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Thank you Chairman Conaway, Ranking Member Peterson, and members of the Committee. I appreciate this opportunity to discuss the relationship between national security and agriculture.

## **Agricultural Megatrends**

Before I focus on the agriculture and national security nexus, I wanted to look at some of the major trends affecting global agriculture to provide some background. With a pressing need to feed the future world of nine billion people and manage emerging national security challenges, we need to look at the big picture as we map our way forward.

One trend is toward an increasingly globalized supply chain with our food supplies increasingly dependent on trade. While access to the world market has generally reduced food prices and improved access to food during local production shortfalls, it also highlights the need to secure market access for our agricultural exports while ensuring the safety and reliability of our imports. Looking further out, it may also necessitate consideration of how to secure food supplies for potentially vulnerable U.S. allies such as Japan.

A second issue is the evolving relationship between food and resource scarcity. Over time, rising competition for limited resources such as water and arable land could affect political stability and shift military priorities. For example, this could fuel further instability in the Middle East, where water scarcity in particular has the potential to aggravate interstate conflict. Water scarcity plays a significant role in both Syria and Iraq, where rivers, canals and dams are military targets. Over time, these and other resource constraints along with pressures from climate change could slow down increases in productivity.

The next trend is the rising global middle class, which is expected to double in size in the next decade. According to the U.N. Food and Agriculture Organization, the world must increase food production by 50 to 60 percent to satisfy expected global population growth and changing consumption patterns by 2050. This could transform markets for many food products. In East Asia and Sub-Saharan Africa, per capita meat consumption by weight is projected to increase by 55 percent and 42 percent by 2030. These changes will put pressure on the food production system, but will also create immense opportunities for U.S. and global agricultural producers.

At the same time, changes in our food system have also driven the fourth trend, changes in consumption in rich and middle income countries. Consumers are increasingly looking for products that are not only healthier but also have other characteristics. This not only includes products that are lower in sugar, fat and salt but those that address environmental, animal welfare, labor and other concerns. These increasing demands on the food system could reduce productivity, but could also allow entrepreneurial farmers to get better prices for high-value and differentiated products.

Rising consumer demand for value-added products has partially been driven by rising anxiety about and skepticism of science. While Western Europe has traditionally been least trustful of the food and agricultural industry, this trend of rejecting modern agricultural production technologies has spread elsewhere, including within the United States. This has been most evident in the deepening suspicion about agricultural biotechnology and support for mandatory labeling. If science skepticism accelerates, this could undermine our ability to increase production enough to feed the world.

The sixth trend is driven by energy prices. Since energy prices are one of the largest expenses in agricultural production, food prices rise with energy costs. At the same time, energy demands also divert a substantial amount of agricultural production. In the United States, around 40 percent of corn production is used for ethanol. While energy markets are famously volatile, rising long-term energy prices could drive up production costs and divert more crops to fuel use.

A seventh trend is the continuing exclusion of too many farmers from the global economy. According to the United Nations, 1.4 billion people cannot fulfil their most basic needs – and many are subsistence farmers. This continuing poverty makes millions vulnerable to weather, disease, price changes or other issues – and can drive many other problems, including refugee flows and political instability. Including poor farmers in development can increase resilience and prevent problems from worsening.

The last trend is the changing world of agricultural trade policy. Although the World Trade Organization (WTO) is still in place, the organization may be overtaken in the future by a growing number of alternative bilateral or regional trade agreements – which numbered more than 600 in 2010. The number is higher now because of new agreements such as the recently completed free trade agreement between the European Union and Canada. These rules could complicate our ability to access markets globally – but also offer an immense opportunity if we open trade too.

At the center of all of these worldwide and regional trends is U.S. agricultural production. The United States plays a critical role in global agriculture since we are world's largest producer of beef, soybeans, corn and poultry and a top exporter of products as diverse as almonds, apples, cotton, raisins, sorghum, pork and wheat. Even in our highly globalized economy, America is still often the world's swing supplier of food.

### The Agriculture-National Security Nexus

All of these trends offer a mix of threats and opportunities for the United States – but with the right approaches we can minimize the former and maximize the latter. These issues can be clustered into the global security, homeland security and economic realms.

On the global security front, energy security, access to natural resources, and continuing ability to trade food globally will be central to maintaining our security – and that of America's allies. Central to this will be the ability to move physical product through open sea lanes, the limitation of trade restricting measures, and ensuring access to reasonably priced energy and other resources.

Homeland security is connected to agriculture because of the importance of America's global supply chains and food safety issues. Although these issues have not been front and center because of the strength of the U.S. regulatory system and our status as a major net exporter, the risks do exist.

The economic dimension is tied to both farm income and to the effects on consumer prices. Domestically, the U.S. Department of Agriculture estimates that livestock and poultry production alone generates more than \$100 billion a year in revenue. The U.S. food and agriculture sector has also benefitted tremendously from trade is exports totaled \$152.5 billion in Fiscal Year 2014. At the same time, Americans spend a little more than 6 percent of disposable income on food, one of the lowest levels in the world. The food and agriculture sector creates immense benefits for both producers and consumers – both in the United States and worldwide.

### **Building our Future Security**

All of these topics raise the question of what is to be done. While there is not sufficient time to look at the issues in detail, I would like to offer a few thoughts – some of which were cited in documents such as the recently released Intelligence Community Assessment (ICA) on Global Food Security, along with two Development of Homeland Security Presidential Directives: HSPD-7, "Critical Infrastructure Identification, Prioritization and Protection" and HSPD-9, "Defense of United States Agriculture and Food.

Infrastructure: Agriculture is extremely dependent on roads, rail, electricity, water and other physical infrastructure. As mentioned in HSPD-7, it is important for federal departments and agencies to further advance efforts to protect critical infrastructure and key resources by preventing, deterring, and mitigating deliberate efforts to destroy, incapacitate or exploit them by working across agencies and with state and local governments and the private sector. Reducing the chances of attack will likely require increased investment in vulnerable or aged infrastructure and a continuing evaluation of new and emerging threats.

Biodefense: One specific kind of threat is the theme of HSPD-9, which focuses on the risks of biological attack on U.S. agriculture. The consequences of a successful attack range from economic damage to threats to food safety and public health. Although there have been no large-scale attacks, it is important to strengthen surveillance, monitoring and tracking and to enhance nationwide laboratory networks to ensure food, veterinary, plant health and clean water. As federal retirements continue apace, we need to build up talent for the future in these areas.

Resource Strategy: Since agriculture is so tied to energy, water and other resources, we may consider these items themselves to be of strategic importance. In the decades to come, water could become to global strategy what petroleum is today, since declining food security could contribute to large-scale political instability and conflict. These problems could be aggravated by climate change – which may disrupt resource availability. To ensure that the United States, its allies and other strategically important countries have access to food, we may need to reimagine a grand strategy around these resource issues. The ICA mentions Africa, the Middle East and South Asia as particularly vulnerable to resource constraints.

Agricultural Research: In order to feed a growing global middle class and a population expected to reach nine billion by 2050, we need to increase food production. Given the constraints on land, water and other resources, the only way to do this is to boost productivity. Unfortunately, funding for vital research at the U.S. Department of Agriculture and the Consultative Group on International Agricultural Research (CGIAR) has stagnated, while the need to produce food becomes more pressing. This needs to change.

Trade Policy: One vital consideration is market access – both for U.S. exporters and those in other countries. As noted earlier, exports boost U.S. farm income and create jobs – and trade can fill in gaps in local food supplies and allow access to lower cost products. Beyond this, exports from poor countries also can support their farm incomes and boost regional and global food availability. Advancing these goals will include both support for free trade agreements such as the Trans-Pacific Partnership and measures that open the U.S. market, such as the African Growth and Opportunity Act (AGOA) and the General System of Preferences. Stronger trade agreements could also work against a repeat of 2008, where more than 30 major food exporters restricted trade in order to stem rising domestic food inflation – at the cost of their trading partners.

Support International Agricultural Development: A final issue is the pressing need to support farming systems in the developing world. Boosting agricultural production not only increases world food supplies, but it can reduce the vulnerability of political systems to weather, conflict and other shocks. Boosting rural incomes can reduce hunger, prevent the emergence of disease and reduce migration to the cities or as refugees overseas. The key to successful development is to develop market-oriented systems that improve the operation of agriculture as a business by working with farmers, host governments, investors, civil society and private industry.

There is more that needs to be done beyond the issues already mentioned. We need to reduce crop and food waste that costs approximately one-third of all global food production. To boost production, we should focus on trade capacity-building to allow farmers in developing countries to compete in the global market. In many countries, there needs to be an assessment of counterproductive government policies that tax producers and undermine food availability. Finally, we need to find a way to encourage agriculture and food policy to align with science on such issues as biotechnology.

Although there are many challenges on the way to feeding the future world of nine billion, we can enhance both national and global security if we make the right choices now.

Chairman Conaway, Ranking Member Peterson, and members of the Committee, thank you for the opportunity to testify before you this morning. I look forward to answering your questions.