (see Figure 178).





## 4.5.4.1 Egypt

#### 4.5.4.2 Demographics

Egypt has about 3,845,557 poultry farms. Most of these poultry farms are household or micro-producer farms accounting for 99.6% or 3,829,769 of the total. Approximately 0.19%, or 14,698 poultry farms, were commercial chicken farms. Duck farms accounted for 0.01% or 814. The remaining 277 poultry farms were turkey farms (Figure 179). The average number of turkeys per farm was 12,355 head. Duck farms had an average 9,563 head. Commercial farms had an average 7,162 head. Household chicken farms had an average 16 head.

Egypt's poultry consumption and production have more than doubled since 2010. In 2021, poultry production totaled 1.5 million metric tons, approximately 81% higher than Egypt's poultry production in 2010 (see Figure 180). In 2021, Egypt consumed nearly 1.6 million metric tons of poultry, an estimated 61% increase compared to 2010.

The total number of poultry stocks was 178.2 million head. About 94% or 167 million head of Egypt's poultry stocks were chickens. Ducks accounted for 4% or 7.8 million head of the total poultry stocks in Egypt. Turkeys represented the remaining 2% (3.4 million head) of poultry stocks in Egypt. Since 2010, chicken





Egypt number of poultry farms by type



Egypt pount y production & consumption

stocks increased 61%, duck stocks decreased 11%, and turkey stocks increased 109% since 2010.

| EGYPT POULTRY STOCKS, SLAUGHTE |           |        |         |           |
|--------------------------------|-----------|--------|---------|-----------|
| 1,000 head                     | Chickens  | Ducks  | Turkeys | Total     |
| Stocks                         | 167'039   | 7'781  | 3'417   | 178'237   |
| Producing Animals/Slaughtered  | 1'007'352 | 28'990 | 2'748   | 1'039'090 |
| Production (1,000 MT)          | 1'339     | 71     | 24      | 1'434     |
| Sources EAO 2020               |           |        |         |           |

Table 52. Egypt poultry stocks, slaughter & production
Poultry slaughter in Egypt totaled 1.03 billion in 2020 (see Table 52). An estimated 97% or 1.01 billion head of poultry slaughter was chickens. Duck slaughter outnumbered turkey slaughter and represented nearly 29 million head of poultry slaughter. Approximately, 2.7 million turkeys were slaughtered in 2020. Poultry slaughter in all sectors increased compared to 2010. Chicken slaughter increased 86%, duck slaughter increased 10%, and turkey slaughter increased 121%.

Poultry production included 1.3 million metric tons of chicken, 71,000 metric tons of duck, and 24,000 metric tons of turkey. Compared to 2010, chicken production was 80% higher in 2020, duck production was 7% higher, and turkey production was 243% higher in 2020.

# 4.5.4.3 GDP and Value of Production

The total value of GDP in Egypt was estimated at \$363.1 billion in 2020. Approximately 6% of the total GDP was represented by agricultural production. Crop production was valued at \$11.1 billion or 3% of the total GDP. Red meat production was the next largest share of agricultural production representing 2% or \$6.8 billion. Representing about 1% or \$1.9 billion of the total GDP was chicken production. Duck production was valued at \$172.0 million or less than 1% of the total GDP. Turkey production also represented less than 1% of the total GDP. Turkey production was valued at \$33.7 million (Figure 181).



The combined (direct and indirect) effects of agricultural production in Egypt are estimated to be \$31.2 billion. Of this amount, \$4.5 billion comes from the poultry industry, with \$4.1 billion from chicken meat production, \$366 million from duck production, and \$72 million from turkey production. Agriculture pays a net value of \$61 million in taxes, \$7 million of which is estimated to be from the poultry industry (Table 53).

| ECONOMIC EFFECTS - EGYPT (\$1,0                  |                              |              |              |             |
|--|------------------------------|--------------|--------------|-------------|
|  | Direct                       | Indirect     | Total        | Taxes paid* |
| All agriculture                                  | \$19'953'582                 | \$11'291'521 | \$31'245'103 | \$61'248    |
| Livestock  | \$8'896'402                  | \$5'034'380  | \$13'930'782 | \$27'308    |
| Poultry  | \$2'132'912                  | \$2'408'176  | \$4'541'088  | \$6'776     |
| Chicken  | \$1'927'237                  | \$2'175'958  | \$4'103'195  | \$6'123     |
| Duck   | \$172'009                    | \$194'208    | \$366'217    | \$546       |
| Turkey   | \$33'666                     | \$38'011     | \$71'677     | \$107       |
| Source: FAOSTAT, Egypt CAPMAS.*Taxes is equal to | total taxes net of subsidies |              |              |             |

Table 53. Economic effects - Egypt

#### 4.5.4.4 Labor

The estimated total number of people in Egypt's labor force was 27.9 million in 2020 (Table 54). About 81%, or 22.7 million of the labor force were male, compared to only 5.2 million females. The non-agricultural sectors included nearly 22.1 million individuals.

Labor in the agricultural sector totaled to 5.7 million. Approximately 626,345 people were employed in the poultry production industry. Within this industry, chicken production dominated with approximately 565,947 workers.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - EGYPT                                   |            |            |            |  |
|--|------------|------------|------------|--|
|  | Total      | Female     | Male       |  |
| Total Country Labor  | 27'870'211 | 5'211'134  | 22'659'077 |  |
| Non-Agricultural Labor   | 22'144'441 | 4'066'718  | 18'077'723 |  |
| Agricultural Labor   | 5'725'770  | 1'144'416  | 4'581'354  |  |
| Total Non-Poultry Agricultural Labor   | 5'099'425  |            |            |  |
| Total Poultry Labor  | 626'345    |            |            |  |
| Chicken Labor  | 565'947    |            |            |  |
| Turkey Labor   | 9'886      |            |            |  |
| Other Poultry Labor  | 50'512     |            |            |  |
|  |            | Wages (\$´ | 1,000 USD) |  |
| Total Meat Processing Labor  | 9'007      | \$31       | '970       |  |
| Livestock Processing Labor   | 4'562      | \$16       | 192        |  |
| Poultry Processing Labor   | 4'445      | \$15       | '778       |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |            |            |            |  |

Table 54. Agricultural labor force characteristics - Egypt

The next largest share of the poultry production industry was "other" poultry labor with 50.512 individuals. Turkey production was the smallest within the poultry production industry with only 9,886 workers.

The total number of meat processing jobs in Egypt was 9,007 during 2020. Wages earned in meat processing totaled nearly \$32.0 billion. Livestock meat processing accounted 51% or 4,562 meat processing jobs and \$16.2 million in wages earned. Poultry meat processing accounted for 4,445 jobs and \$15.8 million in wages earned.

#### 4.5.4.5 Trade

Kuwait, United Arab Emirates, and China, Hong Kong SAR were the largest three markets for Egypt's poultry exports in 2020. Egypt exported \$1.9 in poultry meat to Kuwait. At the same time, Egypt's value of poultry exported to United Arab Emirates and China, Hong Kong SAR was estimated at \$425,760 and \$60,973, correspondingly (see Figure 182 and Figure 183).



Figure 182. Egypt top 10 poultry exports, trade value





Egypt poultry export flows



The main supplier of poultry meat to Egypt was Brazil (\$61.1 million). At a distant second and third place were Ukraine (\$4.7 million) and Denmark (\$1.1 million). France supplied an estimated \$53,257 of poultry meat to Egypt in 2020 (see Figure 184 and Figure 185).

Figure 184. Egypt top 10 poultry exports, trade value



Figure 185.

### DECISION INNOVATION SOLUTIONS

GLOBAL MACROECONOMIC INDICATORS FOR THE POULTRY MEAT INDUSTRY

#### 4.5.4.6 Morocco

#### 4.5.4.7 Demographics

The total number of poultry farms in Morocco were estimated at 8,513. Approximately, 90% of the poultry farms were commercial chicken farms, totaling to 7,627 commercial chicken operations. The average number of chickens on commercial chicken farms were 27.232 head. The remaining 10% or 885 of poultry farms were turkey farms. The average size of a turkey farm was 11,893 head.

Morocco's poultry production and consumption have both increased since 2010. In 2019, poultry production totaled 841.562 metric tons. representing a 37% increase compared to 2010. Consumption of poultry has 19% from 626.066 metric tons in 2010. to 747,367 metric tons in 2019.

The total number of poultry stocks in Morocco were 218.2 million head in 2020. Chickens represented 95% (207.7 million head) of Morocco's poultry stocks. Turkeys accounted for the remaining 5% (10.5 million head) of poultry stocks in Morocco. Since 2010, chicken stocks increased 22%, and turkey stocks increased 17% in Morocco.

In 2020, poultry slaughter totaled 641.9 million head and was comprised of chickens and turkeys.





Morocco number of poultry farms by type



Morocco poultry production & consumption

An estimated 98% (630.2 million head) of poultry slaughter was chickens. The remaining 2% (11.7 million head) of Morocco's poultry slaughter was turkeys. Compared to 2010, Morocco's chicken and turkey slaughter increased by 33% and 11%, respectively. Morocco's poultry production in 2020 included 822,000 metric tons of chicken and 60,000 metric tons of turkey. Compared to 2010, Morocco's chicken and turkey production increased 47% and 15%, respectively.

| MOROCCO POULTRY STOCKS, SLAU  |          |       |         |         |
|-------------------------------|----------|-------|---------|---------|
| 1,000 head                    | Chickens | Ducks | Turkeys | Total   |
| Stocks                        | 207'696  |       | 10'525  | 218'221 |
| Producing Animals/Slaughtered | 630'217  |       | 11'706  | 641'923 |
| Production (1,000 MT)         | 822      |       | 60      | 882     |
| Sources FAO. 2020             |          |       |         |         |

Table 55. Morocco poultry stocks, slaughter & production

# 4.5.4.8 GDP and Value of Production

In 2020, the total value of GDP for Morocco was \$112.9 billion. Nonproduction agricultural sectors represented an estimated 88% or \$99.7 billion of the total GDP. Crop production represented 7% or \$7.4 billion. An estimated 4%, or \$4.4 million, was derived from red meat production in Morocco. Representing about 1% or \$1.2 million, chicken production was the largest contributor from the poultry production sector. Turkey production was less than 1%, or \$168.7 million of the total GDP (Figure 188).



ECONOMIC EFFECTS - MOROCCO (\$1,000 USD) Direct Indirect Total Taxes paid\* \$9'612'098 \$22'754'118 \$89'180 All agriculture \$13'142'000 \$38'988 Livestock \$5'745'469 \$4'202'247 \$9'947'716 Poultry \$1'369'128 \$1'605'987 \$2'975'115 \$11'453 \$1'200'473 Chicken \$1'408'155 \$2'608'628 \$10'042 Duck \$366'487 \$1'411 Turkey \$168'655 \$197'832

Table 56. Economic effects - Morocco

The combined (direct and indirect) effects of agricultural production in Morocco are estimated to be \$22.8 billion. Of this amount, \$3.0 billion comes from the poultry industry, with \$2.6 billion from chicken meat production and \$366 million from turkey production. Agriculture pays a net value of \$89 million in taxes, \$11 million of which is estimated to be from the poultry industry (Table 56).

#### 4.5.4.9 Labor

The total number of people working in the labor force for Morocco was estimated at 11.7 million in 2020 (Table 57). Of that total, nearly 8.7 million (74%) of the labor force participants were male and 3.0 million (26%) were female. Nonagricultural labor accounted for an estimated 8.0 million jobs.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - MOROCCO                                 |            |            |            |  |
|--|------------|------------|------------|--|
|  | Total      | Female     | Male       |  |
| Total Country Labor  | 11'665'214 | 2'997'499  | 8'667'715  |  |
| Non-Agricultural Labor   | 7'985'135  | 1'577'998  | 6'407'137  |  |
| Agricultural Labor   | 3'680'079  | 1'419'501  | 2'260'578  |  |
| Total Non-Poultry Agricultural Labor   | 3'294'844  |            |            |  |
| Total Poultry Labor  | 385'235    |            |            |  |
| Chicken Labor  | 337'780    |            |            |  |
| Turkey Labor   | 47'455     |            |            |  |
| Other Poultry Labor  | -          |            |            |  |
|  |            | Wages (\$1 | I,000 USD) |  |
| Total Meat Processing Labor  | 5'004      | \$22       | 426        |  |
| Livestock Processing Labor   | 3'333      | \$14       | '938       |  |
| Poultry Processing Labor   | 1'671      | \$7'       | 489        |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |            |            |            |  |

Table 57. Agricultural labor force characteristics - Morocco

The remaining 3.7 million jobs were in agricultural sectors. The total number of people employed in the poultry production sector totaled 385,235 in 2020.

In 2020, an estimated 5,004 people were employed in Morocco's meat processing sector. The total wages earned from meat processing was \$22.4 million. Livestock meat processing was the largest share of meat processing with 3,333 jobs and \$15 million in wages earned. Poultry meat processing accounted for 1,671 jobs and \$7.5 million in wages earned.

#### 4.5.4.10 Trade

Senegal, Guinea, and Liberia were the three largest markets for Morocco's poultry meat exports in 2020. Morocco's total poultry meat exports to these three markets reached over \$834,357 (see Figure 189 and Figure 190).





Morocco top 10 poultry exports, trade value





Most of Morocco's poultry imports were shipped from Brazil (\$6.2 million). At a smaller scale, Morocco also imported poultry meat from the Germany (\$2.8) and France (\$980,145) in 2020 (see Figure 191 and Figure 192).

53



Morocco top 10 poultry imports, trade value



Figure 192.

Morocco poultry import flows

#### 4.5.5 Nigeria

#### 4.5.5.1 Demographics

The total number of poultry farms in Nigeria was estimated at 6,617,000. Nearly all poultry farms were household or micro-producer chicken farms, totaling to 6,600,000 (see Figure 193). These household or micro-producer farms had an average 12 head. About 0.3% or 17,000 farms were commercial chicken farms. The average number of chickens per commercial farm was 5,184 head.

Nigeria's poultry production and consumption have decreased in comparison to 2010 volumes. Poultry production was 244,990 metric tons in 2010 and peaked at 260,130 metric tons in 2018 (Figure 194). In 2021, poultry production was 233,000 metric tons. Nigeria's poultry consumption increased between 2013 and 2018 but has fallen since. In 2021, consumption was 238,943 metric tons.

Chickens accounted for 100% of Nigeria's poultry stocks, slaughter, and production in 2020 (Table 58). Approximately, 166.1 million head of chickens comprised Nigeria's poultry stocks. Chicken production totaled an estimated 238,000 metric tons. An estimated 238.3 million head of chickens were slaughtered in 2020. Since 2010, chicken stocks in Nigeria decreased 14%, chicken slaughter declined 3%, and chicken production declined 3%.





Nigeria number of poultry farms by type



Figure 194.

Nigeria poultry production & consumption

| NIGERIA POULTRY STOCKS, SLAUGH |          |       |         |         |
|--------------------------------|----------|-------|---------|---------|
| 1,000 head                     | Chickens | Ducks | Turkeys | Total   |
| Stocks                         | 166'125  |       |         | 166'125 |
| Producing Animals/Slaughtered  | 238'250  |       |         | 238'250 |
| Production (1,000 MT)          | 238      |       |         | 238     |
| Sources: FAO, 2020             |          |       |         |         |

Table 58. NIgeria poultry stocks, slaughter & production

# 4.5.5.2 GDP and Value of Production

The value of GDP in Nigeria was estimated at \$432.3 billion in 2020. Approximately 94% or \$406.8 billion was derived from nonagricultural production sectors. Crop production represented 5.4% or \$23.5 billion of the total GDP. Red meat production was valued at \$1.8 billion. Contributions from the poultry production sector were derived from chicken production. Approximately, 0.07% or \$293.4 million was derived from chicken production (Figure 195).



Figure 195.

Nigeria GDP & value of production by sector

#### 4.5.5.3 Labor

An estimated 62.3 million people worked in Nigeria's labor force in 2020. Approximately 56% or 34.7 million were male, and 44% or 27.5 million were female. More than 41.5 million people worked in nonagricultural sectors. Agricultural labor accounted for 33% of the total labor with 20.8 million workers. An estimated 233,897 people worked in poultry production (Table 59).

### 4.5.5.4 Cost of Production

Most of the costs of broiler production in Nigeria was related to feed cost at 65% in 2020. Dayold chick cost had a share of 20% of total cost of poultry production, while the remainder was due to other costs (see Figure 196).

### AGRICULTURAL LABOR FORCE CHARACTERISTICS - NIGERIA

|  | Total      | Female     | Male       |  |
|--|------------|------------|------------|--|
| Total Country Labor  | 62'259'271 | 27'532'192 | 34'727'079 |  |
| Non-Agricultural Labor   | 41'477'969 | 20'478'598 | 20'999'371 |  |
| Agricultural Labor   | 20'781'302 | 7'053'594  | 13'727'708 |  |
| Total Non-Poultry Agricultural Labor   | 20'547'405 |            |            |  |
| Total Poultry Labor  | 233'897    |            |            |  |
| Chicken Labor  | 233'897    |            |            |  |
| Turkey Labor   | -          |            |            |  |
| Other Poultry Labor  | -          |            |            |  |
|  |            | Wages (\$1 | ,000 USD)  |  |
| Total Meat Processing Labor  | -          |            | -          |  |
| Livestock Processing Labor   | -          |            | -          |  |
| Poultry Processing Labor   | -          |            | -          |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |            |            |            |  |

Table 59. Agricultural labor force characteristics - Nigeria





#### 4.5.5.5 Trade

India was the largest market for Nigeria's poultry exports in 2020. Nigeria exported \$389,997 in poultry meat to India. The second and third largest markets for Nigeria's poultry exports were Japan, and Turkey, which imported \$188,513 and \$172,138 in poultry meat, respectively. Trade flows illustrated from the Resource Trade database reflect Ireland, Norway, and the United Arab Emirates were also destinations from Nigeria's poultry meat exports in 2020. Nigeria's poultry exports to Ireland, Norway, and the United Arab Emirates totaled less than \$1,000 in 2020 (see Figure 197 and Figure 198).





Nigeria top 10 poultry exports, trade value





Nigeria poultry explort flows

In 2020, Nigeria's top five suppliers of poultry meat were Italy, South Africa, the USA, Germany, and the Netherlands. The total value of poultry meat exported by these five countries to Nigeria was estimated at \$323,000 (see Figure 199 and Figure 200). According to the USDA FAS, poultry meat imports are one of many agricultural commodities which are generally prevented from entry into the domestic market due to restrictive trade measures<sup>12</sup>.



Figure 199.

Nigeria top 10 poultry imports, trade value



Figure 200.

Nigeria poultry import flows

12 USDA FAS. Food Service- Hotel Restaurant Institutional Report- Nigeria. January 28, 2022

#### 4.5.6 South Africa

#### 4.5.6.1 Demographics

In South Africa, approximately 4,954 poultry farms make up the poultry farming sector. Household or microproducer chicken farms represent 71% or 3,495 of the total (Figure 201). The average number of chickens on these micro-producer farms was 1,024 head. Commercial chicken farms are the next largest type of poultry farm, representing 18% or 909 of the total poultry farms. The average number of chickens on commercial chicken farms was 193,000 head. An estimated 6% or 300 poultry farms were duck farms. The average size of duck farms was 1,390. The remaining 5% or 250 poultry farms were turkey farms, with an average of 2,188 head.

Both poultry production and poultry consumption have steadily increased in South Africa (Figure 202). Compared to 2010, poultry production in South Africa was up 38%, from 1.5 million metric tons to 2.0 million metric tons by 2021. Poultry consumption increased 46%, from 1.7 million metric tons to 2.5 million metric tons in 2021.

In 2020, Approximately, 99% of poultry stocks in South Africa were chickens. Turkeys (547,000 head) and ducks (417,000 head) were each less than 1% of South Africa's poultry stocks. Compared to 2010, chicken stocks decreased 9%, duck stocks increased 10%, and turkey stocks increased 5%.



Figure 201.

South Africa number of poultry farms by type





South Africa poultry production & consumption

| SOUTH AFRICA POULTRY STOCKS, S |          |       |         |         |
|--------------------------------|----------|-------|---------|---------|
| 1,000 head                     | Chickens | Ducks | Turkeys | Total   |
| Stocks                         | 179'017  | 417   | 547     | 179'981 |
| Producing Animals/Slaughtered  | 967'966  | 476   | 703     | 969'145 |
| Production (1,000 MT)          | 1'873    | 1     | 6       | 1'880   |
| Sources FAD 2020               |          |       |         |         |

Table 60. South Africa poultry stocks, slaughter & production



GLOBAL MACROECONOMIC INDICATORS FOR THE POULTRY MEAT INDUSTRY

South Africa's poultry slaughter totaled 969.1 million head (Table 60). The vast majority of South Africa's poultry slaughter were chickens. In fact, chickens accounted for 99.9% or 968.0 million head of poultry. Turkeys (703,000 head) and ducks (476,000) each accounted for less than 1% of poultry slaughter. South Africa's poultry stocks were mainly chickens in 2020. Compared to 2010, chicken slaughter decreased 7%, duck slaughter increased 9%, and turkey slaughter increased 7%.

Poultry production included 1.9 million metric tons of chicken, 6,000 metric tons of turkey, and 1,000 metric tons of duck. Compared to 2010, chicken production increased 27%, turkey production increased 9%, and duck production increased 9%.

# **4.5.6.2 GDP and Value of Production**

In 2020, the GDP of South Africa was valued at \$301.9 billion. Approximately 93%, or \$280.2 billion of the total GDP was derived from non-agricultural production sectors. agricultural production Of the sectors, the crop production sector was the largest agricultural in value with an estimated contribution of 4% or \$10.8 billion of the total GDP. Red meat production was the next largest representing about 2% or \$7.2 billion of the total GDP. Chicken production followed with an estimated contribution of 1% or \$3.7 billion of the total GDP. Approximately 0.002% or \$5.2 million of South Africa's total GDP is represented by turkey production.



Duck production represented an even smaller share (0.0004%) valued at \$1.1 million (Figure 203).

The combined (direct and indirect) effects of agricultural production in the USA are estimated to be \$53.9 billion. Of this amount, \$9.7 billion comes from the poultry industry, with \$9.6 billion from chicken meat production, \$2 million from duck production, and \$14 million from turkey production. Agriculture pays a net value of \$1.1 billion in taxes, \$143 million of which is estimated to be from the poultry industry (Table 61).

| ECONOMIC EFFECTS - SOUTH AFRICA (\$1,000 USD)   |                                  |              |              |             |
|---|----------------------------------|--------------|--------------|-------------|
|   | Direct                           | Indirect     | Total        | Taxes paid* |
| All agriculture                                 | \$21'677'357                     | \$32'227'846 | \$53'905'203 | \$1'106'087 |
| Livestock                                       | \$10'883'819                     | \$16'181'034 | \$27'064'853 | \$555'347   |
| Poultry   | \$3'658'836                      | \$6'000'491  | \$9'659'327  | \$143'297   |
| Chicken   | \$3'652'527                      | \$5'990'144  | \$9'642'671  | \$143'050   |
| Duck  | \$1'090                          | \$1'788      | \$2'878      | \$43        |
| Turkey  | \$5'219                          | \$8'559      | \$13'778     | \$204       |
| Source: FAOSTAT, OECD Input-Output Tables .*Tax | es is equal to total taxes net o | of subsidies |              |             |

Table 61. Economic effects - South Africa

#### 4.5.6.3 Labor

In South Africa, an estimated 21.3 million individuals were employed in the labor force (Table 62). Of that total, 20.5, million worked in non-agricultural sectors.

Approximately 859,427 worked in agricultural sectors. Within the agricultural sector, poultry production accounted for 146,273 jobs.

The meat processing sector accounted for 35,800 jobs and \$188.9 million in wages earned. Poultry processing dominated the sector by number of jobs.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - SOUTH AFRICA                            |            |            |            |  |  |
|--|------------|------------|------------|--|--|
|  | Total      | Female     | Male       |  |  |
| Total Country Labor  | 21'345'809 | 9'534'678  | 11'811'131 |  |  |
| Non-Agricultural Labor   | 20'486'382 | 9'262'905  | 11'223'477 |  |  |
| Agricultural Labor   | 859'427    | 271'773    | 587'654    |  |  |
| Total Non-Poultry Agricultural Labor   | 713'154    |            |            |  |  |
| Total Poultry Labor  | 146'273    |            |            |  |  |
| Chicken Labor  | 146'021    |            |            |  |  |
| Turkey Labor   | 209        |            |            |  |  |
| Other Poultry Labor  | 44         |            |            |  |  |
|  |            | Wages (\$1 | ,000 USD)  |  |  |
| Total Meat Processing Labor  | 35'800     | \$188      | 914        |  |  |
| Livestock Processing Labor   | 10'800     | \$106      | '384       |  |  |
| Poultry Processing Labor   | 25'000     | \$82'      | 530        |  |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |            |            |            |  |  |

Table 62. Agricultural labor force characteristics - South Africa

In 2020, there were 25,000 people employed in poultry processing. Collectively, wages earned was \$82.5 million for poultry processing. Livestock processing employed 10,800 people. Wages earned from livestock processing was \$106.4 million.

#### 4.5.6.4 Cost of Production

The largest component of the cost of broiler production in South Africa was feed at 68% of total cost in 2021, followed by day-old chicks (20%), and labor (9.3%) (see Figure 204).



4.5.6.5 Trade

The value of South Africa's poultry exports to its top ten markets was more than \$75.6 million in 2020. The three leading markets for South Africa poultry meat exports were Lesotho (\$28.7), Mozambique (\$23.6 million), and Namibia (\$12.3 million) (see Figure 205 and Figure 206).



Figure 205. South Africa top 10 poultry exports, trade value



South Africa Top-10 Poultry Imports Trade Value (\$1,000 USD)



In 2020, South Africa imported poultry meat mainly from Brazil (\$139.4 million). After Brazil, the other three largest sources of poultry meat for South Africa were the USA (\$56.7 million), Ireland (\$33.0 million) and Spain (\$28.8 million) (see Figure 207 and Figure 208). Increased tariffs and anti-dumping measures have been imposed sporadically since 2015 and as recently as January 2022 on bone-in and boneless chicken imports to South Africa<sup>13,14</sup>.



13 USDA FAS, Poultry and Products Annual- Republic of South Africa, Sept. 7, 2021 14 USDA FAS, South Africa Imposes Provisional Anti-Dumping Duties Against Bone-in Chicken Imports from Brazil Denmark Ireland Poland and Spain, Jan. 19, 2022

### 4.6 Asia

#### 4.6.1 Regional Demographics and Poultry Stocks

The Asian poultry industry has 56.0 million farms with 47.8 million (85%) of those being household or micro-producer chicken farms. An estimated 6.8 million (12%) poultry farms are duck farms. Commercial chicken farms account for 1,457,508 or 3% of Asia's poultry farms. Less than 1% or 13,074 of Asia's poultry farms are turkey farms. The average size of the household or microproducer chicken farm is 31 head. The average size of a duck farm is 153 head. Commercial chicken farms have an average 9,520 head. The average turkey farm has 1,196 head (Figure 209).

Asian broiler farms have stocks of 15.4 billion chickens with 90.7% being on commercial farms and 9.3% being on household or microproducer farms. Asia has duck stocks of 1.03 billion head and turkey stocks of 15.6 million head.

Overall poultry stocks have increased since 2010. Chicken stocks have increased 38.4%, duck stocks have declined 3%, and turkey stocks have increased 38.5% (Figure 210).





Asia number of poultry farms by type



#### **4.6.2 Regional Economics**

Asia's total GDP was an estimated \$31.5 trillion in 2020. Agricultural production was approximately 6% of the total GDP. Crop production was 5% or \$1.4 trillion. About 1%, or \$457.6 billion, of Asia's total GDP was derived from red meat production. Poultry production was less than 1% of the total Asian GDP (Figure 211).



Figure 211.

Asia GDP & value of production by sector

#### 4.6.3 Regional Poultry Production Volume and Value

Asia produced 47.9 million metric tons of poultry meat in 2020 with 91% being chicken meat, 9% being duck meat, and less than 0.5% being turkey meat (Figure 212).



Figure 212.

Asia poultry meat production

Asian poultry production has increased 33.7% since 2010. Asian value of poultry production in 2020 was \$93 billion with 98% due to chicken production, 1% due to turkey production, and 1% due to duck production (Figure 213).





#### 4.6.4 Regional Cost of Production

As Figure 214 indicates, the share of feed cost relative to total cost of poultry production for countries in the Asian region represented the largest share of total cost despite differences in years of data included. In China the cost of feed for broilers production in 2020 had a share of total cost equal to 67%, while for Russia in 2017, 62% of total cost of poultry production was due to feed cost. In 2021, Turkey's share of feed cost represented 80% of total costs. For India (2016) and Thailand (2017) the cost of feed represented 70% and 67% of total production cost, respectively (see Figure 214).



Figure 214.

Feed share of poultry production costs: Asia

#### 4.6.5 China

#### 4.6.5.1 Demographics

In 1985, production was dominated by more than 150 million small-scale poultry farmers, each keeping a few birds to supplement other farming activities. At the time, there were virtually no large-scale operations. Since then, there has been a rapid increase in intensification, with a trend towards fewer, larger, privately owned operations. Between 1996 and 2005, some 70 million smallscale poultry farmers left the sector, mostly in the more economically developed east of the country and around major cities. Over the same period, large-scale operations (with annual output of more than 10 000 birds) expanded their share of production from about one-quarter to one-half.



Today, the commercial broiler market is dominated by large, integrated companies that control the entire production and marketing chain: feeding, breeding, fattening and processing. One large, integrated operation in Fujian Province, for example, produces 50 million broilers a year and employs 4 000 employees – one job for every 12 500 birds produced annually. Extrapolating this ratio to the national level suggests that the integrated broiler sector provides around 800 000 jobs (Bingsheng and Yijun, 2008).

Between 1985 and 2005, the proportion of farming households that kept poultry fell from 44% to less than 14%. However, more than 34 million rural households still keep backyard poultry, and poultry remain an important source of income and food for poor households, especially in the less-developed western part of the country. The number of household poultry producers continues to decline and a current estimate is that 10% of broiler production in China is by household producers.

However, backyard producers play a continuing reduced role in meeting burgeoning market demand. As food marketing channels extend their reach ever further into the rural areas, and non-farm employment options increase, the need for rural households to keep poultry is declining (Bingsheng and Yijun, 2008).

It is estimated that in 2020, there were about 25 million poultry farms in China. About 84%, or 20.9 million poultry farms were household or micro-producer chicken farms (Figure 215). These micro-producer farms contained an estimated 23 chickens, on average. The total number of duck farms was estimated at 3.5 million or 14% of poultry farms in China. The average size of these duck farms was 200 head. Commercial chicken farms represented the remaining 2% or 586,874 poultry farms. The average number of chickens per commercial farm was 7,442 head. FAO estimates that there were 85,000 turkeys in China with most of those on commercial farms.

Ibisworld.com reports that they expect there to be 529,231 poultry farming businesses in China in 2022. They report an average annualized negative 2% growth rate in poultry businesses in China for the period 2017 – 2022.

Both poultry production and consumption have had an upward trend from 2010 to 2021 (Figure 216). China's poultry production was about 24.0 million metric tons in 2021, which was up 45% from the level in 2010. China's poultry consumption in 2021 (25.0 million metric tons) was 1.5 times higher than the volume consumed in 2010.

For the most part, the level of poultry produced has been lower than the level of poultry consumed; therefore, poultry imports from several countries, particularly Brazil and the USA, have complemented domestic poultry consumption in China. The USDA FAS notes the shift from pork consumption to poultry meats such as chicken/duck, and the expansion of chicken-related fast-food restaurants as drivers in increased poultry consumption<sup>15</sup>. In 2021, poultry production was down about 4% from poultry consumption in China.



Figure 216.

China poultry production & consumption

| CHINA POULTRY STOCKS, SLAUGHT |           |           |         |            |
|-------------------------------|-----------|-----------|---------|------------|
| 1,000 head                    | Chickens  | Ducks     | Turkeys | Total      |
| Stocks                        | 4'748'080 | 682'946   |         | 5'431'026  |
| Producing Animals/Slaughtered | 9'287'900 | 2'173'330 |         | 11'461'230 |
| Production (1,000 MT)         | 15'144    | 3'431     |         | 18'575     |
| Sources: FAO, 2020            |           |           |         |            |

Table 63. China poultry stocks, slaughter & production

China is the second largest chicken producer in the world. The estimated total number of China's poultry stocks was more than 5.4 billion head in 2020 (Table 63). Nearly 4.8 billion head of chickens, and 682.9 million ducks comprised the total poultry stocks. In 2020, China's poultry slaughter totaled 11.5 billion head. Chicken slaughter was estimated at 9.3 billion head. Duck slaughter was an estimated 2.2 billion head. Poultry production included 15.1 million metric tons of chicken and 3.4 million metric tons of duck.

#### 4.6.5.2 GDP and Value of Production

The GDP in China was valued at \$14.7 trillion in 2020. An estimated 94% of the total GDP was derived from non-agricultural sectors. Agricultural production represented 6% of the total GDP with crop production valued at \$681 billion and 5% of the total GDP. The share of red meat production was valued at \$174.7 billion. Chicken meat production was valued at \$27.8 billion, duck production at \$3.6 billion, and turkey production at \$4.5 billion (Figure 217).



<sup>15</sup> USDA FAS, Poultry and Products Annual-People's Republic of China, Sept. 31, 2029

The combined (direct and indirect) effects of agricultural production in China are estimated to be \$2.1 trillion. Of this amount, \$82.7 billion comes from the poultry industry, with chicken meat production being responsible nearly all of that amount. Agriculture receives a net subsidy of \$4.5 billion in taxes. The poultry industry is estimated to pay a net tax of \$8 million (Table 64).

| ECONOMIC EFFECTS - CHINA (\$1,000 USD)       |                                |                 |                 |               |
|--|--------------------------------|-----------------|-----------------|---------------|
|  | Direct                         | Indirect        | Total           | Taxes paid*   |
| All agriculture                              | \$883'658'208                  | \$1'226'618'762 | \$2'110'276'970 | \$(4'496'905) |
| Livestock                                    | \$202'518'196                  | \$281'118'442   | \$483'636'638   | \$(1'030'608) |
| Poultry                                      | \$27'793'104                   | \$54'974'760    | \$82'767'864    | \$7'954       |
| Chicken                                      | \$27'789'472                   | \$54'967'576    | \$82'757'048    | \$7'953       |
| Duck   | \$3'632                        | \$7'184         | \$10'816        | \$1           |
| Turkey                                       | -                              | -               | -               | -             |
| Source FAOSTAT OFCD Input-Output Tables *Tax | es is equal to total taxes net | ofsubsidies     |                 |               |

Table 64. Economic effects - China

#### 4.6.5.3 Labor

In 2020, China's labor force employed an estimated 792.4 million people (see Table 65). Of that total, nearly 439.6 million individuals were males, and 352.8 million were females.

More than 602.1 million individuals worked in non-agricultural sectors. Another 190.3 million worked in the agricultural sector. Of that total, 6.1 million individuals worked in poultry production.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - CHINA                                   |             |             |             |  |
|--|-------------|-------------|-------------|--|
|  | Total       | Female      | Male        |  |
| Total Country Labor  | 792'401'719 | 352'848'259 | 439'553'460 |  |
| Non-Agricultural Labor   | 02'074'513  | 270'091'895 | 331'982'618 |  |
| Agricultural Labor   | 90'327'206  | 82'756'364  | 107'570'842 |  |
| Total Non-Poultry Agricultural Labor   | 184'188'787 |             |             |  |
| Total Poultry Labor  | 6'138'418   |             |             |  |
| Chicken Labor  | 6'137'616   |             |             |  |
| Turkey Labor   | -           |             |             |  |
| Other Poultry Labor  | 802         |             |             |  |
|  |             | Wages (\$1  | ,000 USD)   |  |
| Total Meat Processing Labor  | 4'937'000   | \$6'93      | 4'790       |  |
| Livestock Processing Labor   | 3'983'325   | \$5'59      | 5'204       |  |
| Poultry Processing Labor   | 953'675     | \$1'33      | 9'586       |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |             |             |             |  |

Table 65. Agricultural labor force characteristics - China

Meat processing labor in China accounted for 4.9 million jobs and \$6.9 billion in wages earned. Livestock meat processing was the largest share of meat processing with 4.0 million jobs and \$5.6 billion in wages earned. Poultry meat processing accounted for 953,675 jobs and \$1.3 million in wages earned.

#### 4.6.5.4 Costs of Production

China's feed cost accounted for 67% of broiler total production cost in 2020. Eighteen percent of total broiler production costs was due to day-old chick costs, which was the second largest production cost in China. Next was health cost at 5% followed by labor at 3%. Transportation and building costs each was 2% of total production cost. General cost represented about 1% (see Figure 218).



#### 4.6.5.5 Trade

China exported about 428,401 MT of poultry meat valued at \$1.5 million in 2020. Thirty eight percent of the poultry meat volume exported was shipped to Japan. Poultry meat exports to Japan were estimated at \$679.4 million (Figure 219 and Figure 220). Over 60% (\$913.8 million) of China's total value of poultry exported was made up by prepared poultry products.



**China Top-10 Poultry Exports** 



China top 10 poultry exports, trade value



Figure 220.

China poultry export flows





In 2020, China's largest supplier of poultry meat was Brazil with an estimated value of \$1.7 billion and 47% share of the poultry import market in China. The USA followed with \$750 million and 21% share of the poultry import market. In addition to chicken meat, the USA primarily exports chicken paws to China<sup>16</sup>. China imported \$368.1 million in poultry meat from Thailand in 2020 (Figure 221 and Figure 222).



16 USDA FAS, Poultry and Products Semi-Annual- People's Republic of China, Jan. 28, 2022

#### 4.6.6 India

#### 4.6.6.1 Demographics

In India, an estimated 124,000 farms were poultry farms<sup>17</sup>. About 70%, or 86,800 poultry farms were household or micro-producer chicken farms (Figure 223). On average, a microproducer chicken farm in India had 750 head. Commercial chicken farms represented the remaining 30% or 37,200 poultry farms with an average 19,514 head.

India's poultry production and consumption consistently increased between 2010 and 2019. In 2019, both poultry production (4.2 million metric tons) and consumption (4.2 million metric tons) were twice as large their corresponding volumes in 2010. India's poultry production and consumption have declined since 2019, but both remained higher than their volumes in 2010. Poultry production and consumption each rose 64% from their levels in 2010 (see Figure 224).

According to FAO, poultry stocks of India totaled 826.5 million with 791 million chickens, and 35.5 million ducks. Since 2010, poultry stocks increased 20%, overall (Table 66). Chicken stocks increased 19%. and duck stocks increased 40% compared to 2010.





India number of poultry farms by type



India poultry production & consumption

India's poultry slaughter was nearly 2.7 billion head in 2020. An estimated 2.6 billion head were chickens. The remaining 35.8 million head in poultry were ducks. Chicken and duck slaughter increased 45% and 40%, respectively. Chicken production totaled 3.6 million metric tons, and duck production totaled 47,000 metric tons in 2020. Compared to 2010, chicken and duck production increased 62% and 40%, respectively.

| INDIA POULTRY STOCKS, SLAUGHTE |           |        |         |           |
|--------------------------------|-----------|--------|---------|-----------|
| 1,000 head                     | Chickens  | Ducks  | Turkeys | Total     |
| Stocks                         | 791'032   | 35'507 |         | 826'539   |
| Producing Animals/Slaughtered  | 2'625'635 | 35'799 |         | 2'661'434 |
| Production (1,000 MT)          | 3'551     | 47     |         | 3'597     |
| Sources FAO 2020               |           |        |         |           |

Table 66. India poultry stocks, slaughter & production

<sup>17</sup> LMIS Report on Poultry Sector, Agricultural Skills Council of India

# **4.6.6.2 GDP and Value of Production**

The estimated value of GDP in India was \$2.6 trillion in 2020. Nonagricultural production sectors represented about 84% or \$2.2 billion of the total. An estimated \$301.7 billion or 12% of India's total GDP was derived from the crop production sector. Red meat production was valued at \$105.3 billion and represents about 4% of the total GDP. An estimated \$11.4 billion or 0.4% of total GDP was represented by chicken production. About 0.01% or \$136.1 million of the total GDP in India was represented by duck production (Figure 225).



The combined (direct and indirect) effects of agricultural production in the India are estimated to be \$680.0 billion. Of this amount, \$27.1 billion comes from the poultry industry, with \$26.8 billion from chicken meat production and \$318 million from duck production. Agriculture pays a net value of \$2.8 billion in taxes, \$43 million of which is estimated to be from the poultry industry (Table 67).

| ECONOMIC EFFECTS - INDIA (\$1,0                 |                                |               |               |             |
|---|--------------------------------|---------------|---------------|-------------|
|   | Direct                         | Indirect      | Total         | Taxes paid* |
| All agriculture                                 | \$418'541'343                  | \$261'446'286 | \$679'987'629 | \$2'838'701 |
| Livestock                                       | \$116'841'432                  | \$72'986'239  | \$189'827'671 | \$792'462   |
| Poultry   | \$11'582'849                   | \$15'509'435  | \$27'092'284  | \$43'636    |
| Chicken   | \$11'446'758                   | \$15'327'209  | \$26'773'967  | \$43'124    |
| Duck  | \$136'091                      | \$182'226     | \$318'317     | \$513       |
| Turkey  | -                              | -             | -             | -           |
| Source: FAOSTAT, OECD Input-Output Tables .*Tax | es is equal to total taxes net | of subsidies  |               |             |

Table 68. Economic effects - India

#### 4.6.6.3 Labor

Nearly 457.8 million people were employed in India's labor force in 2020 (see Table 68). Approximately 366.4 million of the total labor force were male and 91.4 million were female. The total number of people working in non-agricultural sectors was 267.4 million compared to the 190.4 million working in the agricultural sector. Approximately 5.4 million people worked in India's poultry production sector in 2020.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - INDIA                                   |             |            |             |  |
|--|-------------|------------|-------------|--|
|  | Total       | Female     | Male        |  |
| Total Country Labor  | 457'779'812 | 91'395'433 | 366'384'379 |  |
| Non-Agricultural Labor   | 267'375'308 | 35'104'226 | 232'271'081 |  |
| Agricultural Labor   | 190'404'504 | 56'291'207 | 134'113'298 |  |
| Total Non-Poultry Agricultural Labor   | 185'037'500 |            |             |  |
| Total Poultry Labor  | 5'367'005   |            |             |  |
| Chicken Labor  | 5'303'946   |            |             |  |
| Turkey Labor   | -           |            |             |  |
| Other Poultry Labor  | 63'059      |            |             |  |
|  |             | Wages (\$1 | 1,000 USD)  |  |
| Total Meat Processing Labor  | 26'878      | \$88       | 685         |  |
| Livestock Processing Labor   | 4'601       | \$15       | 5183        |  |
| Poultry Processing Labor   | 22'277      | \$73       | '502        |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |             |            |             |  |

Table 67. Agricultural labor force characteristics - India

The total number of meat processing jobs in India was 26,878 in 2020. Wages earned in meat processing totaled \$88.7 million. Poultry meat processing dominated the sector with 22,277 jobs and \$73.5 million in wages earned. Livestock meat processing accounted for 4,601 jobs and \$15.2 million in wages earned.

#### 4.6.6.4 Trade

India's leading export market for poultry meat was Bhutan in 2020. The share of the value of poultry exported to Bhutan represented almost 60% of the total value of poultry meat exported by India. The second largest market for India's poultry exports was Bahrain with a total value of exports equal to \$1.2 million (Figure 226 and Figure 227).



**India Top-10 Poultry Exports** 



India top 10 poultry exports, trade value



Figure 227.

India poultry export flows

India imported \$261,780 of poultry meat in 2020. Almost 40% (\$103,409) of the total value of poultry meat imported by India was shipped by the USA. Imports of Poultry meat from Malaysia and Thailand were assessed at \$56,601 and \$53,447, correspondingly (see Figure 228 and Figure 229). The USDA notes market access is limited due to trade restrictions, high tariffs, and other challenges in regulation<sup>18</sup>.





India top 10 poultry imports, trade value



Figure 229.

<sup>18</sup> USDA FAS, Exporter Guide- India, Jan. 4, 2022

#### 4.6.7 Russia

#### 4.6.7.1 Demographics

The total number of poultry farms in Russia was estimated at 111,553. About 98%, or 110,418 poultry farms in Russia were household or micro-producer chicken farms (see Figure 230). Micro-producer farms contained an estimated 765 head, on average. Commercial chicken farms represented about 1% or 1,135 of the total number of poultry farms. On average, commercial chicken farms are estimated to have had 363,419 chickens.

Representing less than 1% of poultry farms in Russia were duck farms with an estimated 657 farms. The average duck farm size was 32,606 head. Turkey farms were also less than 1% of Russia's poultry farms with 276 turkey farms in total. The average size for a turkey farm was 31,812 head.

Poultry production in Russia increased 79% from 2010 to 2017 but has been relatively stable since then, increasing another 4% in the past 4 years. Production in 2021 was estimated to be 4.63 million metric tons. Poultry consumption increased 42% from 2010 through 2017 and has declined by 1% in the past 4 years. Poultry consumption in Russia was estimated to be 4.56 million metric tons in 2021.





Russia number of poultry farms by type



As of January 1, 2020, total poultry inventories in Russia were 544.691 million head. Eighty-three percent of all fowl are raised on commercial farms, 15 percent are "backyard production" and 2 percent are on small subsistence ("peasant") farms. Broilers and layers account for approximately 96 percent of total poultry inventories.

| RUSSIA POULTRY STOCKS, SLAUGHT |           |        |         |           |
|--------------------------------|-----------|--------|---------|-----------|
| 1,000 head                     | Chickens  | Ducks  | Turkeys | Total     |
| Stocks                         | 496'964   | 21'422 | 8'780   | 527'166   |
| Producing Animals/Slaughtered  | 2'497'984 | 4'072  | 27'500  | 2'529'556 |
| Production (1,000 MT)          | 4'432     | 9      | 273     | 4'715     |
| Sources: FAO, 2020             |           |        |         |           |

Table 69. Russia poultry stocks, slaughter & production

Twenty companies accounted for 70.5% of poultry production in 2019 and the market share of these twenty companies continues to grow. Russia ranked number five in the world for chicken production in 2020.<sup>19</sup>

An estimated 94% or 497.0 million head of poultry stocks were chickens. Ducks accounted for 4% or 21.4 million head of poultry stocks. The remaining 2% or 8.8 million head of poultry stocks were turkeys (Table 69). The total number of reported poultry slaughter was an estimated 2.5 billion with chickens accounting for 98.8% of poultry slaughter. DIS estimated slaughter numbers for ducks and turkeys. Poultry stocks contained chickens, ducks, and turkeys, according to FAO. Since 2010, chicken stocks increased 27%, while chicken slaughter increased 51%. Duck stocks decreased 13%, and turkey stocks increased 301% compared to 2010.

### 4.6.7.2 GDP and Value of Production

In 2020, the estimated GDP of Russia was \$1.5 billion. Non-agricultural production sectors represented about 95% or \$1.4 trillion of the total GDP. Crop production was the largest agricultural production sector, valued at nearly \$38.0 billion and representing about 3% of the total GDP. The next largest agricultural production sector was red meat production which represented about 2% or \$30.0 million of the total GDP of Russia. Chicken production was valued at \$7.1 billion, an estimated 0.5% of the country's total GDP. Duck production represented an estimated 0.1% of the total GDP. Turkey production was the smallest of the agricultural production sectors representing about \$417.0 million or 0.03% of Russia's total GDP.



The combined (direct and indirect) effects of agricultural production in the Russia are estimated to be \$158.1 billion. Of this amount, \$20.4 billion comes from the poultry industry, with \$17.4 billion from chicken meat production, \$2.1 billion from duck production, and \$1.0 billion from turkey production. Agriculture pays a net value of \$2.5 billion in taxes, \$330 million of which is estimated to be from the poultry industry (Table 70).

| ECONOMIC EFFECTS - RUSSIA (\$1,000 USD) |   |  |  |  |
|---|---|--|--|--|
| Direct                                  | Indirect  | Total  | Taxes paid*  |  |
| \$76'242'045                            | \$81'877'387  | \$158'119'432  | \$2'553'611  |  |
| \$38'290'044                            | \$41'120'208  | \$79'410'252   | \$1'282'467  |  |
| \$8'333'036                             | \$12'116'235  | \$20'449'271   | \$330'167  |  |
| \$7'074'525                             | \$10'286'359  | \$17'360'884   | \$280'303  |  |
| \$841'511                               | \$1'223'557   | \$2'065'068  | \$33'342   |  |
| \$471'000                               | \$606'318   | \$1'023'319  | \$16'522   |  |
|   | 1,000 USD)<br><i>Direct</i><br>\$76'242'045<br>\$38'290'044<br>\$8'333'036<br>\$7'074'525<br>\$841'511<br>\$471'000 | I,000 USD)   Direct Indirect   \$76'242'045 \$81'877'387   \$38'290'044 \$41'120'208   \$8'333'036 \$12'116'235   \$7'074'525 \$10'286'359   \$841'511 \$1'223'557   \$471'000 \$606'318 | I,000 USD)DirectIndirectTotal\$76'242'045\$81'877'387\$158'119'432\$38'290'044\$41'120'208\$79'410'252\$8'333'036\$12'116'235\$20'449'271\$7'074'525\$10'286'359\$17'360'884\$841'511\$1'223'557\$2'065'068\$471'000\$606'318\$1'023'319 |  |

Source: FAOSTAT, OECD Input-Output Tables .\* Taxes is equal to total taxes net of subsidies

Table 70. Economic effects - Russia

<sup>19</sup> USDA GAIN Report Number RS2020-0042, September 21, 2020, Poultry and Products Annual, Russian Federation.

#### 4.6.7.3 Labor

The number of people working in Russia's labor force was estimated at 70.0 million in 2020 (Table 71). Of that total, 68.6 million people worked in non-agricultural sectors.

The agricultural sector employed an estimated 1.4 million people. Approximately 396,228 individuals people worked in the poultry production, specifically, chicken production. In 2020, an estimated 257,972 people were employed in Russia's meat processing sector. The total wages earned from meat processing was \$1.5 billion.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - RUSSIA                                  |            |             |            |  |
|--|------------|-------------|------------|--|
|  | Total      | Female      | Male       |  |
| Total Country Labor  | 70'002'269 | 35'523'524  | 34'478'745 |  |
| Non-Agricultural Labor   | 68'556'486 | 34'080'551  | 34'475'935 |  |
| Agricultural Labor   | 1'445'783  | 1'442'973   | 2'810      |  |
| Total Non-Poultry Agricultural Labor   | 1'049'555  |             |            |  |
| Total Poultry Labor  | 396'228    |             |            |  |
| Chicken Labor  | 396'228    |             |            |  |
| Turkey Labor   | -          |             |            |  |
| Other Poultry Labor  | -          |             |            |  |
|  |            | Wages (\$1, | 000 USD)   |  |
| Total Meat Processing Labor  | 257'972    | \$1'509     | '644       |  |
| Livestock Processing Labor   | 172'577    | \$1'009     | 9'916      |  |
| Poultry Processing Labor   | 85'395     | \$499'      | 729        |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |            |             |            |  |

Table 71. Agricultural labor force characteristics - Russia

Livestock meat processing was the largest share of meat processing with 172,577 jobs and \$1.0 billion in wages earned. Poultry meat processing accounted for 85,395 jobs and \$499.7 million in wages earned.

#### 4.6.7.4 Cost of Production

By far the largest component of the cost of broiler production in Russia was feed at 62% of total costs in 2017. Three components together, day-old chicks (20%), other variables cost (heating, electricity, litter, and animal health, 10%) and housing (7%), accounted for 37% of total costs (see Figure 233).



4.6.7.5 Trade

China was the main market for Russian poultry exports. In 2020 that market was valued at \$262.9 million and represented almost 58% of total value of poultry exports. The second largest destination for poultry meat exports was Kazakhstan, receiving \$56.7 million in poultry meat and accounting for 13% of Russia's poultry meat export value (Figure 234 and Figure 235).



Figure 234. Russia top 10 poultry exports, trade value







Most of the value of imported poultry meat by Russia was from Belarus (\$185.7 million) followed by Brazil (\$124.9 million). In 2020, Belarus and Brazil's poultry meat imported accounted for 93% of the total value of poultry meat imported to Russia (Figure 236 and Figure 237).

Figure 236.

Russia top 10 poultry imports, trade value



Figure 237.

**DECISION INNOVATION SOLUTIONS** GLOBAL MACROECONOMIC INDICATORS FOR THE POULTRY MEAT INDUSTRY

#### 4.6.8 Thailand

#### 4.6.8.1 Demographics

The total number of poultry farms in Thailand was estimated at 184,089. The largest share of poultry farms were duck farms, accounting for 77% or 142,060 farms. The average size for a duck farm was 99 head. Household or micro-producer chicken farms were the second largest share of poultry farms in Thailand, representing about 20% or 35,947 poultry farms. The average size of a micro-producer chicken farm was 795 head. The remaining 3%, or 6,082 poultry farms were commercial chicken farms. These operations had 42,287 head on average.

Thailand poultry production experienced an uneven growth from 2010 to 2021, reaching its highest volume in 2013 (1.8 million metric tons). But overall, in 2021 poultry production in Thailand (1.7 million metric tons) was up 35% from 2010.

Thailand's poultry consumption on the other hand, declined 11% from 630,530 metric tons in 2010 to 561,430 metric tons in 2021. Thailand's poultry production was 3 times higher than poultry consumption in 2021, leaving a relatively large margin for exports (see Figure 239).







Figure 239.



Of the 299.8 million head in Thailand's poultry stocks, 285.8 million (95%) were chickens, and 14.1 million (5%) were ducks (Table 72). Compared to 2010, chicken stocks increased 23% and duck stocks declined 14% by 2020.

| THAILAND POULTRY STOCKS, SLAUC |           |        |         |           |
|--------------------------------|-----------|--------|---------|-----------|
| 1,000 head                     | Chickens  | Ducks  | Turkeys | Total     |
| Stocks                         | 285'764   | 14'085 |         | 299'849   |
| Producing Animals/Slaughtered  | 1'272'360 | 27'860 |         | 1'300'220 |
| Production (1,000 MT)          | 1'782     | 61     |         | 1'843     |
| Sources: FAO, 2020             |           |        |         |           |

Table 72. Thailand poultry stocks, slaughter & production

Total poultry slaughter in 2020 was 1.3 billion head. Chickens represented an estimated 98% (1.3 billion head) of poultry slaughter. Ducks represented the remaining 2% (27.9 million head) of poultry slaughter. Compared to 2010, chicken slaughter in Thailand increased 31% in 2020, and duck slaughter declined 46% compared to 2010.

Thailand's poultry production included 1.8 million metric tons of chicken and 61,000 metric tons of duck. Compared to 2010, chicken production increased 46% and duck production declined 21%.

# **4.6.8.2 GDP and Value of Production**

The total value of GDP in Thailand was an estimated \$501.8 billion in 2020. Approximately 94% of the total GDP is derived from nonagricultural production sectors. The crop production sector represented 4% or \$21.3 billion of the total GDP. Red meat production was the second largest agricultural production sector representing about 1% or \$4.5 billion. Chicken production also represented about 1% or \$3.1 billion of the total GDP. Less than 1%, or nearly \$242.2 million was represented by the duck production sector. Turkey production was the smallest of Thailand's agricultural production sectors with an estimated \$4.0 million.



The combined (direct and indirect) effects of agricultural production in Thailand are estimated to be \$58.4 billion. Of this amount, \$8.3 billion comes from the poultry industry, with \$7.7 billion from chicken meat production, \$596 million from duck production, and \$9.7 million from turkey production. Agriculture pays a net value of \$465 million in taxes, \$64 million of which is estimated to be from the poultry industry (Table 73).

| ECONOMIC EFFECTS - THAILAND                   |              |              |              |             |
|---|--------------|--------------|--------------|-------------|
|   | Direct       | Indirect     | Total        | Taxes paid* |
| All agriculture                               | \$29'145'747 | \$29'278'654 | \$58'424'401 | \$465'772   |
| Livestock                                     | \$7'877'312  | \$7'913'233  | \$15'790'545 | \$125'886   |
| Poultry                                       | \$3'375'677  | \$4'935'240  | \$8'310'917  | \$64'007    |
| Chicken                                       | \$3'129'558  | \$4'575'414  | \$7'704'972  | \$59'340    |
| Duck  | \$242'168    | \$354'049    | \$596'217    | \$4'592     |
| Turkey  | \$3'951      | \$5'777      | \$9'728      | \$75        |
| Source, EAOSTAT OECO Input Output Tables *Tay |              |              |              |             |

Table 73.Economic effects - Thailand

### 4.6.8.3 Labor

An estimated 39.0 million people worked in Thailand's labor force in 2020 (Table 74). Approximately 27.1 million were employed in non-agricultural sectors. Nearly 12 million people worked in the agricultural sector. Of that total, 113,703 people worked in poultry production.

In 2020, an estimated 109,220 people were employed in the meat processing sector in Thailand. The total wages earned from meat processing was \$408.0 million. Poultry meat processing was the largest share of meat processing with 56,719 jobs and \$211.9 million in wages earned. Livestock meat processing accounted for 52,501 jobs and \$196.1 million in wages earned.

#### 4.6.8.4 Cost of Production

Thailand's cost of feed (67%) represented the largest share of broiler production total costs in 2017. Day-old chicks ranked as second largest share of total cost at 17%, followed by other variable costs (heating, electricity, litter, and animal health, 7%) and housing (6%). Labor cost accounted for 2% of total costs. The costs at farm level for insurance, bookkeeping, consultancy, telephone, and transport represented 1% of total costs (see Figure 241).

#### 4.6.8.5 Trade

Thailand total value of poultry products exports was estimated at \$3.4 billion in 2020. Most of Thailand exports were cooked/ poultry prepared poultry products (\$2.4 billion or 73% of the total value market). In 2020, Thailand poultry export value to Japan alone totaled more than \$1.8 billion, of which, \$1.4 billion consisted of cooked/prepared poultry products.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - THAILAND                                |            |            |            |  |
|--|------------|------------|------------|--|
|  | Total      | Female     | Male       |  |
| Total Country Labor  | 39'036'695 | 17'894'477 | 21'142'218 |  |
| Non-Agricultural Labor   | 27'076'184 | 12'983'363 | 14'092'821 |  |
| Agricultural Labor   | 11'960'511 | 4'911'114  | 7'049'397  |  |
| Total Non-Poultry Agricultural Labor   | 11'846'808 |            |            |  |
| Total Poultry Labor  | 113'703    |            |            |  |
| Chicken Labor  | 56'852     |            |            |  |
| Turkey Labor   | -          |            |            |  |
| Other Poultry Labor  | 56'852     |            |            |  |
|  |            | Wages (\$1 | ,000 USD)  |  |
| Total Meat Processing Labor  | 109'220    | \$408      | 3'038      |  |
| Livestock Processing Labor   | 52'501     | \$196      | 5'138      |  |
| Poultry Processing Labor   | 56'719     | \$211      | '900       |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |            |            |            |  |

Table 74. Agricultural labor force characteristics - Thailand





Figure 242.

Thailand top 10 poultry exports, trade value

Thailand's poultry exports to the United Kingdom (\$543 million), and China (\$357.0 million) together made up 27% of the total value of poultry exports in 2020. (Figure 242 and Figure 243). Thailand's exports to the United Kingdom consisted mainly of cooked/prepared poultry products.



Figure 243.

Thailand poultry export flows





Hungary was the largest supplier of Thailand's poultry meat imports in 2020. In a distant second and third place were France and the USA. The value of poultry imported from Hungary was estimated at \$2.2 million, which represented about 28% of total value of Thailand' poultry imports (\$7.1 million) (Figure 244 and Figure 245). Challenges to exporting poultry meat to Thailand may include its use of non-transport import permit controls and high WTO bound rates of import tariffs which range from 30-40%<sup>20</sup>.

Figure 244.

Thailand top 10 poultry imports, trade value



20 USDA FAS, Poultry and Products Annual- Thailand, Sept. 1, 2021

#### 4.6.9 Turkey

#### 4.6.10 Demographics

The total number of poultry farms in Turkey was 13,931. Commercial chicken farms represent 100% of poultry farms in Turkey (Figure 246). The average size of a commercial chicken farm was 27,233 head.

Poultry production and consumption both increased in Turkey from 2010 to 2021. Poultry production in 2021 reached 2.4 million metric tons (Figure 247). Poultry consumption in 2021 was estimated at 1.8 million metric tons. Poultry production increased 63% from 2010 to 2021. Turkey's poultry consumption expanded 31%.

The total number of poultry stocks was 384.7 million head. An estimated 379.3 million head were chickens, which accounted for 98% of poultry stocks in 2020. The total number of turkeys was 4.8 million and represented 1% of the total poultry stocks in 2020. Ducks accounted for 560,000 head (less than 1%) of poultry stocks (Table 75).

In Turkey, poultry slaughter included 916.1 million chickens, 6.1 million turkeys, and 508,000 ducks. compared to 2010, chicken slaughter increased 9%, duck slaughter increased 54%, and turkey slaughter increased 66%.



Figure 246.

Turkey number of poultry farms by type



In Turkey, poultry production included 2.1 million metric tons of chicken, 58,000 metric tons of turkey, and 1,000 metric tons of duck. Compared to 2010, chicken production increased 48%, duck production increased 54%, and turkey production increased 82%.

| TURKEY POULTRY STOCKS, SLAUGHT |          |       |         |         |
|--------------------------------|----------|-------|---------|---------|
| 1,000 head                     | Chickens | Ducks | Turkeys | Total   |
| Stocks                         | 379'349  | 56    | 0 4'798 | 384'707 |
| Producing Animals/Slaughtered  | 916'126  | 50    | 8 6'064 | 922'698 |
| Production (1,000 MT)          | 2'138    |       | 1 58    | 2'197   |
| Sources: FAO, 2020             |          |       |         |         |

Table 75. Turkey poultry stocks, slaughter & production
# **4.6.10.1 GDP and Value of Production**

The total GDP in Turkey was valued at \$720.1 billion in 2020. Nonagricultural production sectors accounted for an estimated \$666.1 billion, or 92% of the total GDP. Crop production was the largest agricultural production sector. representing about \$34.2 billion, or 5% of the total GDP. Red meat production was valued at \$15.9 billion or 2% of the total GDP. Chicken production was estimated to contribute 1% or \$3.8 million towards the total GDP. Although less than 1% of the total GDP, turkey production was estimated to represent \$207.7 million (Figure 248).



The combined (direct and indirect) effects of agricultural production in Turkey are estimated to be \$107.5 billion. Of this amount, \$10.0 comes from the poultry industry, with \$9.5 billion from chicken meat production, \$4 million from duck production, and \$500 million from turkey production. Agriculture pays a net value of \$1.5 billion in taxes, \$129 million of which is estimated to be from the poultry industry (Table 76).

| ECONOMIC EFFECTS - TURKEY (\$1,000 USD)  |              |              |               |             |
|--|--------------|--------------|---------------|-------------|
|  | Direct       | Indirect     | Total         | Taxes paid* |
| All agriculture  | \$54'094'438 | \$53'358'035 | \$107'452'473 | \$1'481'674 |
| Livestock  | \$19'864'063 | \$19'593'648 | \$39'457'711  | \$544'087   |
| Poultry  | \$3'999'307  | \$5'990'962  | \$9'990'269   | \$128'564   |
| Chicken  | \$3'790'040  | \$5'677'480  | \$9'467'520   | \$121'837   |
| Duck   | \$1'588      | \$2'379      | \$3'967       | \$51        |
| Turkey   | \$207'679    | \$311'103    | \$517'782     | \$6'676     |
| Source: FAOSTAT OFCD Input-Output Tables *Taxes is equal to total taxes pet of subsidies |              |              |               |             |

Table 76. Economic effects - Turkey

### 4.6.10.2 Labor

An estimated 31.6 million people worked in Turkey's labor force in 2020 (see Table 77). Approximately, 68% or 21.4 million were males, and 32% or 10.2 million were female. The non-agricultural sector employed 26.6 million people. The remaining 5.0 million worked in the agricultural labor sector. Of that total, approximately, 362,242 people were employed in poultry production.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - TURKEY                                  |                     |                 |            |  |  |
|--|---------------------|-----------------|------------|--|--|
|  | Total               | Female          | Male       |  |  |
| Total Country Labor  | 31'624'253          | 10'175'295      | 21'448'958 |  |  |
| Non-Agricultural Labor   | 26'585'749          | 8'012'228       | 18'573'521 |  |  |
| Agricultural Labor   | 5'038'504           | 2'163'067       | 2'875'437  |  |  |
| Total Non-Poultry Agricultural Labor   | 4'676'262           |                 |            |  |  |
| Total Poultry Labor  | 362'242             |                 |            |  |  |
| Chicken Labor  | 343'287             |                 |            |  |  |
| Turkey Labor   | 18'811              |                 |            |  |  |
| Other Poultry Labor  | 144                 |                 |            |  |  |
|  | Wages (\$1,000 USD) |                 |            |  |  |
| Total Meat Processing Labor  | 47'818              | 7'818 \$428'591 |            |  |  |
| Livestock Processing Labor   | 32'388              | \$ \$290'290    |            |  |  |
| Poultry Processing Labor   | r 15'430 \$138'301  |                 | 3'301      |  |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |                     |                 |            |  |  |

Table 77. Agricultural labor force characteristics - Turkey

The total number of meat processing jobs in Turkey was 47,818 during 2020. Wages earned in meat processing totaled \$428.6 million. Livestock meat processing accounted for 32,388 jobs and \$290.3 million in wages earned. Poultry meat processing accounted for 15,430 jobs and \$138.3 million in wages earned.

### 4.6.10.3 Trade

The value of Turkey's poultry exports was estimated at \$545.80 million with exports to Iraq representing 56% of total value in 2020. The second and third largest market for Turkey's poultry exports were China, Hong Kong (\$42.5 million), and Libya (\$32.3 million) (see Figure 249 and Figure 250).





Turkey top 10 poultry exports, trade value



In 2020, Turkey imported \$17.8 million in poultry meat from the USA, which was the main supplier of poultry meat to Turkey that year. Brazil was the second largest source of poultry meat imports for Turkey at \$12.4 million (see Figure 251 and Figure 252). According to the USDA FAS, Turkey produces enough poultry to meet domestic demand for poultry. Additionally, high custom tariff rates of 100% on poultry meat deters exports to Turkey. Transshipment of poultry meat through Turkey is allowed. Thus, Turkey serves as a hub to ship poultry meat to countries in the Middle East<sup>21</sup>.









Figure 252.

Turkey poultry import flows

<sup>21</sup> USDA FAS, Poultry and Products Annual Report- Turkey, Aug. 31, 2021

### 4.7 Oceania

### 4.7.1 Regional **Demographics and Poultry Stocks**

An estimated 84.129 farms in Oceania are poultry farms (Figure 253). The Oceania broiler industry has 4,078 farms with 797 (19.5%) of those being commercial farms and 3,281 (99.8%) being household or micro-producer farms.

Oceania broiler farms have stocks of 139 million chickens with 97.4% being on commercial farms and 2.6% being on household or microproducer farms. The average size of commercial broiler farms is 170,022 head. The average size of the household or micro-producer farms is 1.109 head.

There are 79.820 duck farms in Oceania with an inventory of 1.6 million head. The average size duck farm is 20 head.

There are 231 turkey farms in Oceania with 1.2 million head of inventory. The average turkey farm has an inventory of 5,124 head.

Overall poultry stocks have increased slightly since 2010. Chicken stocks have increased 22.4%, duck stocks have increased 3.2%, and turkey stocks have declined 13.2% (Figure 254).





Oceania number of poultry farms by type





Oceania poultry stocks

### **4.7.2 Regional Economics**

The total GDP for Oceania was valued at \$1.7 trillion in 2020. The agricultural production sector was approximately 3% of the total red meat and crop production contributing \$27 billion and \$26 billion, respectively. Poultry production was less than 1% of the total GDP for Oceania (Figure 255).



Figure 255.

Oceania GDP & value of production by sector

### **4.7.3 Regional Poultry Production Volume and** Value

Oceania poultry production has increased 21.8% since 2010. Oceania produced 1.5 million metric tons of poultry meat in 2020 with 98% being chicken meat, 1% being duck meat, and 1% being turkey meat (Figure 256).

production (Figure 257).



Figure 256.

Oceania poultry meat production



Figure 257. Oceania value of poultry production

### 4.7.4 Australia

### 4.7.4.1 Demographics

The total number of poultry farms in Australia was estimated at 2,883. The largest share of poultry farms were household or micro-producer chicken farms, accounting for 54% or 1,581 poultry farms (see Figure 258). The average size of household/ micro-producer farm was 1,712 head. Approximately, 700 poultry farms were commercial chicken farms. Commercial chicken farms had an average of 128,646 head. An estimated 12% or 349 poultry farms were duck farms with an average of 3,515 head. Turkey farms comprised 9% or 253 of the total poultry farms with an average of 3,985 head.

Figure 259 indicates Australia's poultry production increased 35% in 2021 to 1.32 million metric tons compared with 2010 (977,330 metric tons). In 2010 Australia consumed 947,730 metric tons of poultry, by 2021 the volume consumed increased to 1.3 million metric tons representing an increase of 34% between 2010 and 2021. Over the last 12 years, Australia poultry production has been about 4% above poultry consumption.

The total number of poultry stocks was 103.1 million head (see Table 78). Approximately 101.9 million head were chickens, 1.2 million head were ducks, and 1.0 million head were turkeys.





Australia number of poultry farms by type



Figure 259.

Australia poultry production & consumption

| AUSTRALIA POULTRY STOCKS, SLAU |          |       |         |         |
|--------------------------------|----------|-------|---------|---------|
| 1,000 head                     | Chickens | Ducks | Turkeys | Total   |
| Stocks                         | 100'894  | 1'226 | 1'009   | 103'129 |
| Producing Animals/Slaughtered  | 658'261  | 7'844 | 5'296   | 671'401 |
| Production (1,000 MT)          | 1'247    | 17    | 19      | 1'282   |
| Sources: FAO. 2020             |          |       |         |         |

Table 78. Australia poultry stocks, slaughter & production

Since 2010, Australia's chicken stocks increased 22%, duck stocks increased 2%, and turkey stocks decreased 16% since 2010.

Poultry slaughter in Australia totaled 671.4 million head in 2020. An estimated 658.3 million head of poultry slaughter were chickens, 7.8 million head were ducks, and 5.3 million head were turkeys. Chicken slaughter increased by 29% compared to 2010. Duck slaughter decreased 2%, and turkey slaughter decreased 16% compared to 2010.

Australia's poultry production included 1.2 million metric tons of chickens, 19,000 metric tons of turkey, and 17,000 metric tons of duck. Compared to 2010, chicken production increased 33%, duck production remained the same as in 2010, and turkey production declined 16%.

### 4.7.4.2 GDP and Value of Production

The total value of GDP in Australia was valued at \$1.3 trillion in 2020. Nearly \$1.3 billion or 97% of the total GDP was derived from nonagricultural sectors. The crop production sector was estimated to contribute nearly \$22 billion or 2% of the total GDP. Red meat production represented \$13.6 billion or 6% of the total GDP. Chicken production contributed \$13.3 billion and represented less than 1% of the total GDP. Turkey production also represented less than 1% or \$27.4 million of the total GDP. Duck production also represented less than 1% or \$25 million (Figure 260).



The combined (direct and indirect) effects of agricultural production in Australia are estimated to be \$86.3 billion. Of this amount, \$5.1 billion comes from the poultry industry, with \$4.9 billion from chicken meat production, \$64 million from duck production, and \$73 million from turkey production. Agriculture pays a net value of \$466 million in taxes, \$19 million of which is estimated to be from the poultry industry (Table 79).

| ECONOMIC EFFECTS - AUSTRALIA (\$1,000 USD)   |              |              |              |             |
|--|--------------|--------------|--------------|-------------|
|  | Direct       | Indirect     | Total        | Taxes paid* |
| All agriculture  | \$37'129'156 | \$49'129'123 | \$86'258'279 | \$466'294   |
| Livestock  | \$15'160'378 | \$20'060'140 | \$35'220'518 | \$190'395   |
| Poultry  | \$1'881'738  | \$3'174'492  | \$5'056'230  | \$19'162    |
| Chicken  | \$1'830'256  | \$3'087'642  | \$4'917'898  | \$18'637    |
| Duck   | \$27'071     | \$40'608     | \$64'679     | \$245       |
| Turkey   | \$27'411     | \$46'242     | \$73'653     | \$279       |
| Source: FAOSTAT, OECD Input-Output Tables .*Taxes is equal to total taxes net of subsidies |              |              |              |             |

Table 79. Economic effects - Australia

### 4.7.4.3 Labor

Nearly 13.5 million people worked in Australia's labor force in 2020 (Table 80). Non-agricultural sectors supported an estimated 13.1 million jobs.

Approximately 336,478 people worked in the agricultural sector. Of that total 2,537 people worked in poultry production.

The total number of meat processing jobs in Australia was 60,374 during 2020. The total wages earned from meat processing was \$2.4 billion.

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - AUSTRALIA                               |                  |                   |           |  |
|--|------------------|-------------------|-----------|--|
|  | Total            | Female            | Male      |  |
| Total Country Labor  | 13'481'621       | 6'413'045         | 7'398'214 |  |
| Non-Agricultural Labor   | 13'145'078       | 6'307'502         | 7'167'213 |  |
| Agricultural Labor   | 336'543          | 105'542           | 231'001   |  |
| Total Non-Poultry Agricultural Labor   | 334'006          |                   |           |  |
| Total Poultry Labor  | 2'537            |                   |           |  |
| Chicken Labor  | 2'077            |                   |           |  |
| Turkey Labor   | 245              |                   |           |  |
| Other Poultry Labor  | 215              |                   |           |  |
|  |                  | Wages (\$1        | ,000 USD) |  |
| Total Meat Processing Labor  | 60'374           | 0'374 \$2'440'205 |           |  |
| Livestock Processing Labor   | 48'745           | 8'745 \$1'970'183 |           |  |
| Poultry Processing Labor   | 11'629 \$470'022 |                   | 0'022     |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |                  |                   |           |  |

Table 80. Agricultural labor force characteristics - Australia

Livestock meat processing was the largest share of meat processing labor with 48,745 jobs and nearly \$2.0 billion in wages earned. Poultry meat processing accounted for 11,629 jobs or \$470.0 million in wages earned.

### 4.7.4.4 Trade

Papua New Guinea, Singapore, and China, Hong Kong were the three largest markets for Australia's poultry exports in 2020. Australia exported more than \$19.2 million in poultry meat to Papua New Guinea. Also, Australia's value of poultry exports to Singapore and China, Hong Kong were estimated at \$9.1 million and \$6.8 million, respectively (see Figure 261 and Figure 262). Overall, Australia exported 39,491 MT of poultry meat products valued at %58.4 million.





Figure 262.

Australia top 10 poultry exports, trade value



The value of Australia's poultry imports was assessed at \$7.4 million. Thailand, New Zealand and the Netherlands supplied 72% of the total value imported (see Figure 263 and Figure 264).





Figure 264.

Australia top 10 poultry imports, trade value

**DECISION INNOVATION SOLUTIONS** GLOBAL MACROECONOMIC INDICATORS FOR THE POULTRY MEAT INDUSTRY

### 4.7.5 New Zealand

### 4.7.5.1 Demographics

The total number of poultry farms in New Zealand was estimated at 2,154. The largest share of poultry farms were household or micro-producer chicken farms, representing 92% or 2,020 farms (Figure 265). The average size of household/micro-producer farm was 100 head. Commercial chicken farms contributed the remaining 6% or 134 poultry farms. On average, commercial chicken farms had 170,579 head.

New Zealand's poultry production consistently increased from 2010 (148,720 metric tons) to 2021 (237,660 metric tons), indicating a 60% increase during that period. At the same time, New Zealand poultry consumption expanded 56%. In 2021, New Zealand's poultry production volume was 6.4% higher than the poultry consumption volume (Figure 266).

In 2020, the total number of poultry stocks in New Zealand was 25.1 million head (see Table 81). Of the total poultry stocks, an estimated 99% (24.8 million head) were chickens, less than 1% (181,000) were ducks, and less than 1% (78,000) were turkeys. Since 2010, chicken stocks in New Zealand increased 34%, duck stocks increased 1%, and turkey stocks increased 3% since 2010





New Zealand number of poultry farms by type



Figure 266.

New Zealand poultry production & consumption

| NEW ZEALAND POULTRY STOCKS, S |          |       |         |         |
|-------------------------------|----------|-------|---------|---------|
| 1,000 head                    | Chickens | Ducks | Turkeys | Total   |
| Stocks                        | 24'849   | 181   | 78      | 25'108  |
| Producing Animals/Slaughtered | 119'640  | 361   | 252     | 120'253 |
| Production (1,000 MT)         | 217      | 1     | 1       | 218     |
| Sources: FAO, 2020            |          |       |         |         |

Table 81. New Zealand poultry stocks, slaughter & production

Poultry slaughter in New Zealand totaled 120.3 million head in 2020. An estimated 99% (119.6 million head) of poultry slaughter were chickens. Duck slaughter outnumbered turkey slaughter and represented 361,000 head or less than 1% of poultry slaughter. Approximately, 252,000 turkeys accounted for less than 1% of total poultry slaughter. Chicken and turkey slaughter increased 46% and 1%, respectively. Duck slaughter decreased 2% compared to 2010.

New Zealand's poultry production included 217,000 metric tons of chicken, 1,000 metric tons of ducks, and 1,000 metric tons of turkey. Compared to 2010, chicken production increased 51%, duck production decreased 3%, and turkey production increased 1%.

### 4.7.5.2 GDP and Value of Production

In 2020, the total GDP in New Zealand was valued at \$212.5 billion. An estimated 92% or \$195.4 billion of the total GDP was represented non-agricultural by production sectors. The red meat production sector, was the largest agricultural production sector, representing 6% or \$13.6 billion in total GDP. Crop production was the second largest agricultural production sector, contributing to an estimated \$3.2 billion or 2% of the total GDP. The poultry production sector was the smallest, with chicken production representing \$387.1 million, and turkey production representing \$2.1 million (Figure 267).



The combined (direct and indirect) effects of agricultural production in New Zealand are estimated to be \$38.9 billion. Of this amount, \$1.0 billion comes from the poultry industry, with \$1.0 billion from chicken meat production, \$5 million from duck production, and \$5 million from turkey production. Agriculture pays a net value of \$321 million in taxes, \$8 million of which is estimated to be from the poultry industry (Table 82).

| ECONOMIC EFFECTS - NEW ZEALAND (\$1,000 USD)   |              |              |              |             |
|--|--------------|--------------|--------------|-------------|
|  | Direct       | Indirect     | Total        | Taxes paid* |
| All agriculture  | \$17'125'657 | \$21'741'595 | \$38'867'252 | \$320'890   |
| Livestock  | \$13'955'942 | \$17'717'536 | \$31'673'478 | \$261'498   |
| Poultry  | \$391'137    | \$627'384    | \$1'018'521  | \$8'139     |
| Chicken  | \$387'128    | \$620'953    | \$1'008'081  | \$8'056     |
| Duck   | \$1'948      | \$3'125      | \$5'073      | \$41        |
| Turkey   | \$2'061      | \$3'306      | \$5'367      | \$43        |
| Source: FAOSTAT, OECD Input-Output Tables .*Taxes is equal to total taxes net of subsidies |              |              |              |             |

Table 82. Economic effects - New Zealand

### 4.7.5.3 Labor

The labor force in New Zealand was comprised of nearly 2.9 million people in 2020. Non-agricultural sectors employed 2.7 million. The agricultural sector employed 161,909 people with approximately 3,651 working in poultry production (Table 83).

In 2020, an estimated 31,100 people worked in the meat processing sector. Wages earned in meat processing totaled nearly \$1.1 billion. Livestock meat processing dominated the sector with 28,559 jobs and \$979.6 million. Poultry meat processing accounted for 2,541 jobs and \$87.1 million in wages earned.

### 4.7.5.4 Trade

New Zealand's poultry meat largest export market was Papua New Guinea in 2020. The share of the value of poultry exported to Papua New Guinea represented 30% of the total value of poultry exported by New Zealand (\$26.5 million). The second largest market for New Zealand's poultry exports was Fiji with a total value of exports equal to \$5.0 million (see Figure 268 and Figure 269).

| AGRICULTURAL LABOR FORCE CHARACTERISTICS - NEW ZEALAND                             |                |             |            |  |
|--|----------------|-------------|------------|--|
|  | Total          | Female      | Male       |  |
| Total Country Labor  | 2'877'711      | 1'373'299   | 1'504'412  |  |
| Non-Agricultural Labor   | 2'715'802      | 1'322'168   | 1'393'634  |  |
| Agricultural Labor   | 161'909        | 51'131      | 110'778    |  |
| Total Non-Poultry Agricultural Labor   | 158'258        |             |            |  |
| Total Poultry Labor  | 3'651          |             |            |  |
| Chicken Labor  | 3'614          |             |            |  |
| Turkey Labor   | 19             |             |            |  |
| Other Poultry Labor  | 18             |             |            |  |
|  |                | Wages (\$   | 1,000 USD) |  |
| Total Meat Processing Labor  | 31'100         | \$1'066'246 |            |  |
| Livestock Processing Labor   | 28'559         | \$979'114   |            |  |
| Poultry Processing Labor   | 2'541 \$87'131 |             | 7'131      |  |
| Source: ILO 2020, World Bank 2020, UNIDO Database, INDSTAT 4 2021, ISIC Revision 3 |                |             |            |  |

Table 83. Agricultural labor force characteristics - New Zealand





# New Zealand Top-10 Poultry Exports Trade Value (\$1,000 USD)

Most of New Zealand's imports of poultry meat were from the Thailand in 2020. Imports of poultry meat from the Thailand were valued at \$2.1 million (see Figure 270 and Figure 271). The USA exported 350,323 MT of poultry products valued at \$321,921.





New Zealand top 10 poultry imports, trade value



Figure 271.

New Zealand poultry import flows

# 5. Appendix A, Methodology

## **5.1 Demographics**

Agricultural census data was obtained from a variety of governmental sources. Data on the number of poultry farms, if available, was gathered as were statistics on chicken, duck, and turkey farms and inventory (stock) numbers. Census data was found for Argentina (2018), Australia (2010/11 and 2015/16), Brazil (2006 and 2017), Canada (2016), China (2006 and 2016), Colombia (2014), Egypt (2009/10), France (2010), Germany (2010), Italy (2010), Mexico (2007), Netherlands (2010), New Zealand (2017), Nicaragua (2011), Panama (2011), Poland (2010), Russia (2016). Stock numbers were updated to 2020, if the data was available.

In addition, data on the number of farms and firms involved in poultry production was obtained from industry websites, industry publications, and from sources such as GAIN reports published by the USDA-FAS, and FAOSTAT data. Items in these categories include:

◊ GAIN report: RS2020-0042

- ◊ GAIN report: RS1829
- ♦ GAIN report: RS1747
- Self-Declaration of the Republic of Colombia as a Country Free from Newcastle Disease in Poultry, filed with the OIE on April 4, 2021.
- ◊ Chile's Full Integration Demands High Standards, Aug 13 2013.
- ◊ Global Poultry Industry and Trends, Feed & Additive Magazine, March 11, 2021
- **& LMIS Report on Poultry Sector, Agriculture Sill Council of India**
- OMOROCCO, FISA (Federation Interprofessionelle du Secteur Avicole) data
- ◊ Australia's Industry Structure, September 2021
- Overview of the South African Poultry Industry, April 1, 2018, AFMA
- ◊ South African Poultry Association, 2019 Industry Profile,
- ◊ Poultry Sector Study Nigeria, Netherlands Enterprise Agency, October 2020.
- ◊ Thailand's Poultry Industry, IPSOS Consulting, September 2013
- ◊ U.S. National Broiler Council data 2020.
- ◊ FAO The State of Food and Agriculture, 2014
- ◊ FAO, What Do We Really Know About the Number and Distribution of Farms and Family Farms in the World?, Background Paper for the State of Food and Agriculture 2014.
- ◊ Knoema EU Poultry Data Livestock and Poultry Holdings by Economic Size of Farms
- ◊ Eurostat: The Number of Farms in the European Union Which Held Poultry in 2016, by Country
- ◊ Eurostat: The Number of Specialist Poultry Farms in the EU in 2016, by Country
- ◊ USDA-NASS, Chicken Inventory, 2007-2020
- ◊ USDA-NASS, Turkey Inventory, 2007-2020
- ◊ FAOSTAT, Production Data, Chicken Stocks, Duck Stocks, Turkey Stocks, by Country 2010-2020

USA chicken and turkey stocks were calculated in the following manner: Inventory numbers are available for each year for which the U.S. Census of Agriculture is published. For 2007, the ratio of chickens for meat production from USDA-NASS (number of head) was divided by the inventory number from the COA, and that ratio was used to calculate the inventory levels in 2008, 2009, 2010, and 2011 by dividing the chicken production number (head) by the ratio of inventory to slaughter for 2007. The ratio from the 2012 COA was used for the years 2013-2016, and the ratio from the 2017 COA was used for 2018-2020. For turkey inventory calculations, a similar process was used, using turkey production numbers (head) from USDA-NASS and turkey inventory numbers from each COA.

For Chile, data from an article in May 2010 Poultry World indicates that Super Pollo has more than 1,500 broiler houses and that Super Pollo represents approximately 60% of broiler production at that time. The number of chicken farms in Chile was estimated by dividing 1,500 by 0.6, then multiplying that number times the ratio of poultry stocks in 2020 to the poultry stocks in 2010. For turkeys, the number of farms in Chile was estimated by dividing the 2020 turkey stocks by the average turkey stocks of a USA farm (assumes similar technology being used) adjusted by the ratio of the average size of Chile broiler farms to the average size of USA commercial broiler farms.

The number of commercial chicken farms in China is based on the number of businesses involved with poultry production as reported by the June 2021 Poultry Farming Industry in China – Market research Report published by IBISWorld. The number of household chicken farms in China was estimated by extending the annual percentage decline in the number of poultry farms from 2008-2009 through 2020 and then subtracting the estimated number of commercial farms. Inventory held by household farms was estimated to be 10% of China's chicken inventory.

# **5.2 Economic Impact**

Economic impact multipliers were obtained from a variety of sources. OECD data was used to estimate indirect economic effects in countries for which it was available. For these countries, multipliers were obtained from each country's total Leontief inverse matrix. Tax data was obtained from each country's input-output table. Poultry multipliers and taxes paid were estimated using the "food products, beverages, and tobacco" aggregation, while livestock and total agriculture multipliers and taxes paid were estimated using a weighted average of this aggregation as well as the "agriculture, hunting, and forestry" aggregation.

For countries where OECD data was not available, country specific input-output tables were obtained from a variety of sources:

◊ 2016/2017 Input-Output tables, Egypt CAPMAS

◊ Central Bank of Honduras (Matriz de insumo-producto para la economía de Honduras 2013)

◊ Central Bank of Nicaragua (Matriz simétrica insumo producto 2006)

◊ FES Central America (Diversificación de la matriz productiva en Panamá, 2016)

For these countries, multipliers and taxes paid were estimated by using the closest equivalent aggregations to those used for the OECD input-output tables.

