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## Impact of HPAI on Ghanaian Rural Chicken Producers' Incomes

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### Key Findings

- More than half of all rural households in Ghana keep at least one chicken, and on average, income from chicken sales comprises 11 percent of rural households' income.
- In the worst case scenario, HPAI shocks may cause an average rural household to lose 5.7 percent of its total household income.
- Impact of HPAI shocks varies significantly across households by income segments, agro-ecological zones, and size of flock.
- This heterogeneity should be taken into consideration when designing HPAI prevention and control policies.

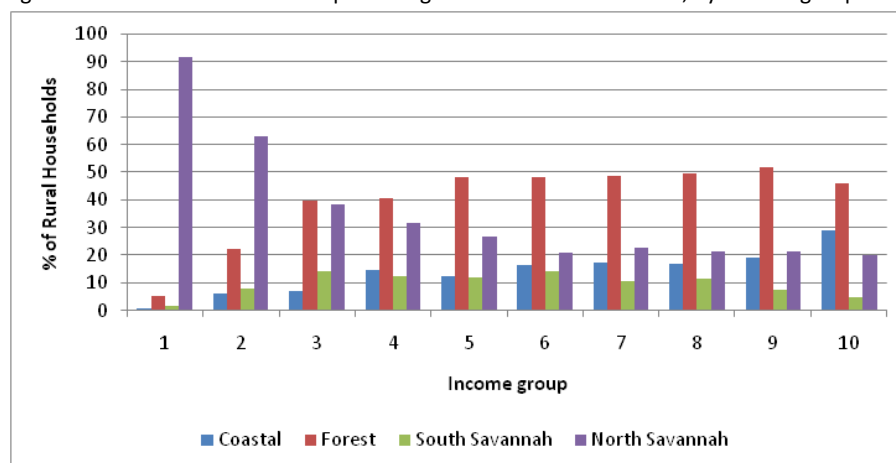
**Poultry** production is an important livelihoods activity in the rural areas of many developing countries. Several studies from African and Asian countries have found that poultry production significantly contributes to several livelihoods indicators of rural households, such as income, food and nutrition security, and intra-household gender equality. In the event of HPAI outbreaks and associated demand and supply shocks, therefore, it is expected that severe impacts will be experienced not only by large-scale, commercial poultry producers, but also by small-scale, non-, and semi-commercial poultry producers, who depend upon poultry for their livelihoods.

As reported by Diao (2008), the overall economywide impacts of HPAI in Ghana are modest. In fact, in the case of the rural poor, HPAI-induced demand and supply shocks were found to result in a small increase in income. This is because most of the rural poor derive greater proportions of their income from crop production, and substitution poultry consumption—the consumption of plant-based foods—leads to increases in returns to crop production. There is, however, little information on the impacts of HPAI outbreaks and associated shocks on the incomes of rural poor households that produce and sell poultry. In order to fill this gap, we use data from the fifth wave of the nationally representative Ghana Living Standards Survey (GLSS) to explain the role of poultry in the incomes of smallholder poultry-producing households, and to quantify the magnitudes of the impacts of HPAI shocks on these incomes.

## Chicken-producing households in rural Ghana

Similarly to other African countries, chicken production is an important rural household livelihoods activity in Ghana, where more than half of all rural households keep poultry. In fact, approximately 87 percent of all chicken producers in the country are located in rural areas, of which 97 percent are smallholders holding less than 500 birds. Figure 1 indicates that the poorest chicken producers are mainly located in the Northern Savannah, while the majority of the wealthier chicken producers are located in the Forest Zone.

Figure 1 – Distribution of chicken-producing households in rural areas, by income group and agro-ecological zone



Smallholder chicken producers are further subdivided into three categories based on average flock sizes: village extensive producers, backyard intensive producers, and small-scale, semi-commercial farmers (see Table 1). Backyard producers are the dominant producer type, accounting for 53 percent of all chicken producers in rural areas of Ghana, and a greater majority of small-scale, semi-commercial chicken farmers sell poultry, as expected.

Table 1 – Smallholder chicken producer types in rural Ghana

• Producer type	Size of flock	% of all producers	% that sell chicken	% of total income from chicken
Village extensive	<50	36	23.8	11.4
Backyard intensive	50-200	53	36.2	12.6
Small-scale, semi-commercial	200-500	11	48.9	13

The average contribution of income from chicken sales to total household income is reported in Table 2. On average, the share of chicken sales in total income is 11 percent. There is, however, significant variation across income groups and agro-ecological zones: the poorest households rely more on chicken sales for their income (18 percent) and households in the Northern and Southern Savannah acquire greater proportions of their income from chicken sales (12.6 percent and 11.2 percent, respectively).

Table 2 – Average share of income from chicken sales in total income

Zone	Income groups										Total
	1	2	3	4	5	6	7	8	9	10	
Coastal	7.67	9.40	7.76	12.61	4.29	9.19	2.80	8.33	2.95	27.07	9.88
Forest	27.60	10.86	8.26	8.30	5.41	6.65	7.84	7.08	22.27	5.79	9.23
S. Savannah	-	10.75	8.84	22.37	8.05	8.99	19.46	12.10	9.94	-	11.16
N. Savannah	17.57	9.06	9.44	9.64	21.21	5.84	3.92	8.93	2.92	2.12	12.59
Total	18.01	9.65	8.74	10.93	9.69	7.28	6.48	8.33	12.14	11.06	10.98

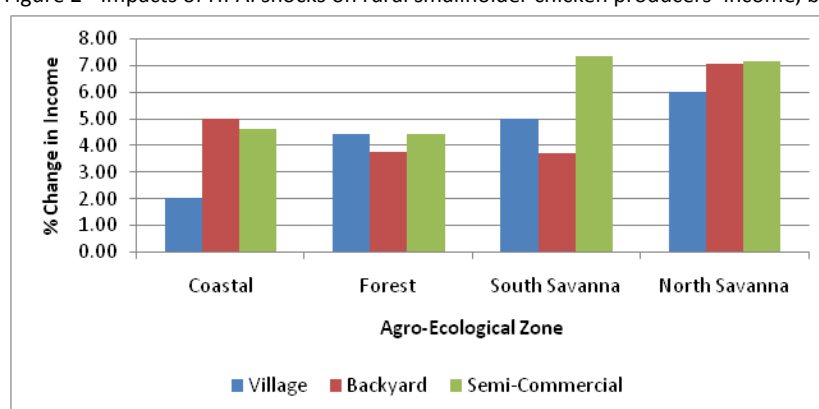
## HPAI Scenarios

Impacts of three HPAI scenarios are simulated on total household income of chicken-producing and chicken-selling households. In Scenario 1, an HPAI outbreak results in a supply shock, which leads to a 10-percent loss of chicken stock due to infection and culling. This shock is assumed to be uniform across all agro-ecological zones of the country. In Scenario 2, an HPAI scare (for example, a false alarm or an actual outbreak in a neighboring country) generates a demand shock in Ghana, which results in a 40-percent reduction in poultry demand. Scenario 3 is a combination of the first two scenarios. Here we present the results from this worst-case scenario.

## Impacts of HPAI on poultry-producing households' incomes

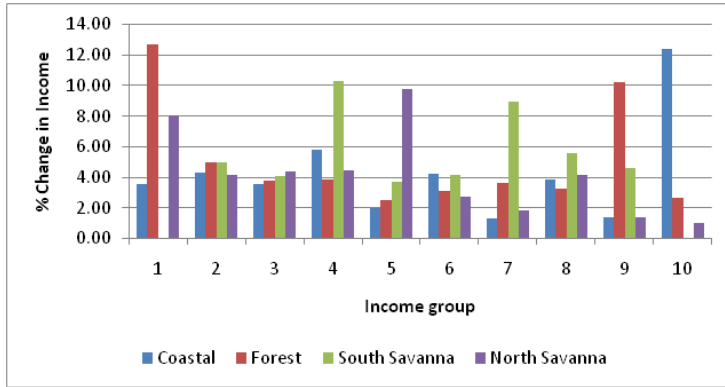
The results reveal that on average, smallholder poultry producers would lose 5.7 percent of their total income under Scenario 3. When disaggregated into agro-ecological zones and producer types, we see that across zones, smallholders in Northern Savannah bear the highest income losses, whereas across producer types, small-scale, semi-commercial producers are generally hit the hardest by the demand and supply shocks caused by HPAI outbreaks.

Figure 2 - Impacts of HPAI shocks on rural smallholder chicken producers' income, by agro-ecological zone &amp; producer type



Across agro-ecological zones, chicken-producing households located in the Northern Savannah suffer an average 6.8-percent reduction in their total household incomes, while those in the Forest Zone suffer the least losses, with an estimated 4-percent average reduction in income. Figure 2 provides a distribution of reductions in income across each income group by agro-ecological zone. Among the poorest three income groups, producers in the Forest zone suffer the most, while among the wealthiest three income groups, producers in the Coastal and Forest Zones bear the highest income losses.

Figure 2 – Impacts of HPAI shocks on rural smallholder chicken producers’ income, by agro-ecological zone & income group



In terms of impacts across each producer type, semi-commercial producers are affected the most, with an average 5.9-percent reduction in income. Figure 3 reveals that across all producer types, producers in the bottom four decile groups suffer significantly higher income losses than their counterparts in higher income groups.

Figure 3 – Impacts of HPAI shocks on rural smallholder chicken producers’ income, by producer type & income group



## Concluding remarks

Poultry production is an important rural livelihoods activity. More than half of all rural households keep at least one chicken, and on average, income from chicken sales comprises 11 percent of rural households’ income. In the worst-case scenario (Scenario 3), HPAI shocks may cause an average rural household to lose 5.7 percent of its total household income, though the impact of shocks varies significantly across households by income segments, agro-ecological zones, and size of flock. This heterogeneity should be taken into consideration for the design of efficient and equitable HPAI prevention and control policies, and compensation schemes.

Acknowledgement: This Research Brief has been extracted from: Birol, E. and D. Asare-Marfo. “Impact of Highly Pathogenic Avian Influenza on Ghanaian Chicken Producers’ Incomes,” available on [www.hpai-research.net](http://www.hpai-research.net).

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