Developing Local and Regional Food Systems - A Study of Indiana

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Structure

- Background
  - The Well Traveled Yogurt Pot
  - Food-miles Concept: Pros & Cons
  - Linkages with Community Systems
  - Food Logistics Infrastructure & Data Sources
  - Processed Food Movement, IN & USA

- Online Demonstration- Food System Assets
1 truck-load of yogurt in southern Germany, a theoretical truck-load had to move 1,005 KM.

In general, volume of road freight (tons) is stagnating, volume of freight movement (ton-miles) is increasing.


Map developed by the PCRD
Food-Miles Concept

- “Farm to the Fork”- distance traveled by food (Angela Paxton, 1994)

- Energy used, GHG emissions, other environmental impacts

- The average U.S. household’s carbon footprint from food consumption is 8.1 ton CO₂/year (Weber et al., 2008)

- EIO-LCA: 83% of GHG emissions are from food production, only 11% is from the transportation of food materials (Weber et al., 2008)

- Arguments for locally grown foods should not be based solely on food-miles and environmental benefits

Linkages with Community/Regional Systems

- Transportation
- Community health
- Equity
- Green Infrastructure
- Air Quality
- Noise
- Land use/activity
- Community/Regional Economy
- Sustainability

Food System & Planning
**Ag & Food Products:**
- Animal feed
- Cereal grains
- Live animals/fish
- Meat/seafood
- Milled grain products
- Other Ag products
- Other/processed food stuffs

- Trucks carried 85% (2.6 billion tons) of Ag & Food commodities by weight in 2007; Water modes only 3%

- Trucks carried 90% ( $ 1.6 trillion) of Ag & Food commodities by value in 2007; Water modes only 1%

Source: NTAD, FAF 3.3, FHWA, ORNL, ArcGIS Online
Map developed by the PCRD
Railroads carried 8% (237 million tons) of Ag & Food commodities by weight in 2007; Multiple modes and mail only 3%

Railroads carried only 3% (60 billion $) of Ag & Food commodities by value in 2007; Multiple modes and mail only 3%

By Weight

- 63.5% is cereal grains
- 13% is processed food stuffs
- 5% is milled grain products

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Processed Food Stuffs:
- Dairy products
- Processed or prepared vegetables
- Fruits, other nuts, juices
- Coffee, tea, and spices
- Animal or vegetable fats and oils, prepared edible fats, flours, oil seeds
- Sugars, confectionary, cocoa preparations
- Other edible preparations
- Non-alcoholic beverages and ice

Map developed by the PCRD
Source: NTAD; FAF 2.2, FHWA; SRTM Elevation Data, ESRI
Freight Analysis Framework 3

- Oak Ridge National Laboratory
- Commodities
- Freight movement by 7 modes
- Truck, Rail, Water, Air, Multiple modes, Pipeline, Other modes
- 7 commodities- live animals/fish, cereal grains, other ag. prod., animal feed, meat/seafood, milled grain products, other food stuffs
Food & Ag. related Freight Movement, USA

Food & Ag. Products by Weight, 2007

Food & Ag. Products by Value, 2007
Online Demonstration

FSNAT

FIAT
• Flow mapping by using ESRI ArcGIS viewer for FLEX

• Services on ArcGIS Server
• Indiana as Origin
• Maine as Destination
• Intermodals
- Freight zones flow
- Complex flows can be mapped
Mapping US Farmer’s Markets

Thiessen polygons help to find nearest farmer markets
Chart tool helps to look at employment situation in Agribusiness cluster by county.

Identify tool helps to retrieve information on Farmer’s Market.
Drive time tool could be useful in making decision on which farmer's Market is more accessible.

Route tool helps to identify an optimal drive route to the desired market.
Thank you!

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