The last 5 five years have been busy and rewarding, as we pursued our mission to “to foster a transition to a clean, sustainable, and prosperous economy”. This report outlines the key achievements and activities of the Center in each of the three core areas: education, research, and outreach and events.


I. Education

1. Sustainability-Related Programs and Courses

The Center was launched with the receipt in late 2009 of a $187,000 grant from the Massachusetts Clean Energy Center for Clean Energy Workforce Training (PI David Levy), which enabled the development of two new certificate programs, and strengthening the MBA specialization. New courses were developed for these and existing courses updated in several colleges. The certificates have been updated to enable non-UMB students to take them, though the vast majority of students are taking UMB degrees.

Environmental Management specialization in MBA (Updated with grant, and new/revised courses – administered from CM). 10 current students, 23 graduates.

Graduate Certificate in Clean Energy and Sustainability (New- administered from CM). 10 students have graduated, many new enquiries for next year.

Undergraduate Certificate in Clean Energy and Sustainability (New – administered from EEOS/ SFE, has since evolved into Environmental Studies minor for degree students). Has grown to about 15 students a year over last 5 years.

The certificate programs are interdisciplinary, and are open to people taking any degree. They are designed to support the careers of people fulfilling many different functions, from science
and engineering to policy, finance or marketing. Businesses tell us they want people who are highly skilled in their core functional area and who also have literacy, some expertise, and enthusiasm in sustainability. Clean-tech and sustainability related employment has been growing much faster than other sectors, around 8-10% a year, even through the recession, and the Boston region has emerged as a key center for this activity.

SERC collates all the courses available each semester for these programs and promotes them. We have launched a web portal to promote all UMB’s sustainability-related programs https://www.umb.edu/serc/sustain

Interest in our sustainability-related courses has remained strong. The environmental courses continue to attract students from a variety of majors such as business, economics, environmental studies, and mathematics (for detailed information on course enrollment see Figure 1).

**Figure 1. Student Enrollment in Sustainability-Related Courses, 2010-2015**

<table>
<thead>
<tr>
<th>Courses Acad. year</th>
<th>MGT 481</th>
<th>MGT 671</th>
<th>MGT 678</th>
<th>MGT 688</th>
<th>MBA AF631</th>
<th>EEOS684/MGT674/E EOS384</th>
<th>EEO 670/675</th>
<th>ECON/ EEO349</th>
<th>MBAMGT 673</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-2016</td>
<td>17</td>
<td>NA</td>
<td>NA</td>
<td>20</td>
<td>Spr’16</td>
<td>NA</td>
<td>NA</td>
<td>Spr’16</td>
<td>12</td>
</tr>
<tr>
<td>2014-2015</td>
<td>21</td>
<td>7</td>
<td>NA</td>
<td>NA</td>
<td>26</td>
<td>30</td>
<td>13</td>
<td>37</td>
<td>11</td>
</tr>
<tr>
<td>2013-2014</td>
<td>12</td>
<td>10</td>
<td>6</td>
<td>14</td>
<td>16</td>
<td>27</td>
<td>9</td>
<td>38</td>
<td>NA</td>
</tr>
</tbody>
</table>

**Course titles:**
MGT481/671: Introduction to Environmental Management (Undergrad/Grad Class)
MGT678: Environmental Management, Implementation and Operations
MGT688: Climate Change and International Business Management
EEOS684/MGT674/EEOS384: Climate Change Policy and Law
EEOS 670/675/349: Environmental and Energy Economics
MBAMGT673: Clean-Energy Entrepreneurship and Sustainability
MBA AF 673: Environmental Accounting and Finance

In addition to taking courses, we offer students the opportunity to engage in independent study or internships to explore a particular clean energy or sustainability issue of interest to them. Quite a number of graduate students have completed independent studies in this area over the past few years. For the 2015-2016 academic year, these are two examples of independent studies supervised by SERC faculty: William Henderson (Alternatives to toxic chemicals in solar panels manufacturing), and Gavin Bodkin (Strategies and best practices for reducing waste through employee engagement). During the 2015 summer semester, undergraduate student Celine Fong completed an independent study as part of her internship with Jones Lang LaSalle to examine current drivers and barriers for adopting climate resilience strategies in the commercial real estate market.
2. **Ph.D. Program in Organizations and Social Change (OSC)**

The Ph.D. program track in Organizations and Social Change entered its fourth year with a total of 22 students enrolled. More information about the program is available at: [http://www.umb.edu/academics/cm/business_administration_phd/osc](http://www.umb.edu/academics/cm/business_administration_phd/osc). A number of the students have an interest in various dimensions of sustainability. In Fall 2016, we will welcome our third cohort of two College of Management graduate students, funded through the **$3.1 million IGERT grant from NSF** in collaboration with the School for Environment and the McCormack Graduate School of Policy and Global Studies. The students are studying complex business and environmental issues affecting coastal areas, such as climate adaptation and marine economies in the Boston region and in developing countries. Several more Ph.D. students are actively involved in sustainability research and have won awards, published papers and presented their research at international conferences (see section on research).

3. **Green Internships**

Our Green Internship Program, launched in November 2012, has continued to expand and attract employers and students (More information about the program is available at: [www.umb.edu/serc/internships](http://www.umb.edu/serc/internships)). **Over 180 internships** have been posted on the SERC Green Internship website since November 2012 and a growing number of employers are reaching out to the department to publicize their openings (e.g., Environmental Defense Fund, Eversource, Sustainable Energy Advantage, Next Step Living, Sustainalytics, Environment Massachusetts, Clean Production Action, and Sustainable Minds). Our alumni, current students, and board members, have also sent us information regarding available opportunities.

In April 2015 in partnership with UMass Boston’s Office of Internships and Career Services we organized the 4th Annual Green Career Forums, which featured 14 local employers with Alicia Barton, CEO of Mass Clean Energy Center as the keynote speaker. Over 100 students attended the event and were given the opportunity pursue summer internships or job opportunities. The SERC internships website has continued to be the most frequently visited page of all SERC pages.

We have been working with the Office of Career Services and Internships and the School for Environment to establish a system for tracking students completing green internships. Some examples of recent internships include:

<table>
<thead>
<tr>
<th>Name</th>
<th>Grad/Undergrad</th>
<th>Company</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bjoern Stengel</td>
<td>Grad, Finance</td>
<td>CERES</td>
<td>Summer 2015/Fall 2015</td>
</tr>
<tr>
<td>Stefano Maffina</td>
<td>Grad, Finance</td>
<td>Tessolar</td>
<td>Fall 2015</td>
</tr>
<tr>
<td>Lauren DiSalvatore</td>
<td>Undergrad, CES</td>
<td>UMB Sustainability</td>
<td>Fall 2015</td>
</tr>
<tr>
<td>Nayer Abdel Meseh</td>
<td>Undergrad, Environmental science</td>
<td>Haley &amp; Aldrich</td>
<td>Summer 2015</td>
</tr>
</tbody>
</table>
4. Business Involvement in CES Curriculum

We continued our efforts to engage companies in curriculum development and sustainability workforce training through guest lectures, student projects and research. Some of the past year’s guest speakers include:

- Matt Moscardi, ESG Research, MSCI (Large financial investment company)
- Elizabeth Levy, Senior VP, Portfolio Manager and Research Analyst, Trillium Assets Management
- Charlie Myers, President, Massachusetts Hydrogen Association
- Gami Maislin, Lead Power Enterprise Campaign, Raytheon
- Alicia Barton, CEO, MassCEC
- Austin Blackmon, Chief of Environment, Energy and Open Space, City of Boston
- Annie White, Associate Director Research, Sustainalytics (company that develops ESG data sets for investors)
- Berkeley Cue, Principal, BWC Pharma Consulting, LLC
- Martin Wolf, Director Product Sustainability & Authenticity, Seventh Generation
- Josh Lynch, Director of Policy and Outreach, Next Step Living
- Aaron Holmes, Field Marketing Recruiter, Next Step Living

We are always looking for additional speakers for the coming year and will continue to solicit companies interested in engaging with student projects and internships.

Prof. Haigh invited Eversource, Cape Cod Cranberry Growers Association, Boston Beer Company, and Mass General Hospital to participate in the climate scenario project for graduate students taking the MBAMGT688L Climate Change and International Business Management course in Fall 2015 (these included Eversource, Cape Cod Cranberry Growers Association, Boston Beer Company, and Mass General Hospital). Prof. Veleva is currently working with Cambridge Scientific, a small company focused on biotech and pharma equipment remanufacturing, which provided a project for students enrolled in MGT481 Introduction to Environmental Management and Clean Energy course in Fall 2015. The previous year students in this course had the opportunity to provide recommendations for improving PerkinElmer water reporting to the Carbon Disclosure Project (CDP).

II. Research and funding

SERC faculty engages in research projects with the aim of exploring the business-sustainability interface, providing businesses and policy makers with a solid foundation for long-term strategic decisions. Our faculty undertakes a broad range of research including accounting and finance issues associated with climate risk, sustainability standards, organizational challenges of combining economic and social values. We have researched projects on planning and adaptation for coastal flooding risks, and on the development of regional clean-tech clusters within global value chains, and on green chemistry and sustainable consumption.
Awards (selected)

Founder and director David Levy is the recipient of the Aspen Institute 2011 Faculty Pioneer Award, the 2016 UMB Chancellor’s Scholarship Award, and the Strategic Organization 2016 award for the best essay published in the journal five years earlier.

Chris Whynacht, a first year PhD student working with advisor David Levy in the Organizations and Social Change track, won an award for his paper at the Acad. of Mgt. Conference in Vancouver, Aug. 2015, from the Organizations and Natural Environment division.

Debra Butler, a PhD student in the IGERT program and the OSC track of the PhD in Business Administration, was awarded in May 2016 a highly prestigious one-year National Academy of Sciences, Gulf Research Program Fellowship, to study social and economic impacts of climate change in the Gulf Coast region of the US.


Major Grants Awarded:

David Levy 2013 Co-Pi on $3.1 million NSF Division of Graduate Ed. IGERT Grant: Coasts and Communities: Natural and Human Systems in Urbanizing Environments. PI: Robyn Hannigan, School for Environment. NSF EDGE: 1249946. Duration: 09/01/13 to 08/31/18. College of Management and SERC are partners, and funded PhD students will integrate business, science, and policy in research on complex environmental policy.

David Levy 2010 Co-Pi on 20AUD300,000 award from the Australian Research Council under the National Competitive Grants program, in collaboration with Oxford University’s Smith School for Enterprise and Environment, and the University of Western Sydney. Corporate strategies in energy-intense sectors, and the influence of governmental policies and NGO strategies.

David Levy 2009 PI on $187,000 grant from the Massachusetts Clean Energy Center for Clean Energy Workforce Training. Development of Clean Energy and Sustainability courses and programs

SERC faculty have prepared several funded research proposals:

$7 million multi-disciplinary proposal to the Environmental Protection Agency for establishing an Environmental Finance Center at UMass Boston to support financing for climate adaptation and resilience (the project was led by Profs. Haigh and Gao and while we didn’t received funding, we are currently looking for other opportunities in this area).
NSF Infrastructure Management and Extreme Events, $1.8 million: Partnerships for Climate Resilient Infrastructure  
https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13353
Paul Kirshen (SFE), Nardia Haigh (MM), David Levy (MM), Lucia Silva-Gao (AF), and Amit Patel, Department of Public Policy and Public Affairs, MGS.

SERC core faculty Vesela Veleva was awarded $7,128 UMass Boston Joseph P. Healey Research Grant to conduct research on the circular economy in 2016-17 academic year.

Gavin Bodkin, an MBA candidate in the College of Management, was awarded the 2015-2016 Biogen – SERC Fellowship for $6000, working under supervision of Vesela Veleva, who organized the grant.

SERC faculty are participating with SFE, MGS and SSL in a large-scale invited proposal to Green Ribbon Commission/Barr Foundation on urban climate resilience, economic development and equity. The proposed multi-million investment in institutional capacity will support long-term climate adaptation and mitigation research and action. One "node" of this infrastructure should be a center/institute within the U Mass system, which could serve multiple functions. Proposal is currently under development.

SERC – Company Named Fellowships
Currently in its second year, this program aims to advance workforce development in the area of clean energy and sustainability and link local employers with outstanding graduate students in the College of Management at UMass Boston. Biogen, the first company to pilot the program, continued its support for the fellowship which costs $6,000 for a full academic year. The winner for the 2015-2016 Biogen Fellowship was Gavin Bodkin, an outstanding MBA student with concentration in Environmental Management, who is also managing his company - Blu2Green – focused on repurposing hospital blue wrap into sustainable products. Biogen and SERC faculty jointly determined his topic of research, which examines leveraging employee engagement to reduce waste generation. Two more companies have expressed interest in the program and we look forward to expanding it next year.

Board donations
SERC has received donations from board members of approximately $40,000, including $20,000 from NStar/Eversource, $5,000 from Biogen (not including Biogen Green Fellowship program), and $5000 from Mohammed Alam, President, Alyra Renewable Energy Finance. Board member Rich Goode of Ernst and Young also sponsored SSL/SERC/SFL April 20 2016 Social Equity and Climate Change event for $3000.

Sustainable Solutions Lab (SSL)
SERC has been actively involved in the restarting and restructuring of a campus-level environmental institute - the Sustainable Solutions Lab (SSL), to be led by Bob Massie, founder of the Global Reporting Initiative. This multi-disciplinary initiative has received the support of four UMass Boston colleges, and represents a collaborative, cross-disciplinary institute designed to provide a broad range of applied solutions to complex issues surrounding climate change impacts on human and natural systems. The institute will enhance the activities of our sustainability- and security-related related centers, institutes and academic programs by
coordinating and supporting fundraising and grants, educational programs, social media and 
outreach, and conferences, regional and national convenings and event coordination. This 
institutional support is critical because as of Sept. 2015, SERC has lost the services of Dr. Vesela 
Veleva, former center co-director, due to withdrawal of the course releases for her SERC service 
work.

SERC Sustainability Research (selected)

- Prof. Stephan Manning is working with PhD student Tom Bejarano on a project to analyze 
the dynamics of clean energy cluster development, using international comparative analysis 
with research partners.
- Prof. David Levy is working with PhD student Nichole Weber on institutional emergence of 
climate adaptation field, and with Chris Whynacht on the ecological embeddedness of Global 
Production Networks.
- Prof. Nardia Haigh is working with PhD student Paul Case on scenario planning for climate 
change.
- Prof. Benyamin Lichtenstein is working on two papers around conscious consumption and 
sustainability transformations, with PhD student Chris Whynacht. He has also been 
exploring links between emergence and sustainable change in several ongoing research 
projects.
- Prof. Vesela Veleva is working with MBA candidate Gavin Bodkin on leveraging employee 
engagement to reduce waste (funded through the Biogen-SERC fellowship).
- Prof. Veleva is working with board member Dr. Cue to analyze the drivers and barriers to 
green chemistry adoption by the generic pharmaceutical industry.

Examples of recent related publications from CM faculty:

Beaton, E., Kennedy, E.D. & Haigh, N.L. Governance Options for Increasing Social Impact: 
What Hybrids and Traditional Firms might Learn from Each Other. Invited chapter to appear in 
Elgar. Manuscript being revised for resubmission to Editors.

Challenges they Present to Corporate Sustainability”, Organization & Environment. 27(3): 223- 
241.

57(3).

Impacts and Implications”, California Management Review. 57(3): 5-12

Haigh, N.L., Kennedy, E.D. & Walker, J. 2015. “Hybrid Organizations as Shape-Shifters: 

J. Keisler (Served as Guest Editor). 2015. Environment, Systems and Decisions, Volume 34.1, Special issue on Value of Information.


A partial list of recent publications from other faculty is included in several places: on the SERC website: https://www.umb.edu/serc/resources/publications
OSC website: https://organizationsandsocialchange.wordpress.com/recent-publications/
SERC newsletters at www.umb.edu/serc
III. Outreach and events

Advisory Board:

Our Advisory board includes professionals from clean-tech companies as well as sustainability professionals from mainstream businesses from a variety of sectors. Companies represented include EMC, Biogen, Enernoc, Ernst and Young, State Street, Sustainalytics, Trillium Investments, and Eversource.

For details see: https://www.umb.edu/serc/partners/advisory_board

Events

We organize many events for UMass Boston students, faculty, and external stakeholders, primarily professionals from business, government, and non-profits. Most events attract well over 100 attendees, and are usually coordinated with the CM MAP program. More information about each event can be found in the related blog articles available at https://www.umb.edu/serc/events1

Examples of Recent Events:

- On October 22, 2015 SERC hosted a presentation by Austin Blackmon, City of Boston Chief of Environment, Energy and Open Space, who discussed the City’s recent initiatives and remaining challenges in reducing greenhouse gas emissions and improving the environment for all residents and companies in Boston.


- In collaboration with the Office of Career Services and Internships: the 4th Annual Green Careers Forum, which was held on April 15, 2015 at UMass Boston. Keynote speaker for the event was Alicia Barton, CEO of the Massachusetts Clean Energy Center. Eighteen local employers participated in the event which attracted over 110 students.

- SERC supported the first UMass Boston Food Fest held on April 24, 2015, which aimed to educate students about the issue of sustainable and local food. It was organized by a group of UMass Boston undergraduate students led by Net Impact leader Nicholas Guerrero, senior in the College of Management.

- Dec. 2014: panel presentation and discussion: How investors integrate ESG factors in investment decisions. Matt Moscardi of MSCI introduced ESG research, ratings and MSCI's perspective of ESG investing; Elizabeth Levy of Trillium Assets Management elaborated on how they actually use ESG factors and information to make investment decisions. Prof. Lucia Silva-Gao, Associate Professor in Finance at UMass Boston, provided an academic perspective and moderated the event.
• Nov. 10, 2015. SERC co-sponsored, in conjunction with MGS, a talk by Rachel Kyte, Vice President and Special Envoy for Climate Change, World Bank. How Can Paris Kickstart a Zero Carbon, Resilient Economy?

• April 20th, 2016: SERC co-sponsored with SSL and other colleges and centers, a one-day invitational symposium in late April 2016 to examine the potential impacts of large scale climate mitigation, adaptation, and associated infrastructure projects on economically and socially marginalized communities in Boston. More than 100 people attended, including many high level city officials, businesspeople, and academics.

• April 6, 2016 SERC co-sponsored with MGS and SSL a major public speech by UN Executive Secretary Christiana Figueres of the United Nations Framework Convention on Climate Change (UNFCCC), in partnership. Lifting the Billions: The Intersection of Climate and Development Policy

Net Impact Graduate and Undergraduate UMass Boston Chapters collaborations
We continued working closely with the Graduate and Undergraduate Net Impact Chapters at UMass Boston, which helped promote SERC events and organized their own events with business representatives.

Participation in conferences and external events (selected)
In addition to the above events, SERC affiliated faculty presented sustainability-related research at various local and global conferences including:

• SCORAI (Sustainable Consumption Research and Action Initiative), Orono, Maine, June 2016. 3 faculty and 4 students from CM.
• Academy of Management Annual Conference, August 2015, Vancouver, Canada
• European Group on Organization Studies (EGOS), June 2015, Athens, Greece
• Global Cleaner Production and Sustainable Consumption Conference, November 2015, Barcelona, Spain
• National Council of Science and Environment (NCSE) Annual Conference, January 2015, Washington, D.C.
• 5th Massachusetts Sustainable Communities and Campuses Conference, April 2015, Devens, Massachusetts
• Rising Seas Summit, Association of Climate Change Officers, Boston, November 5, 2015.