Coming Full Circle with Sustainability:
A Workshop on Building a Circular Economy in the DMV Region

Leaders in Energy
University of the District of Columbia
September 28, 2017
Sector Presenters

Kamran Zendehdel, Ph.D., Assistant Director, Center for Sustainable Development, College of Agriculture, Urban Sustainability and Environmental Sciences (CAUSES), University of District of Columbia
UDC Food Hub System supporting Circular Economy

Kamran Zendehdel, Ph.D.
Assistant Director of Center for Sustainable Development
College of Agriculture, Urban Sustainability and Environmental Sciences

UDC
September 2017
Humanity’s greatest invention

• Humanity’s greatest invention, cities have always been home for human creativity, but today they have become the basic platform for economic and business growth.

• More than half of the world’s population lives in cities – over three and a half billion people – and an estimated 60 million more are moving to them every year.

• By 2050, more than 70 percent of the world’s population will be city-dwellers.

• Cities stand at the forefront of the challenges and opportunities of the 21st century.

• Cities are responsible for 80% of global GDP – our economy is undoubtedly an urban one.

udc.edu/causes

“Healthy Cities-Healthy People” Kamran.zendehdel@udc.edu
New urban areas around the world

• As today’s cities adapt to new challenges, it is estimated that more than 60% of metropolitan regions that will exist in 2050 have yet to even form.

• As they do, over 3 billion more people will be added to urban centers, and massive investments will be made to construct the infrastructure necessary to support them.
Food Security

• USDA defines “Food Security” as access by all people at all times to enough nutritious food for an active and healthy life.

• But as we know we have food insecurity all around world including Washington DC, the nation’s capital.

• The U.S. food system is lacking not providing enough food as well as not having enough high quality food.
Nutritional value of food in the U.S.

2001 → 25% → 2016
Food travel in the U.S.

Food travel further and further before reaching our cities

udc.edu/causes
“Healthy Cities-Healthy People” Kamran.zendehdel@udc.edu
Where does our food come from?

By: John-Bey, Ghana, Marie, Julio, Iestina
Production location of Vegetables and fruits in Giant Supermarket 2017

- 58% Out of the country
- 23% Product of USA
- 10% No Production Location
- 9% With a state name

Worldwide sources of our vegetables and fruits
Our cities are very vulnerable to food insecurity in East Coast

udc.edu/causes  “Healthy Cities-Healthy People”  Kamran.zendehdel@udc.edu
Top producers in the U.S.
Food desert in Washington DC

8 census tracks that considered food desert in Washington DC

520 Stores Sell Food in Washington, DC
Less than 60 Stores Sell Fresh Food

2015 Unemployment by Ward
- Ward 1: 4.5% (1.0% from 2014)
- Ward 2: 4.3% (1.0% from 2014)
- Ward 3: 4.0% (1.0% from 2014)
- Ward 4: 5.7% (1.2% from 2014)
- Ward 5: 7.9% (1.4% from 2014)
- Ward 6: 5.2% (1.0% from 2014)
- Ward 7: 11.0% (2.0% from 2014)
- Ward 8: 14.2% (2.1% from 2014)

2032 Goal: 4.6% in Every Ward
Health problems in low income neighborhoods in DC

• In many parts of the world we have health problems because food is grown or stored in unsanitary condition.

• In the US, we have many health problems because of limited access to healthy and fresh produce.

• Our health problems in the US are:
  – Blood pressure
  – Diabetes
  – Hypertension
  – Obesity
In Washington DC

• 37% of Washington DC Households with children unable to afford enough food in the past year.

• This is the highest in the nation

udc.edu/causes

“Healthy Cities-Healthy People” Kamran.zendehdel@udc.edu
The UDC Urban Food Hub Concept

1. Food production
2. Food preparation
3. Food distribution
4. Waste and water recovery
   (closing the loop)

• The urban food hubs are designed to form a network of food security island through our city.

• Our food hubs will improve nutritional health, lower public health expenditure, create new businesses, improve air and quality and improve soil quality.

udc.edu/causes   “Healthy Cities-Healthy People”   Kamran.zendehdel@udc.edu
Figure 1: Full-service Grocery Stores and Urban Food Hubs in Washington D.C.
CAUSES Urban Food Systems Model

**Produce**
- Aquaponics: fish and produce
- UDC Firebird Farm
- Community Partners
- Vendors

**Prepare**
- Business Kitchen Incubation Space
- Food Truck

**Distribute**
- Food Truck
- Farmers Markets
- Retail

**Recycle**
- Community Composting
- Anaerobic Digestors

- Entrepreneurship
- Communications/Marketing
- Business Planning and Management
- Food Preparation
- Policies and Legal Processes
- Economic Analyses
- Environmental Impacts
- Maintenance and Management
- Technical Assistance
- Healthy Foods/minimize fishing from Anacostia

Jones & O’Hara © 2013

udc.edu/causes

“Healthy Cities-Healthy People”  Kamran.zendehdel@udc.edu
UDC Land-grant centers

• The Urban Food Hub is anchored in five UDC land-grant centers.

• These centers provide a wide range of community related programs and trainings.
  – Food safety
  – Master gardening
  – Urban Agriculture classes
  – Entrepreneurship classes
  – Green infrastructure classes
In UDC we want:

• Grow more food in the cities
• Train the community about urban food systems
• Add more value to locally grown food
• Food sanitation
• Building innovative food distribution system
• Reduce waste and reuse waste in our food production
Van Ness Campus Sustainability Map

Our goal is to serve as a sustainability leader among institutions of higher education and as a national model for urban sustainability in both campus operations and educational offerings.

Efficient Operations
- Stormwater Collection Cisterns collect stormwater runoff from the plazaides for on-site reuse in a water feature, and in non-potable applications, such as irrigation.
- Future Big Belly Solar Trash and Recycling Compactors operate entirely off the grid and require five times fewer pickups by service staff, helping to reduce costs.
- Sav-Watt Eco Pole provides street lighting via long-lasting, energy efficient LED bulbs generated by two photovoltaic solar panels and a vertical-axis wind turbine.
- Brita Hydration Stations installed at 24 locations in 8 buildings provide quick, easy access to filtered tap water at no cost to students, faculty, staff, and visitors. UDC is also a member of the Tap It network, working to promote public access to campus drinking water. More info at www.tapitwater.com.

Sustainability Research
- EPA-Certified Environmental Quality Lab will serve as DC's primary modeling and simulation facility, managed by UDC's Water Resources Research Institute.
- Zero Energy Visitor Center is managed by UDC’s Center for Excellence in Renewable Energy and generates 100% of its electrical need from solar and wind power.
- Planned Green Roof Sites will be developed in partnership with the District Department of the Environment to study the performance and benefits of an array of green roof design types.

Intermodal Transit
- Van Ness-UDC Metro Station transports more than 57% of commuters living and working within a half-mile of the station (for 7,215 residents and 6,334 employees).
- Van Ness Metro / UDC Capital Bikeshare Station is part of a network of over 1,300 bikes at 110 stations all over the District of Columbia and Arlington.
- Zipcars at Connecticut and Windom are two of eight car-sharing vehicles located within a half-mile of the Van Ness Campus.
- WMATA Bus Lines make stops at six locations at the edge of the Van Ness Campus along Connecticut Avenue and Van Ness Street.
- Existing and Proposed Bike Rack Locations were identified in the 2011 Campus Master Plan. New racks will be installed in the next two years.

Campus Indicators Tracking
- 1,300,000 kWh: Average monthly electricity consumption, equal to the usage of 1,357 US households.
- 1,100,000 gallons: Average monthly water consumption, enough to fill two Olympic-size swimming pools.
- 12,500 pounds: Average weight of waste recycled monthly, roughly the weight of 4.5 Honda Civics.

udc.edu/causes

“Healthy Cities-Healthy People”

Kamran.zendehdel@udc.edu
The green roof installation and renovation of the greenhouse on Building 44 will create a living laboratory in support of the College of Agriculture, Urban Sustainability, and Environmental Sciences (CAUSES). The project will add approximately 20,000 sq ft of green space and will feature water re-use irrigation systems and garden planters for urban agricultural research and demonstration.

Contractor: **CONSYS Inc.**  Architect: **BELL Architects**

**Dr. James Lyons,**
President

**Project Start:** March 2014
**Completion Date:** August 2014

**Barbara Jumper,**
Vice President For Facilities & Real Estate
DCPS Teachers Visit the UDC Firebird Farm

udc.edu/causes

“Healthy Cities-Healthy People”

Kamran.zendehdel@udc.edu
UDC’s Community Garden System-Schematic
The UDC East Capitol Urban Farm
UDC East Capitol Farm
UDC Community Composting Project

Community Compost Build Day

Saturday, June 17, 2017
5:00 p.m. - 6:00 p.m.
East Capitol Urban Farm
5901 East Capitol Street SE
Washington, DC 20019
sustainability@udc.edu | (202) 274-7128

udc.edu/cause
“Healthy Cities-Healthy People”
Kamran.zendehdel@udc.edu
UDC Farmers Markets

UDC VAN NESS
FARMERS' MARKET
HEALTHY CITIES - HEALTHY PEOPLE

UDC EAST CAPITOL
FARMERS' MARKET
HEALTHY CITIES - HEALTHY PEOPLE

udc.edu/causes
“Healthy Cities-Healthy People”
Kamran.zendehdel@udc.edu
The UDC Aquaponics
Thank you for your attention