



# Dean's Annual Report

2016-2017

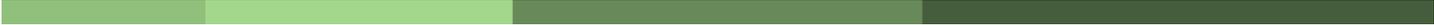
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Patel College of Global Sustainability

University of South Florida

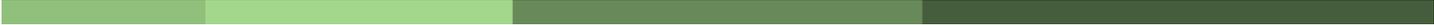
4202 E Fowler Ave

Tampa, FL 33620



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## Highlights

- Admitted student numbers have increased.
- Worked with the council of deans to review and modify academic organizational model
- Increased Enrollment
- Funded a search Committee for a new dean
- Funded three research projects through the inaugural PCGS Interdisciplinary Research Grant Program
- Offered summer courses for the first time
- Became a designee of the UNWTO International Network of Sustainable Tourism Observatories
- Became a Coverdell Fellows Peace Corps Partner
- Faculty member recipient of a Fulbright Scholar Medal
- Faculty member recipient of a Carnegie African Diaspora Fellowship
- The number of graduates securing employment within six months of graduation has increased.
- Developed new partnerships



## Background

### Establishment & Brief History

The Patel College of Global Sustainability (PCGS) was established in 2009 to foster sustainable urban communities and environments through collaborative research, education and community involvement. Its research generates innovations and new knowledge that helps cities around the world, including those in developing countries, reduce their ecological footprint while improving their form and function to make them healthier, more livable and resilient.

The Patel College of Global Sustainability comprises the M.A. Program in Global Sustainability, Patel Center for Global Solutions, and the Graduate Certificate Program in Sustainability. It is an inclusive and holistic college based on interdisciplinary research, design educations and service and has partnered with the other USF Colleges to carry out those activities.

One of the most significant personnel changes within the college in 2016 was the appointment of an Interim Dean. Richard Berman officially began leading the college in August 2015 and since then, the college has experienced exponential growth in academics and outreach by developing over 18 new concentrations and graduate certificate programs combined.

### Mission, Vision, Values & Goals

#### Mission

To foster sustainable urban communities and environments through collaborative research, education and community involvement.

#### Vision

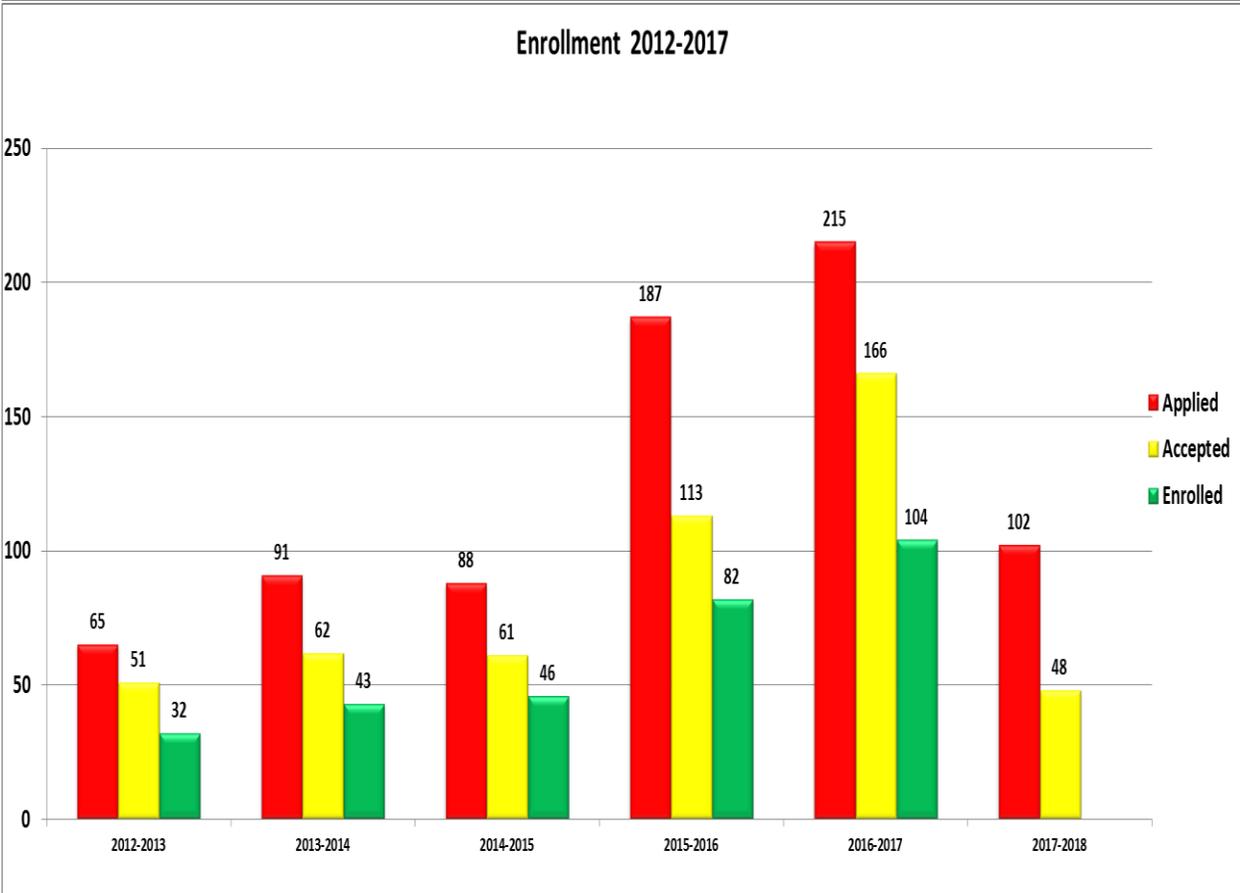
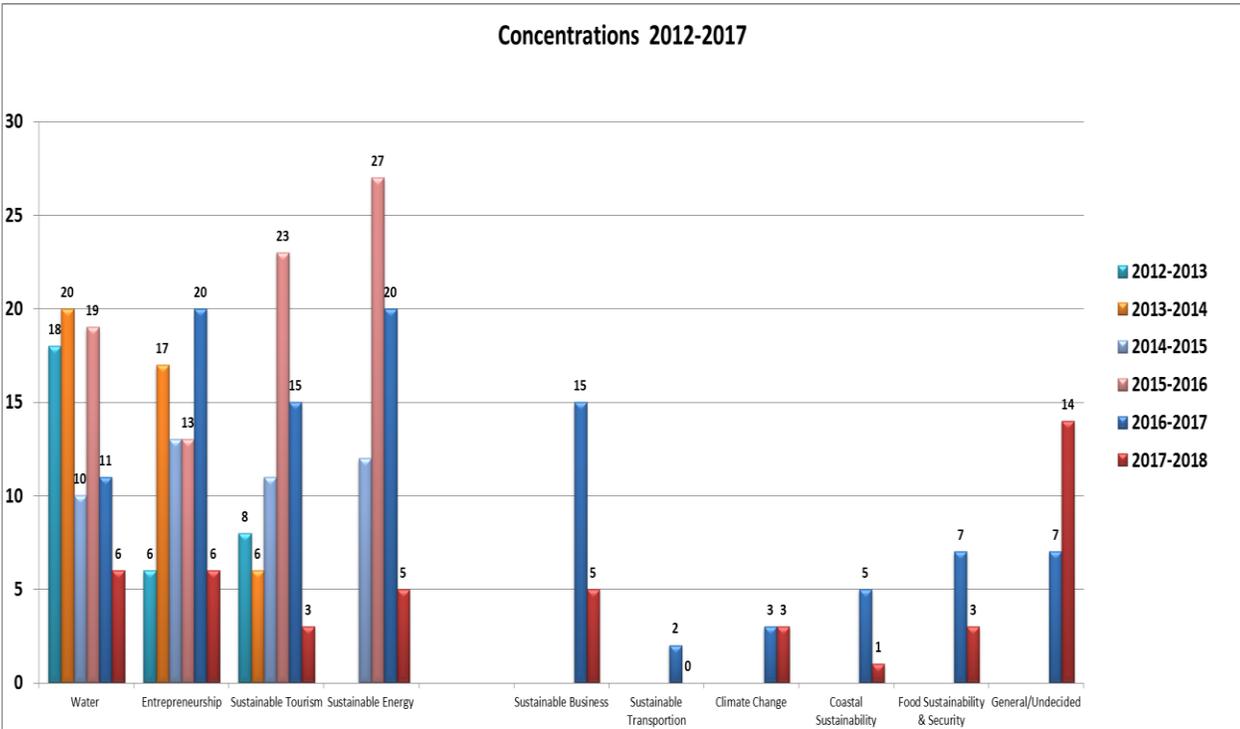
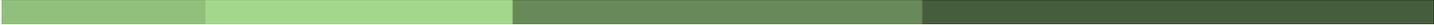
Drawing upon various definitions of “sustainability” we seek to ensure that these efforts both endure and dramatically expand at USF; that they encourage the natural interconnections among those groups on campus addressing ecology, economics, politics and culture; that they recognize the essential contributions of scholars and professionals in engineering, business, architecture and urban planning, transportation, health, global studies and the natural and social sciences; and that they serve to create and maintain the conditions under which humans and nature can exist in productive harmony, fulfilling the social and economic requirements of present and future generations.

## Student Success

### *Admissions and Graduation*

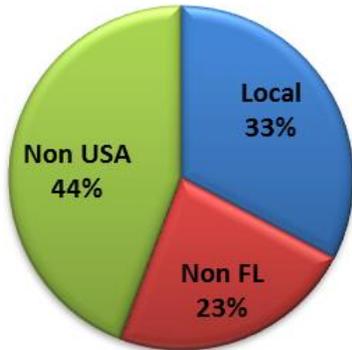
Representation from 2012-2017 of recruitment and admissions

	2012-13 Fall	2013-14 Fall	2014-15 Fall	2017 Fall	2015-16 Fall/Spring	2016-17 Fall/Spring
Applied	65	91	88	102	187	215
Accepted	51	62	61	48	113	166
Enrolled	32	43	46	TBD	82	104
<u>Concentrations</u>						
Water	18	20	10	6	19	11
Entrepreneurship	6	17	13	6	13	20
Tourism	8	6	11	3	23	15
Energy			12	5	27	20
Sustainable Business				5		15
Sustainable Transportation				0		2
Climate Change				3		3
Coastal Sustainability				1		5
Food Sustainability & Security				3		7
General/Undecided				14		7



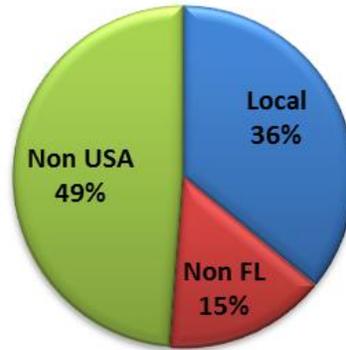
## 201601 Residency

Local Non FL Non USA



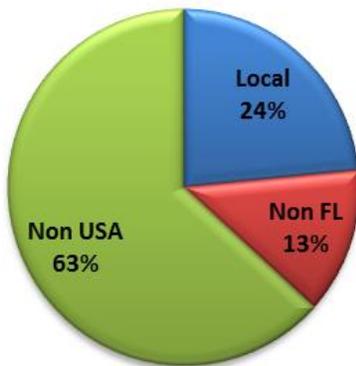
## 201608 Residency

Local Non FL Non USA



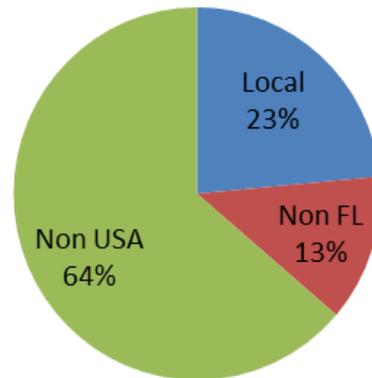
## 201701 Residency

Local Non FL Non USA



## 201708 Residency

Local Non FL Non USA



## Internships

Our students conduct their internships at many exciting places across the globe. The Patel College of Global Sustainability global internship program allows students to gain an international perspective on sustainability while implementing program knowledge and research on-the-ground to solve real world problems.

This ACE program is typically completed the semester before the student graduates. This can be completed during spring, summer or fall.

Below is a detailed report on students who undertook their ACE in the fall of 2016.

	NAME	ORGANIZATION	LOCATION	INTERNSHIP TOPIC
1.	ANDY BAHADUR	Gracie Rock Village Community	Belize	Community Engagement in Tourism
2.	SHUANTZU CHANG	Forest Finance	Panama	Sustainable Pathway for small community in Panama
3.	JOSE FORADADA	AFLG Investments Private Equity	Tampa, Florida USA	Entrepreneurship
4.	EDWARD HOFFMAN	Green Artery	Tampa, Florida USA	Socio-Ecological Impacts of Green Infrastructure Projects
5.	SHI LIN	Steelcase	Singapore	Sustainable Entrepreneurship in the Furniture Market
6.	SARA MATULONIS	Cruise Planners	Tampa, Florida USA	
7.	JASON PRESTI	Bob's Berries	Tampa, Florida USA	
8.	KRISTINA SALZBERG	Sustrana	Philadelphia, Penn. USA	Water, sustainability, and creativity
9.	ANDREA SILVA-ARIAS	Dutch Research Institute for Transitions	Netherlands & Germany	Accelerating and Rescaling Transition to Sustainability
10.	AMELIA SINGH	WTEC	Tampa, Florida USA	
11.	NICOLE WHALEN	Thomas D. Walsch Inc.	Washington D.C.	Applying the Natural Capital Protocol to Urban Property Management & Real Estate

All the 11 students successfully completed their internships and graduated in fall 2016.

Global engagement through PCGS

## Global Internships

Our students conduct their internships at

many exciting places across the globe. The Patel College of Global Sustainability global internship program allows students to gain an international perspective on sustainability while implementing program knowledge and research on-the-ground to solve real world problems. Our global partners include some of the largest and most respected companies, organizations, and universities working to advance sustainability issues in the world.

2016 Internship Sites:

- Costa Rica
- Peru
- Colombia
- Hawaii
- Australia
- New York
- Nicaragua



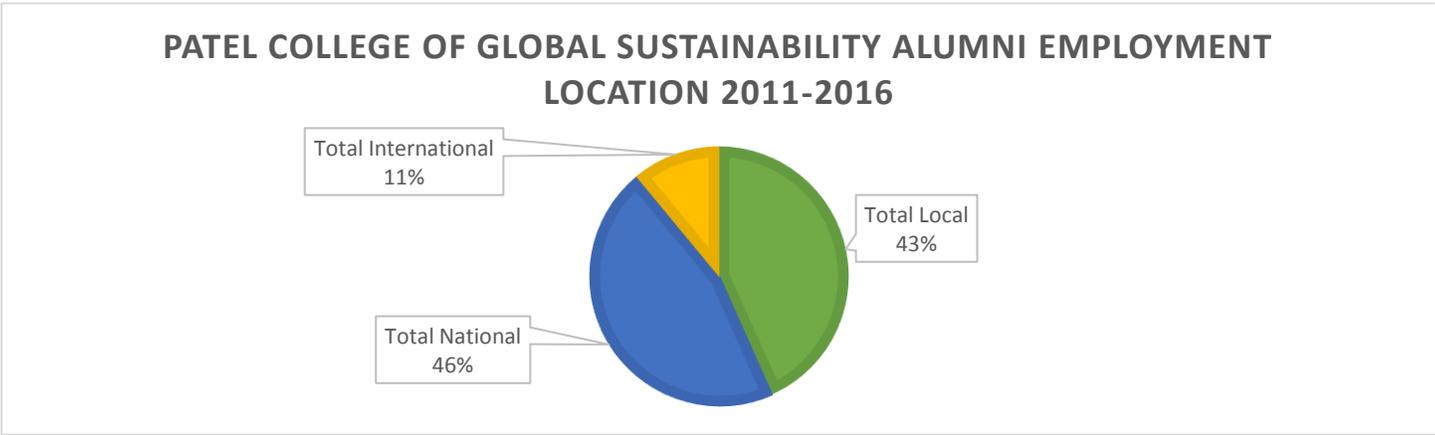
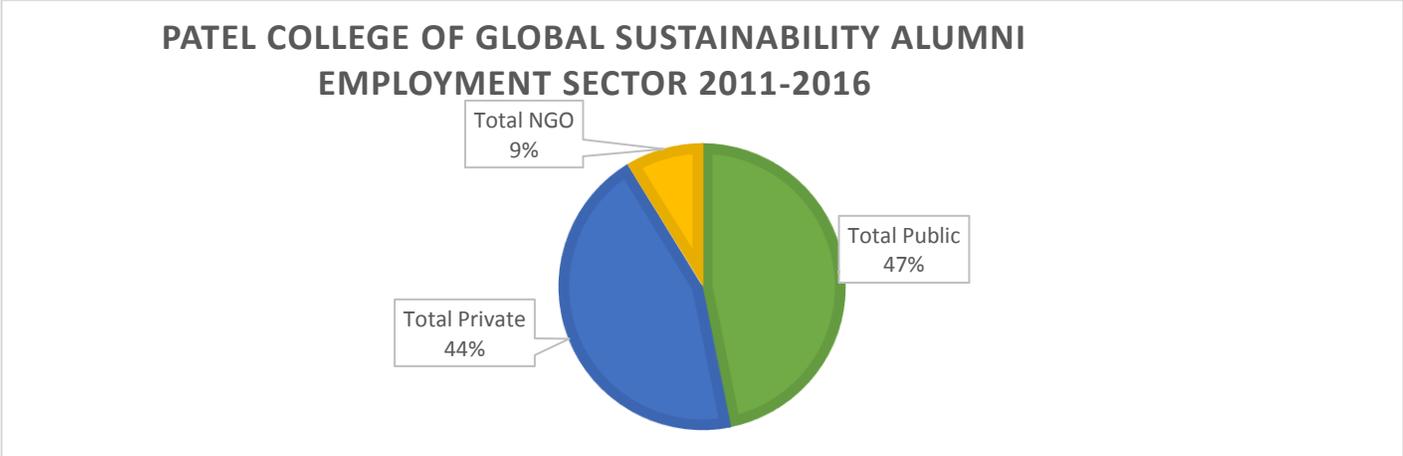
## Student Development

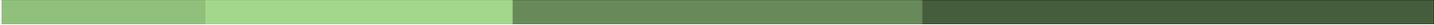
- Senior Project Specialist, Stantec
- Environmental Health & Safety (EHS) Manager, Formulated Solutions
- Sustainability Officer, Houston Community College
- Environmental Project Manager, HDR
- Recycling and Sustainability Manager, Leon County
- Recycling Manager, Goodwill
- Sustainability Consultant, ERM
- Environmental Consultant, Handex Consulting & Remediation, LLC
- Energy Analyst, Arrowpoint Corporation
- Regional Coordinator, National Oceanic and Atmospheric Administration



 <p><b>Yarazeth Watson Colon</b> Coordinator of Sustainability <i>University of Central Florida</i> 2015 Graduate</p>	 <p><b>David Townsend</b> Energy Analyst <i>US National Guard (Arrowpoint Corporation)</i> 2016 Graduate</p>	 <p><b>Brian Pullen</b> Coordinator of Sustainability <i>University of South Florida St. Petersburg</i> 2015 Graduate</p>
 <p><b>Adit Patel</b> Sustainability Energy and Water Specialist <i>Destination Better</i> 2016 Graduate</p>	 <p><b>Estevan Baza</b> Sustainability Coordinator <i>City of Oldsmar</i> 2013 Graduate</p>	 <p><b>Charles Grisafi</b> Marine Debris Regional Coordinator for Florida &amp; the Caribbean <i>National Oceanic and Atmospheric Administration</i> Current Student</p>

Alumni Charts





## Teaching and Research

Education Programs delivered through PCGS

### Master of Arts Program

The M.A. in Global Sustainability offers nine concentrations, all concentrations are available in a traditional on-campus format and online.

This program is designed to prepare students to address complex regional, national, and global challenges related to sustainability and the ability to innovate in diverse cultural, geographic, and demographic contexts. The Patel College of Global Sustainability strives to offer a dynamic curriculum, top-notch internship experiences, and overall superior education for our students.

#### - BUILDING SUSTAINABLE ENTERPRISE

The M.A. in Global Sustainability concentration in Building Sustainable Enterprise will provide a foundation for designing sustainable organizations and businesses and related concepts pertaining to sustainability. Organizations and businesses from all sectors need to develop sustainable practices and models to minimize their environmental footprint and maximize their social responsibility to all stakeholders to meet the requirements of a sustainable, low carbon economy. The goal of this concentration is to provide participants with the knowledge, literacy, skills and tools they need to create more sustainable organizations.

#### - CLIMATE CHANGE & SUSTAINABILITY

The concentration/certificate program in Climate Change and Sustainability will provide a strong foundation for students to advance their career by providing the knowledge and skills necessary to address regional, national and global challenges related to climate change. Students will also focus on the translation of policy and research into climate-smart mitigation and adaptation strategies for building sustainable and resilient communities through urban planning and sustainable urban development.

#### - COASTAL SUSTAINABILITY

The M.A. in Global Sustainability concentration in Coastal Sustainability will provide students knowledge of the history and development of the planning process and implementation, the global issues related to coastal planning including the nine planetary boundaries, and implementation strategies. Students will also be provided knowledge of community development with a particular focus on coastal habitat and marine environments.



- **SUSTAINABLE ENERGY**

The Sustainable Energy Concentration educates students in the growing field of renewable energy, which is expected to increase dramatically within a few decades creating significant employment, entrepreneurship, investment, and trade opportunities. As the U.S. and world economies seek to become more sustainable, they will be increasingly dependent on renewable fuels and power. Students will be prepared for private and public sector positions of leadership and responsibility in the biofuels, solar, wind, biomass, and other renewable energy sectors. The concentration is designed for students with a wide range of backgrounds, unlike similar-sounding programs at other institutions, which are designed for just engineers or hard-science majors.

- **SUSTAINABLE TOURISM**

The M.A. in Global Sustainability concentration in Sustainable Tourism (6 credit hours) enables students to understand the relationships between tourism, society, culture and sustainability. Students develop the skills necessary to design a successful sustainable tourism strategy and development plan that is beneficial to business, coastal and marine habitats, and the local community. This can be completed online or on-campus.

- **ENTREPRENEURSHIP**

The M.A. in Global Sustainability concentration in Entrepreneurship (6 credit hours) provides students with a comprehensive understanding of concepts, tools, and skills of sustainability and green technology. Focus areas include green technology, development, transportation, energy, and sustainable enterprise.

- **FOOD SUSTAINABILITY & SECURITY**

The M.A. in Global Sustainability concentration in Food Sustainability and Security provides students with a solid understanding of key issues in food systems and safety/security.

- **SUSTAINABLE TRANSPORTATION**

The M.A. in Global Sustainability concentration in Sustainable Transportation teaches methods for achieving a more sustainable transportation system and how that system fits into efforts to improve community design and the livability of urban areas.

- **WATER SUSTAINABILITY**

The M.A. in Global Sustainability concentration in Water Sustainability (6 credit hours) enables students to understand the complex regional and global water-related sustainability challenges and to develop innovative, sustainable solutions specifically in the specializations of green infrastructure, urban water, and coastal issues.



## Graduate Certificates

The Patel College of Global Sustainability strives to offer a dynamic curriculum, top-notch internship experiences, and overall superior education for our students.

Our graduate certificates offer students an abbreviated path to a specialization in sustainability. Graduate certificates can be earned in only 12 credit hours (four courses) and are perfect for professionals looking to enhance their skills and expertise, boost career advancement potential, and facilitate the advancement of new skills.

Certificates also functions as a gateway into the Patel College M.A. program as all credits can transfer directly into the degree program. The Patel College currently offers eleven graduate certificate programs, four of which are offered fully online and on-campus

### - **BUILDING SUSTAINABLE ENTERPRISE**

The Building Sustainable Enterprise graduate certificate will provide a foundation for designing sustainable organizations and businesses and related concepts pertaining to sustainability. Organizations and businesses from all sectors need to develop sustainable practices and models to minimize their environmental footprint and maximize their social responsibility to all stakeholders to meet the requirements of a sustainable, low carbon economy. The goal of this certificate is to provide participants with the knowledge, literacy, skills and tools they need to create more sustainable organizations.

### - **CLIMATE CHANGE**

The concentration program in Climate Change and Sustainability will provide a strong foundation for students to advance their career by providing the knowledge and skills necessary to address regional, national and global challenges related to climate change. Students will also focus on the translation of policy and research into climate-smart mitigation and adaptation strategies for building sustainable and resilient communities through urban planning and sustainable urban development.

### - **COASTAL SUSTAINABILITY**

This certificate program will provide a general foundation for coastal sustainability. It is designed to appeal to an audience with a wide range of backgrounds and interests in the planning, policy, and management fields. The certificate will be of particular interest to those related to sustainability students, and those involved with planning and management in coastal communities.

### - **COASTAL SUSTAINABILITY MANAGANEMENT**

This certificate program will provide a general foundation for coastal sustainability. It is designed to appeal to an audience with a wide range of backgrounds and interests in the planning, policy, and management fields. The



certificate will be of particular interest to those related to sustainability students, and those involved with planning and management in coastal communities.

- **ENERGY SUSTAINABILITY**

The certificate program will provide a general foundation in sustainability and thorough understanding of all forms of energy that can support a sustainable economy. It is designed to appeal to an audience with a wide range of backgrounds and career interests by addressing energy from all angles (technology, business, economic, policy, social) unlike similar-sounding programs at other institutions, which are designed narrowly for engineering and hard science students.

- **FOOD SUSTAINABILITY**

This certificate program will provide a general foundation in sustainability and a solid understanding of key issues in food systems and safety/security. The program will cover (1) the concepts, principles, economics, and finance of sustainability, as well as transition towards a green economy; (2) food production, distribution, marketing, disposal, and policy; and (3) food safety and security regarding biological, chemical, and physical threats. It is designed for an audience of a wide range of backgrounds with career interests in the field of food sustainability and security.

- **GLOBAL SUSTAINABILITY**

This certificate program will provide a general foundation in sustainability and a solid understanding of key issues in food systems and safety/security. The program will cover (1) the concepts, principles, economics, and finance of sustainability, as well as transition towards a green economy; (2) food production, distribution, marketing, disposal, and policy; and (3) food safety and security regarding biological, chemical, and physical threats. It is designed for an audience of a wide range of backgrounds with career interests in the field of food sustainability and security.

- **SUSTAINABLE TOURISM**

This certificate program will provide a general foundation of sustainable tourism and related concepts of sustainability. It is designed to appeal to an audience with a wide range of backgrounds and interests in the tourism and hospitality industry. The curriculum will be of particular interest to those related to global tourism movements such as the United Nation's World Tourism Organization, the International Ecotourism Society, and the Global Sustainability Tourism Council.



- **SUSTAINABLE TOURISM LEADERSHIP**

This certificate program will provide a general foundation of sustainable tourism and related concepts of sustainability. It is designed to appeal to an audience with a wide range of backgrounds and interests in the tourism and hospitality industry.

- **SUSTAINABLE TRANSPORTATION**

The M.A. in Global Sustainability certificate in Sustainable Transportation teaches methods for achieving a more sustainable transportation system and how that system fits into efforts to improve community design and the livability of urban areas.

- **WATER SUSTAINABILITY**

The M.A. in Global Sustainability certificate in Sustainable Transportation teaches methods for achieving a more sustainable transportation system and how that system fits into efforts to improve community design and the livability of urban areas.

## Interdisciplinary research in PCGS

The Patel College of Global Sustainability develops research that creates solutions for sustainability development in a rapidly-changing world. Its research is based upon USF's broad, interdisciplinary expertise in the areas of water, public health, energy, global security, and social equity. This interdisciplinary approach provides a fertile foundation for the development of unique solutions to emerging and existing problems.

### Key Research Areas

- Renewable fuel and products
- Global change and the associated uncertainties
- Urban form and its influence and impact on resource management
- Urban metabolism – modelling resources flows (water, wastes, energy, people, goods....)
- Urban water – integrated urban water modelling, flexible design, transitioning
- Sustainable Tourism – Participation in the global research of the UNWTO International Network for Sustainable Tourism Observatories.

### Current Studies

#### *Biofuels & Bioproducts Development*

Energy production and use are strong indicators of economic prosperity and high living standards. Global energy demand is projected to grow dramatically within the next 50 years, but at the same time the public is concerned about energy security, climate change, and environmental pollution. Clearly, our country needs policies and technologies that enhance energy conservation and promote renewable energy production from sustainable natural resources.

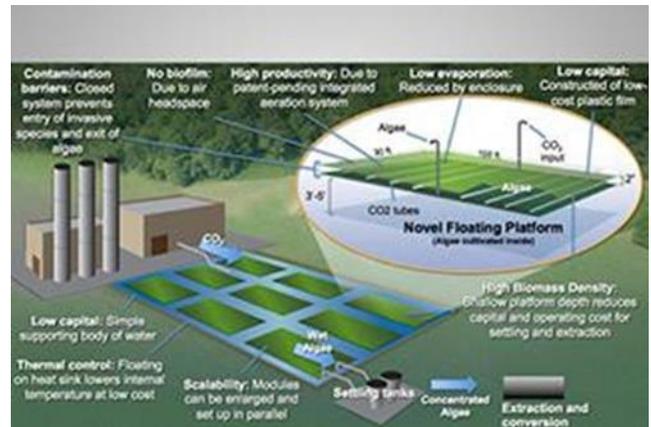
Given the critical nature of energy, we have made renewable energy R&D and education top priorities at the College with a focus on technology development in biofuels (ethanol, biodiesel, and green hydrocarbons) and biopower from cellulosic biomass and algae.



#### *Focus Areas*

- Algae Technology

Algae represents a promising source of alternative fuels and bioproducts, but with the added benefit of serving as a sink for carbon dioxide and wastewater. Using our experience in algae engineering for the production of chemicals and fuels, we use native Floridian algae strains at our lab and outdoor facilities to generate and commercialize algal products under real-world conditions. Algal lipids can be transesterified to produce biodiesel or can be thermally treated to produce aviation- and military-specification fuels. Algal sugars can be used to produce a myriad of chemicals via fermentation, whereas algal protein can serve as animal feed and fish food. Our applied research closes the gap between innovative ideas and the marketplace.



Our efforts are focused on:

- Design of cost-effective cultivation platforms
- Scale-up and operation of algae production systems
- Optimization of productivity
- Water, nutrient, and energy management
- Co-product development
- Intellectual property management

- **Biofuels and Bioproducts from Biomass**

Biomass is an abundant and inexpensive domestic feedstock for biorefineries designed to produce value-added products and clean power. Florida ranks first in the country in annual biomass production: sugarcane bagasse and yard waste in South Florida, citrus peel and agricultural residues in Central Florida, and woody biomass in Northern Florida.

We test and optimize the conversion of various biomass species to sugars in scalable and cost-effective ways through biochemical conversion. First, biomass is pretreated using mild conditions and green chemistry principles. Then, cellulase enzymes are employed to convert cellulose to simple sugars. Those sugars can form the basis of a sustainable green economy, as they are readily convertible via fermentation (or thermochemical processing) to a variety of chemical precursors for the manufacture of biofuels, plastics, resins, and other renewable products. In essence, biomass can replace oil as the source of chemicals essential for consumer products.

A biorefinery pilot plant has been designed and operated in partnership with a sugar company inside one of its sugarcane mills in Florida. It provides USF and its collaborators with unique process development and scale-up capabilities in a real-world environment.

## - Biodiesel

Fuel diversification is needed for diesel and jet engines. The United States consumes 57 billion gallons of diesel and 5 billion gallons of military fuels annually, hence depending significantly on foreign oil. Such dependence renders the United States vulnerable to political instability around the world.



We have technical and business expertise in biodiesel production with a focus on sustainable technologies and resources:

- Biodiesel production using supercritical fluid technology
- Biodiesel from used vegetable oils
- Biodiesel from algal lipids

Production of biodiesel is conducted in batch and continuous modes. We are available to assist entrepreneurs, companies, and communities in the production, distribution, and marketing aspects of their biodiesel business.

## Transitioning Urban Infrastructure

The need for transitioning of Urban Infrastructure Systems (UIS) is illustrated by the facts that the earth system is undergoing significant rapid changes which have developed from increased human activities, population growth and urbanization (Vairavamoorthy et al., 2008). Whereas 48% of the world's population presently live in cities and towns, this proportion is expected to increase to about 60% in the year 2030 aggravating the need for the transition of existing systems.

To ensure a more sustainable future there is a need for more drastic measures. Technology breakthroughs and innovative designs need to be coupled with comprehensive system changes to the urban processes, institutions, and regulations that ultimately shape our cities. Cities will be faced with difficult future strategic decisions (e.g. the choice between centralized and the decentralized systems; the choice regarding the level of involvement of individual citizens, NGOs and companies; the choice between an institutional framework where separate institutions are responsible for a certain element of the urban infrastructure system or moving

towards a more integrated institutional set-up). Hence it is likely that future desired UIS will look and operate differently to existing ones and will be managed and financed differently.

### Focus Area



- 'From Gray to Green: Tools for Transitioning to Vegetation-Based Stormwater Infrastructure'.

Funder: US Forest Service, National Urban and Community Forestry Challenge Program.

Goal: This project will provide natural resource managers,

planners, and engineers with a set of decision support tools to aid the strategic planning process for transitioning to green infrastructure systems that emphasize trees and urban forests.

This project develop and demonstrate an innovative transitioning framework from gray to green infrastructure systems for urban watersheds through the execution of the tasks outlined below and illustrated in the figure below.

**Outcome:** PCGS has developed an open-source, Gray to Green (G2G) Decision Support Tool (DST) to aid the strategic planning process for transitioning from Gray (pond and pipes) to green infrastructure systems. G2G consists of three primary components: 1) a modified version of the EPA’s BMP Siting Tool that will provide a GIS-based mapping tool to identify areas suitable for green infrastructure, factoring in site conditions and existing drainage systems at the scale of the stormwater catchment; 2) an optimization tool to identify an optimal mix of existing gray and new green infrastructure to achieve runoff quantity and quality goals, given site constraints, and key secondary social and ecological benefits (e.g. shade, heat-island mitigation, noise abatement); and 3) a decision support tool to help users select the preferred combination of gray and green options to define a stage-wise implementation process. When used in combination, the toolset will identify a prioritized, optimal transition pathway from gray to green infrastructure.

Recently, the entire suite of G2G toolset has been applied for the neighborhood surrounding the intersection of N. 47th Street and Frierson Avenue in Tampa, Florida. G2G is employed to evaluate alternatives to expanding an existing stormwater retention pond to relieve acute and chronic flooding in an approximately 31-acre drainage basin with no known outfall (closed drainage basin). The outcome showed that green infrastructure and water sensitive urban design approach provide options that restore the natural system and minimize flood impacts while improving other ecological benefits (e.g. Co2 sequestration, shade, heat-island mitigation, noise abatement). The toolset, corresponding guidelines and training materials will be applied in Milwaukee (Wisconsin) in May 2017.

### Integrated Urban Water Management

The global challenges of rapid urbanization and climate change adaptation in the midst of growing water scarcity is driving the need for a paradigm shift to Integrated Urban Water Management (IUWM)

IUWM is an approach that includes: interventions over the entire urban water cycle; reconsideration of the way water is used (and reused); and greater application of natural systems for water and wastewater treatment. It provides an alternative to the conventional approach for an effective and efficient management of scarce water resources.

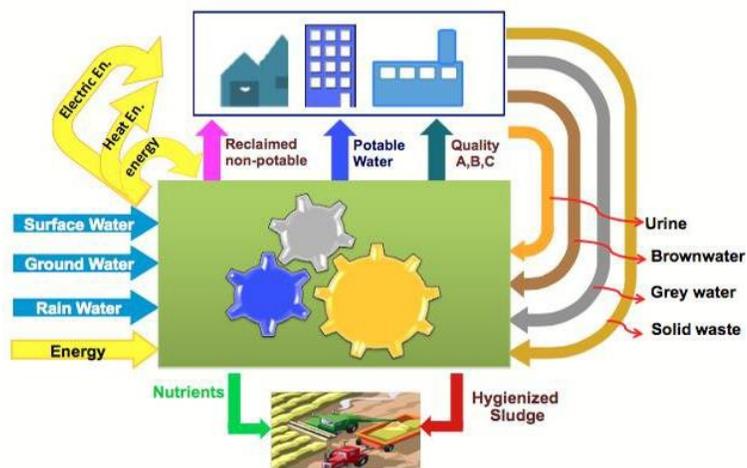
### Focus Area

Integrated Urban Water Management Toolkit (IUWM Toolkit)

Funder: Global Water Partnership (GWP) Goal: The main goal of this project is to enhance awareness of decision makers, senior managers and practitioners on the

concept and approach of IUWM and at the same time to provide the necessary tools and guidance in developing strategies and implementing IUWM on the ground.

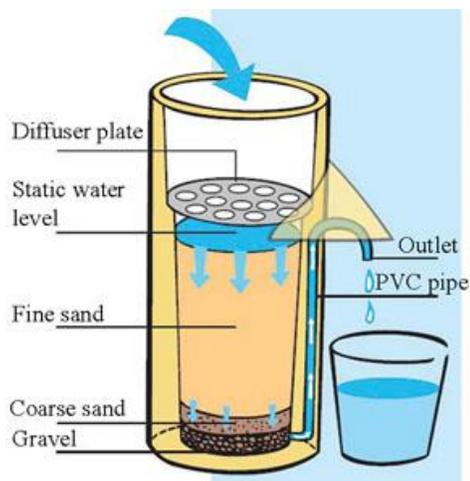
**Outcome:** PCGS in collaboration with the Global Water Partnership (GWP) and the World Bank (WB) has developed IUWM Toolkit and Training Package to provide an integrated solutions to water supply, sanitation and drainage challenges. IUWM Toolkit includes six main components: diagnostic tool, technology selection tool, water balance tool, stakeholder engagement guideline, institutional mapping tool, and economics and finance tool. The toolset has also been used to develop a three level IUWM Training Package that include training module for decision makers, managers and practitioners. The IUWM Toolkit and Training Package have been applied in many countries. Some of them are listed below:



- **Abidjan, Cote d'Ivoire:** PCGS, in collaboration with GWP, provided a half-day "Awareness Raising Introductory Session" on IUWM where the concepts and principles of IUWM were introduced to a high level audience including representatives from the African Development Bank (AfDB) and African Water Facility (AWF). In addition, a 2.5 day "IUWM Capacity Building Program" designed for 25 professional staff of the AFW, AfDB and regional GWP staff was hosted in Abidjan.
- **Ulaanbaatar, Mongolia:** PCGS provide IUWM workshop for a high level meeting at the State Palace of the Republic of Mongolia with the participation of 60 participants including 2 Ministers and the Vice Mayor of Ulaanbaatar. It was followed by a three day workshop outside the capital city and then followed by a debriefing at the Mayor's building with the Vice Mayor, the Governor of the Tuwan Province, and the Director of the association of Mayors of Mongolia.
- **Seychelles:** PCGS is involved in the development of a comprehensive sanitation master plan for Seychelles. The master plan is based on an Integrated Urban Water Management (IUWM) approach, which will identify and utilize links and synergies with other infrastructure sectors – water supply, drainage, solid waste and energy – and other concerned areas like agriculture, land use planning, tourism and economic development.
- **Mozambique (Inhambane and Chimoio Towns):** The Africa Water Facility / African Development Bank approved a Grant of \$1,700,000 on July 2016, for the project Development Plan and Feasibility Study for Urban Sanitation, Drainage and Solid Waste Management in Chimoio and Inhambane. The project is aimed at improve climate change resilience and socio economic development in the provincial capitals of Chimoio and Inhambane. PCGS is providing technical support to the Implementing Agency which will host the Project Implementing Unit (PIU) and the Project Technical Committee and the Consultant to ensure that the IUWM approach and related considerations are mainstreamed in the implementation of the Project.
- **Marondera (Zimbabwe) and Madagascar:** Based on the PCGS IUWM project outcomes and diagnostic studies conducted in many countries, the African Development bank funded \$2,000,000 (for each countries) to develop sanitation master plans for eight cities in Madagascar. The goal is to reach healthier cities through an IUWM. PCGS will provide technical advice on how to integrate IUWM in to the sanitation master plan under development.

## Water and Wastewater Treatment

Globally close to a billion people do not have access to safe drinking water and more than 2.6 billion lack appropriate sanitation, mostly in developing countries. This has led to widespread public health issues and environmental pollution. One of the major reasons leading to these issues is lack of affordable and appropriate technologies for water and wastewater treatment. Researchers at the Patel College of Global Sustainability are trying to address some of these through the development of efficient and low cost technologies for water and wastewater treatment.



### *Focus Area*

Appropriate technologies for water and wastewater treatment

Some of the research activities in this area include the following: Enhancing the design and performance of the conventional biosand filter technology for household water filtration, modifying locally available filter media to remove multiple contaminants such as fluoride, arsenic, pathogens, applying indigenous biomaterials (seeds of Moringa tree) for water and wastewater treatment, and developing modified systems of onsite wastewater treatment for pathogens and nutrients removal together 500 professionals from across the industry and over 50 countries.

## Ecotourism and Sustainable Tourism Conference

The Ecotourism and Sustainable Tourism Conference, now in its tenth year, is a unique annual conference providing practical solutions to advance sustainability goals for the tourism industry.

A leading international meeting place for tourism businesses and destinations, the ESTC will bring

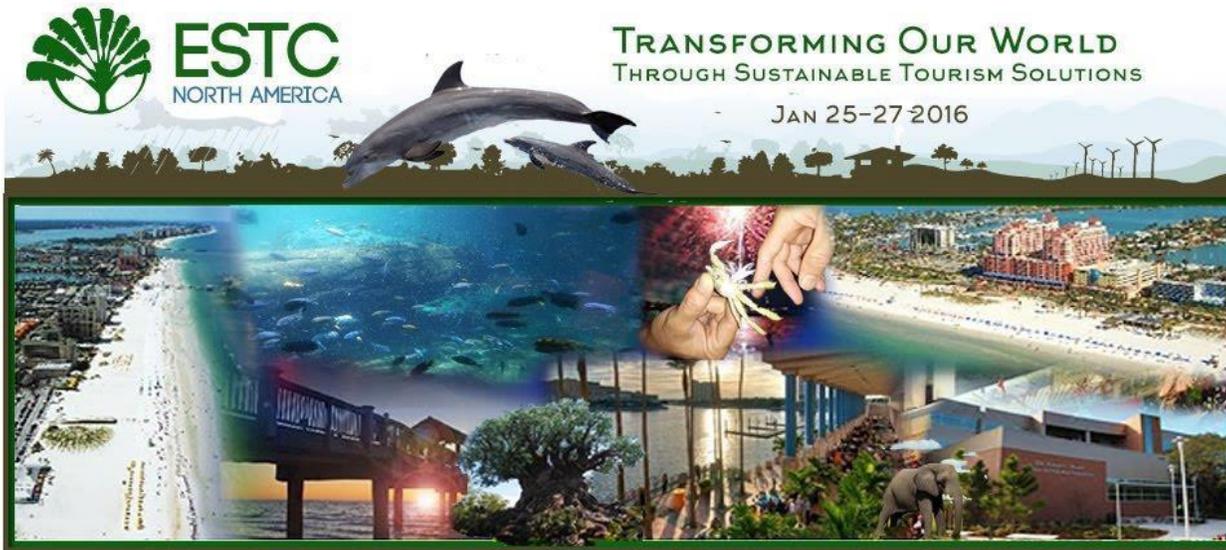
PCGS, in collaboration with The International Ecotourism Society (TIES) hosted ESTC North America in its inaugural year and brought academics, destinations, NGOs, policy makers, operators, consultants, authors, media, and sustainable business together to create and guide ecotourism initiatives and implementation.

ESTCNA SUB-THEMES INCLUDED:

- Eradicating Extreme Poverty and Hunger
- Ensuring Health and a Sense of Well-being for all Individuals
- Conserving, Protecting, & Sustaining Ecosystems, Places and Cultures
- Enhancing Fair and Equal Access to Education

Maximizing Local Economic Benefits while Enhancing Sustainable Infrastructure Development

## Community and Global Partnerships



### Ecotourism and Sustainable Tourism Conference

The Ecotourism and Sustainable Tourism Conference, now in its tenth year, is a unique annual conference providing practical solutions to advance sustainability goals for the tourism industry.

A leading international meeting place for tourism businesses and destinations, the ESTC will bring together 500 professionals from across the industry and over 50 countries.

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## Community and Global Partnerships List

- UNWTO
- NASA
- Whale Center (pending)
- Peace Corps
- Disney
- UN Sustainable Development Solutions Network (UNSDSN)
- The SDG Academy
- International University Network (IUN)
- University of Havana (proposed)
- Nile University of Nigeria
- UNDPI (proposed/in process)
- UNESOC (proposed/in process)
- Blue Community Consortium
- City of Key West (Proposed)
- New Smyrna/NASA's KSC (proposed)
- NASA's Kennedy Space Center – Signed agreement
- The Arava Institute – MOU pending
- LOCAL - unofficial, no MOU but constant flow of students
- Greenwork, Hawaii
- Keep Tampa Bay Beautiful
- Clearwater Marine Aquarium
- The Florida Aquarium (agreement proposed)
- EPC
- The Entrepreneur Collaborative Center
  - o Global partners – unofficial, no MOU, but have strong relationship
- 2041 – Antarctica expedition with Sir Robert Swan
- The Green Program – Peru, Iceland and Japan
- blueEnergy - Nicaragua
- Brick by Brick – Uganda
- STINT Ireland (third party)
- The Intern Group (third party)
- Absolute Internship (third party)
- CRCC Asia (third party)
- ISA (third party)
- Global Experiences (third party)

## Financials

### PATEL COLLEGE OF GLOBAL SUSTAINABILITY FY2016-2017 FUNDING OVERVIEW

#### TOTAL FY2016-2017 PATEL

<b>Source of Funds</b>	<b>TOTAL PROJECTED FY2016- 2017 EXPENSES</b>
<b>Funding Sources</b>	
E&G	1,068,811
Carryforward	217,939
Auxiliary	93,042
Research F&A	17,084
Contracts & Grants	178,466
Foundation*	<u>584,933</u>

FUNDING:     \$     2,733,380     \$ 2,160,275

\*Additional Foundation Funds of \$3,449,007 as follows:

Endowments - \$3,207,988

Foundation Construction Fund - \$241,019