INTEGRATIVE CAPSTONE WORKSHOP
IN SUSTAINABILITY MANAGEMENT
MASTER OF SCIENCE IN SUSTAINABILITY MANAGEMENT

COLUMBIA UNIVERSITY
THE EARTH INSTITUTE
AND THE
SCHOOL OF PROFESSIONAL STUDIES

SPRING 2019 SEMESTER

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EVENING WORKSHOP AGENDA: Spring 2019 Semester

All students who register for an evening section of workshop will meet together for the first session on January 22nd. In subsequent weeks, students will meet in the individual course sections to which they will be assigned, except on October 16th and December 4th, the respective dates of the midterm and final briefings.

January 22- Introductory Session - 6:10–8:00 PM
1. Purpose of the workshop
2. Workshop handbook
3. Faculty introductions and project topics
4. Distribute and collect project preference forms
5. Presentations on managing teams and work plans

January 29- Individual Group Meetings - 6:10–8:00 PM
1. Presentations on work plans and on managing teams
2. Project discussion

February 5 - Individual Group Meetings - 6:10–8:00 PM
1.Presentations of writing memos, reports, and emails; and on oral briefings
2.Project discussion

March 11- Deliverable: Midterm Briefings due to Program Manager (Mariví) for printing

March 12- Midterm Briefings - 6:10–8:00 PM
Team presentations

March 26- Individual Team Meetings - 6:10–8:00 PM
Reflections on methods and client relations

April 23- Dry-Run Final Briefing - 6:10–8:00 PM
Individual group presentations to the Faculty Advisors

April 29- Deliverable: Final Briefings due to Program Manager for printing

April 30- Final Briefing - 6:10–8:00 PM
Group presentations of final reports

Date TBD- Client Briefings and Final Reports to be arranged by each Faculty Advisor

Recommended Reading: The Team Handbook. Scholtes et al, 2003.

DAYTIME WORKSHOP AGENDA: Fall 2018 Semester

Students in this section of the workshop meet on Tuesdays, 2:10 – 4:00 PM. On March 12, April 23, and April 30, the students will reconvene from 6:10 – 8 PM for the midterm, final briefing dry-run and final briefings, respectively. Students who are taking another class on these evenings are excused from attending the briefings.

January 22- Introductory Session - 2:10–4:00 PM
1. Purpose of the workshop
2. Workshop handbook
3. Project topic introduction
4. Presentations on managing teams and work plans

January 29- Session -2:10–4:00 PM
- Presentations on work plans and on managing teams
- Project discussion

February 5 - Session - 2:10–4:00 PM
- Presentations of writing memos, reports, and emails; and on oral briefings
- Project discussion

March 11- Deliverable: Midterm Briefings due to Program Manager (Mariví) for printing

March 12- Midterm Briefings – 6:10–8:00 PM
Team presentations

October 26- Individual Team Meeting – 2:10–4:00 PM
Reflections on methods and client relations

April 23- Session- 2:10-4:00 PM
Dry-run of Final Briefing: 6:10–8:00 PM before the Faculty Advisors

April 29- Deliverable: Final Briefings due to Program Manager for printing

April 30- Final Briefing - 2:10–4:00 PM; 6:10–8:00 PM
Team presentation and final reports

Date TBD- Client Briefings and reports to be arranged by each workshop group

TO: Students and Faculty of the Workshop in Sustainability Management
FROM: George Sarrinikolaou, Capstone Workshop Coordinator
RE: Support Services for the Workshop

This memo outlines the support services provided by the university for students and faculty in the workshop. Students should pay particular attention to the time frames involved in turning in PowerPoint presentations, reserving A/V equipment and reserving rooms for meetings and dry runs.

Duplicating Support

The Master of Science in Sustainability Management program administrators duplicate and pay for midterm and final-briefing booklets, as well as the final workshop reports. Please follow the duplication guidelines below.

- All PowerPoint slides should be turned in to the Sustainability Management program office. Please send them via email to Mariví Perdomo Caba, SUMA Program Manager at mp3221@columbia.edu. **The Midterm briefing presentations are due by 9:00 AM on Monday, March 11. The Final briefing presentations are due and 9:00 AM on Monday, April 29.** We request that groups comply with this deadline so that we can ensure on-time delivery of hard copy.

- Groups must submit the presentation materials **in PowerPoint and PDF format** by that time. Please send the materials to the Faculty Support Assistant and the SUMA program manager. **Presentations should be in standard (4:3) PowerPoint format.**

- The program pays for the duplication of a limited number of copies of the final workshop report. This typically includes a copy for each member of the group, up to five copies for the client, and one copy for the program's files. In addition to any deadlines set by the client, reports are due to Sustainability Management Program Staff (Program Manager and Capstone Assistant) for printing **at least 5 business days prior to the client presentation**.

Audio/ Visual Equipment

Audio/visual equipment is available for any group that requires it. To reserve A/V equipment, a member of the group should contact the SUMA program office at least three business days in advance.

Room Reservations

To reserve a room for dry-run briefings or meetings, a member of a group should request a room from the Program office **via the Capstone Assistant**. The request should be made **at least five business days in advance**. While we cannot guarantee that we will be able to find a room for every group, we guarantee that we will try our best to accommodate every group's needs.

Capstone Curriculum and Grading Assistant
Alexandria (Alex) Lee- al3640@columbia.edu

I. INTRODUCTION

A. Purpose of the Program

The main benefit of this workshop experience is to gain practical training by working on real problems where our work has the potential to influence the operations of an organization in the public or nonprofit sectors. The basic objective of the course is to apply and integrate each element of the SUMA curriculum to a project, giving students hands-on sustainability management experience. Workshop projects are necessary and appropriate elements of a balanced professional degree program. In this course, students will learn how others manage programs and conduct analysis; they will apply what they have learned in the introductory course and other curricular areas to projects with real-world clients. Students will serve on teams and undertake a special analytic project and serve as consultants for their client organizations, and, therefore, increase their understanding of the constraints under which sustainability managers operate. The workshop also serves the purpose of sharpening the students' analytical and communication skills by allowing them to apply their previous experience and knowledge gained from the program to an actual problem.

B. Project Outputs

The outputs required for the Fall workshop include:

1. Project control plan (PCP or work plan)
2. Mid-term briefing to the class
3. Final briefing to the class and the client
4. Final report

The specific form of the report generated by each project is subject to negotiation among the client, the faculty advisor, and the members of each research team. At a minimum, each group must:

1. Produce a professional quality, written final report.
2. Prepare and present an oral briefing to the workshop's faculty and students.
3. Prepare a briefing for the client agency.

C. Project Selection

A lengthy process precedes the selection of each semester's workshop projects. Proposals are generated informally by contacting a small number of friends, associates and former clients in public sector agencies and nonprofit organizations. Students also propose projects to the faculty. The primary criteria for selection include:

1. The timeliness and relevance of the proposal.
2. The program's ability to perform a needed public service.
3. The capability of the program's faculty and students to successfully complete the project on time.

The projects are described in detail in **Appendix A**. In the weeks before the beginning of the semester, the workshop faculty interacted with staff from the selected organization(s). They discussed the details of the projects, and further defined the University's and the organization's mutual understanding of what the student report will look like.

D. Group Membership

Group membership lists will be e-mailed to the class and posted on Canvas as soon as possible. Faculty will also assign project managers and deputy managers. Project managers and deputy managers work with the faculty advisors and selected task leaders.

E. Client-Driven Projects

The workshop experience is largely controlled by the client, as in a typical consulting relationship. Therefore, students must be prepared for changes in the client's preferences, difficulty contacting the client, problems accessing data, concerns regarding confidentiality and what may occasionally appear to be lack of interest. In rare instances, clients may request changes to the scopes of projects that they and the faculty advisors previously agreed upon. If the changes are significant, then the program director, capstone workshop coordinator, and the faculty advisors will confer and decide how to proceed.

In our experience, the frustrations that may occur throughout the process are overwhelmingly offset by the excitement of working on a real sustainability problem and having the opportunity to make recommendations for improvements that are often adopted. Use your faculty advisor to help overcome obstacles and as a sounding board.

II. PROJECT MANAGEMENT
A. Defining the Problem

The first step in analysis is to define the problem you are analyzing. You will begin this process with the help of several resources: (1) the faculty advisor's summary of the understanding between the agency and Columbia; (2) key contact, client or project officer in the agency; (3) your faculty advisor. The problem-definition process begins by focusing on a specific part of the problem that realistically matches the resources available to solve the problem. Student time, capability, and the short number of weeks in the semester necessarily limit workshop projects. These constraints will affect the amount of data collection and analysis. The feasibility of data collection and analysis should be the chief non-analytic factors considered in problem definition.

Problem definition is an iterative process. A brief initial operational definition of the analytic problem is based on a "quick and dirty" assessment of the available data (the client should be helpful here), the level of effort required to collect new data, and the resources required to analyze new and existing data. Once an initial problem definition is agreed on by the research team, the faculty advisor, and the agency client, it will be further refined and operationally defined in the project control plan.

B. Client Relationships

There is no single model for how the research team, faculty and clients work together. The key variable is the nature of the project and the role played by the agency. In some instances, the client will provide a good deal of guidance and direction to the research team. In other cases, the client may play a less visible role or prefer to work through the faculty advisor. In any event, the customer or the client is always right. This does not mean that issues cannot be discussed with the client; it means that the client has the last word. The client is not simply an authority figure, however. He or she is: (1) a guide to sources of data; (2) responsible for obtaining organization clearance to conduct interviews or obtain files; (3) the person best suited to evaluate the team's analytic framework and research questions; and (4) often a subject matter expert in the field of inquiry. Therefore, it is essential that a good productive relationship be established with the client. The client's feedback should be sought on all key project questions and issues.

C. The Project-Control Plan (PCP, or Workplan)

The most critical early phase of a research project is the development of a Project Control Plan (PCP or workplan), which is a plan for how to manage the project. **Exhibit 1** is a sample outline of a workplan. **Exhibit 2** is a sample workplan graphic. All workplan should include most of the elements on the sample, though the sample is only a model.

The workplan is an essential and frequently used tool for organizing group projects in government and in the private sector. Although workplans are often modified during the course of a project, they provide managers with a tool for efficiently deploying staff resources and monitoring implementation. In addition, the workplan can be used to identify those "critical path" tasks that must be undertaken in sequence in order to complete a project. A good workplan will also identify opportunities to perform tasks simultaneously, sometimes going on preliminary assumptions in order to get a draft started fast.

The workplan is the first "deliverable" of the workshop project. The workplan will need to be developed in close consultation with your faculty advisor. At the first workshop session your advisor will arrange a "due date." As shown in Exhibit 1, the first part of the workplan will include a detailed definition of the research problem. This section should not be more than one page long. It should be developed in consultation with the client and should answer the question: What is the research team trying to find out?

The bulk of the workplan is the project overview, or a three- to five-page study prospectus. It will be a mixture of prose and outline. To write the overview, the research team will need to catalogue and briefly review available data and literature. It will discuss the gaps in available data analyses that the project will seek to bridge. The overview should include a first draft of the final report outline, and the study design and methodology. It should also discuss the expected results and benefits of the study. It is always useful to compare these early expectations to the final report that you submit to the client.

The workplan will also include a list of tasks, assignment of responsibilities for those tasks, and schedule of tasks. It will need to sequence tasks so that outputs that are prerequisites for other outputs are produced on time. There are two levels to the workplan: an overall workplan produced by the Project Manager and a detailed workplan produced by each task leader for his or her specific area. Every workplan must include task assignments and due dates for the following outputs and milestones:

1. Draft report
2. Mid-term briefing on the project's progress
3. Oral briefing of the draft report during class
4. Final report
5. Oral briefing of the final report to the client

III. GROUP RESEARCH

A. Common Problems

Through most of your career as a student, the stress has been on individual effort and achievement. The grading system reinforces the value of individual effort by establishing a reward structure biased toward the individual. The school grading system poorly prepares you for group work. When students are rewarded or punished for individual effort, they tend to focus their energies on places where individual achievement is most important.

This is the most common problem with group work: gaining the wholehearted participation of all group members. In the workshop project we hope to avoid this problem by clearly assigning responsibilities in the

workplan, and by constant interaction between faculty and students. We recognize that "free riders" are part of every professional experience. It is important to attempt to elicit effort out of recalcitrant team members. It is also important to know when to move on and simply get the work done.

Other common problems are personality conflicts, unskilled group members, and "grandstanding." Where problems develop, group members must deal with them directly and immediately. If a problem cannot be solved, the group should bring the problem to the attention of the faculty advisor before it gets out of hand.

B. Benefits

Despite the problems described above, group work can be quite productive and rewarding. More importantly, the ability to work well in a group is an essential attribute for a professional working in the public or private sector. Tasks in modern organizations are increasingly complex and interconnected, and often carried out in working groups. Quite simply, many individuals working together as part of a coordinated whole can achieve more than many individuals working alone.

The interpersonal skills required to get along in groups are as important, and often more important, than individual skills or attributes. Intelligence is only useful if it can be successfully applied to the problem at hand. Intelligent individuals who cannot communicate their ideas to others are useless in a group situation.

Group work is good practice for the world after graduate school. It also offers intrinsic rewards. In a group you have the opportunity to teach your peers and learn from them. There is the exhilaration of shared discovery and mutual achievement; there is a sense of belonging to an organization that did a good job. Group work also offers the social benefit of getting to know your colleagues in less formal settings.

C. Roles of Group Members

If a group is to function effectively, the roles and responsibilities of its members must be clearly delineated. At minimum, every project should have:

1. A **Project Manager** responsible for:

    - Chairing all meetings of the Project Group.
    - Ensuring that outputs are completed on schedule and delivered to the management group, faculty and other relevant workgroups.
    - Group coordination; eliciting cooperation through persuasion and cheerleading; obtaining needed assistance.
    - Developing the project design and workplan.
    - Submission of the project's final report.
    - Selecting and guiding task leaders.
    - Convening dry-runs or dress rehearsals for all briefings and inviting an appropriate "outside" reviewer to listen and give feedback.
    - Ensuring group understanding of responsibilities as described in this project design, and figuring out how to avoid any potential "dead weight" problems.
    - Liaison with faculty advisor.

2. A **Deputy Project Manager** responsible for:
    - Attending all meetings of the project group and chairing meetings in absence of Project Manager.
    - Drafting the project's progress reports for group review and the approval of the Project Manager.
    - Assisting the Project Manager in developing the project workplan.
    - Raising and addressing coordination issues for the Project Manager.
    - Developing agendas and tracking follow-up for group meetings
    - Managing plan logistics.
    - Advising task leaders on information collection and analysis and group dynamics problems.
    - Proposing new group management techniques. For example, appointing a critic from within or outside the group to comment on whether meetings were productive; and determining when "sitting back time" is needed to review work progress.

3. A **Task Leader** (such as an **Editor**, who would rewrite a first report draft in a single style) is responsible for:
    - Managing the completion of assigned outputs.
    - Reporting group progress to the Project Manager.
    - Participating in the conduct of specific tasks, and determining when and what advice and information is needed and how to get it.
    - Writing a section of the final report.
    - Attending all workshop meetings.
    - Attending weekly project meetings.

4. A **Faculty Advisor**. Though his/her role may vary, the faculty advisor is responsible for:
    - Participating in meetings of individual project groups, as needed.
    - Approving the draft outputs required of each project.
    - Approving the workplan and draft final reports.
    - Reviewing all outputs to ensure quality, identifying needed modifications, and approving outputs prior to finalization.
    - Evaluating the performance and professionalism of group members and providing feedback to members on the quality of their work.
    - Playing the role of the hypothetical client for the project and defining broad goals.
    - Providing general advice and direction on the content of the analysis, research sources and group management techniques.
    - Assigning students to project teams, selecting Project Managers, and Deputy Managers.

Other possible Task Leader roles include **Fieldwork Coordinator**, **Data Management Coordinator**, **Data Analysis Coordinator** and so on. It is not important that all groups have the same division of labor; however, it is essential that each group member have a written set of responsibilities.

SAMPLE LANGUAGE FOR THE CAPSTONE WORKSHOP TO USE IN RÉSUMÉS AND LINKEDIN

CITY OF STAMFORD LAND USE BUREAU, Stamford, CT Project Manager, Capstone Workshop Consultancy

Under the supervision of a faculty advisor, managed team of nine student consultants in analyzing climate risks and developing coastal infrastructure planning and risk management strategies for the City of Stamford, Connecticut. Crafted simple ways to communicate complex climate science to city officials, and recommended a management framework for integrating the science into city plans. Designed the project, developed the work plan, prepared oral briefings, wrote reports for the client, and ensured the timely completion of tasks.

IV. LITERATURE REVIEW

The literature review is the vehicle for getting up to speed on the subject matter as quickly as possible. If you were working in a professional context, it is extremely unlikely that you would start out with little or no knowledge of your subject (although sometimes it does happen); thus, a formal literature search is unusual in a professional setting. The literature review should deal with the social, economic, political and managerial factors that are at the core of the issue you are working on.

V. FIELDWORK AND DATA COLLECTION

A. How to Organize Fieldwork and Data Collection

The client should play an active role in determining appropriate sources of data, and the individuals who should be interviewed (if any). Since the workshop projects must be completed in three months, and since staff resources are extremely limited, fieldwork and data collection must be carefully targeted. As a rule of thumb, no more than half the person-days in the project should be devoted to fieldwork and data collection. Time must be available for human subject clearance (where needed), analyzing data and preparing reports and briefings.

Data collection should be a carefully planned activity. A strategy should be developed to enable the research team to focus its efforts on the collection of data directly relevant to the problem described in the workplan. There are many data collection strategies possible.

As a rule, a review of existing data should precede the collection of new data, and should be used to target personal interviews and other data collection activities. Bear in mind that collecting new data is quite time consuming for both the research team and individuals who might be interviewed. Wherever possible, existing data should be used and new data only collected when truly needed.

B. How to Conduct Fieldwork and Data Collection

Data collection can be a frustrating, time-consuming activity. Having a data collection strategy helps, and using key contacts to help focus your activity can also be useful. Once you are at the data collection site (survey respondent's workplace or home, office files, data archive, newspaper morgues, library, etc.) you should always maintain two objectives: (1) gather the information you need as efficiently as possible, and (2) remain unobtrusive. Personal interviews and file searches are particularly sensitive situations. In both cases the researcher is intruding on the workspace and time of the individuals and organizations being studied.

1. **Interviews**

   Remember that when you conduct an interview you are a representative of your client and the University. You should be cordial, respectful, and professional. If your respondent is uncooperative, your approach should be "gentle persistence." You should be gracious and pleasant at all times and under all conditions. If you must terminate the interview before you have completed your agenda, do not let the respondent know what a disastrous interview you have just had. At the beginning of the interview you should always identify yourself, the University, and your client, and whenever possible briefly explain the objectives of the study and the role the respondent plays in it. When taking notes be careful not to distract the respondent and never interrupt the flow of conversation. If you decide to record an interview, first attain the respondent's approval to record. If you feel you have missed an important point, ask the respondent to repeat what he or she said or asked a follow-up question that covers similar ground.

   Immediately upon leaving the interview, check your notes and add additional information you can remember, but did not have time to write down during the interview. Do not wait to do this later. The longer you delay, the more information you will forget. If your respondent wishes to see a copy of the study when it is completed, take down his or her mailing address or business card and promise a follow-up. Clients may have different policies regarding the release of reports, but at a minimum you (or the client) can send a follow-up letter explaining that policy. Always follow through on requests from respondents.

2. **Access to Files**

   If you have obtained permission to search an office's files or other written records, you must be certain not to interfere with the normal use of those files. If you are allowed to photocopy at the office where records are housed, you should defer to the office's regular staff whenever they wish to use the machine. Before leaving the office, you should ask the individual responsible for giving you access to the files if he or she would like to review your notes or photocopies. If a staff person denies you access to files after you were granted permission to search the files from an individual higher up in the hierarchy, politely remind the staffer of the source of your permission. If the staff person still resists, do not force the issue. Leave the office and contact your faculty advisor and/or client.

VI. REPORT WRITING AND BRIEFING

After you have collected and analyzed your data, you must communicate your findings. In the workshop this is accomplished through written reports and formal briefings. Other forms of communication typical in public sector agencies include memos, informal briefings, meetings, and audio-visual tools.

A. Planning a Report

Reports for clients are not like long term papers. Useful policy-relevant reports tend to be short and to the point. When reviewing a draft report you should always ask: Is this (chapter section, paragraph, sentence, word) needed to communicate the point? One way to ensure a succinct report is to develop a logical, detailed outline to think through the report before you begin writing. The outline should be organized to answer the questions posed in the problem statement included in the workplan. It should be divided into distinct units to facilitate the assignment of writing responsibilities. Every member of the group should be given responsibility for writing the first draft of one section of the report. Usually, the project team's editor is only required to write the first draft of the report's introduction and conclusion.

B. Writing the Report

The final report enables the project team to see the results of its work in a single format. When writing the executive summary, the project team will need to integrate the semester's work and identify the major themes and findings of the project. Writing a report on a complex topic is a difficult task. The report should be simply structured, easy to read, and tailored to its audience. The formal briefing accompanying the final report gives the entire team and invited guests the opportunity to critically assess the project's findings. In addition, the final report will provide a permanent record of the combined group effort.

To get a good idea of how to write a workshop report for a client, please see examples from your M.S. in Sustainability Management Colleagues and the M.P.A. in Environmental Science and Policy Program:

- M.S. in Sustainability Management: https://www.sustainability.ei.columbia.edu/curriculum
- M.P.A. in Environmental Science and Policy (see only Spring projects, which involve a client): http://mpaenvironment.ei.columbia.edu/workshops/spring-workshop-projects/

After preparing the report outline, the project team submits it to the faculty advisor. Once approved by the advisor, the report is submitted to client. Report writing should not begin until the client, the advisor, and the group agrees to a final outline. The workplan should include time to review and revise the outline. Similarly, the workplan should allow enough time for multiple drafts of the report to be submitted, reviewed, and revised. First drafts of each section of the paper should be submitted to the faculty advisor for comment. Comments should then be incorporated into a second draft of the report, which should then be submitted to the group's editor for consolidations and edits.

The Editor's first draft is then presented to the client for comment. After discussing the client's comments with the faculty advisor, the editor (and possibly other members of the research team) prepares a draft final report for submission to the faculty advisor and client. If the final draft of the report is acceptable to the advisor and client, it becomes the final report. If further revision is needed, the report must be rewritten. Multiple drafts may seem repetitive; however, they are a necessary part of analysis in professional settings. Analysis will often raise sensitive issues that the client will be more conscious of than the research team. The client may have additional data or new considerations that need to be reflected in the report and the research team must comply with the client's needs.

The Editor plays a key role in the process of draft revision, transforming a document written in several styles into a consistent, coherent product. In exchange for the extra work required to synthesize draft reports, the Editor should be relieved of some (but not all) of the other project duties.

C. Briefings

An oral briefing is the most likely forum you will be given to communicate the results of the work of your team and your study or project. It is worth thinking about what makes an effective briefing because a briefing is a powerful and flexible communication tool. A good briefing is not a speech or even an illustrated speech. Rather, it is creative combination of spoken and visual techniques that together are particularly effective in communicating often complex and detailed information to a general audience. Briefings are not always effective. A briefing is likely to fail if your group does not:

- Motivate the audience by making it clear from the outset why the subject under discussion is important to them.
- Have a clear organization and structure to it.

- Make a direct connection between the significance of the problem to be overcome and the solution identified through your study or project.
- Keep the briefing at a sufficient level of generalization so that the audience is not overwhelmed with excessive, unnecessary detail.
- Present simple, easy to understand charts, overheads or briefing books.

Generally, an effective briefing should take between 10 - 30 minutes with an additional 10 -20 minutes for questions and answers. (The midterm and final briefings will always be 10 minutes long.) The briefing should always start right on time and finish on or earlier than scheduled. Do not attempt to report the day-by-day experiences of the team throughout the project period. Do not replicate your learning process in public, and organize your message so it can be easily understood. Tell a logical, interesting story. Prepare a briefing that could be understood by an intelligent outsider to the organization.

Your briefing should identify:

- The problem your team was seeking to understand or overcome.
- The overall approach you took and the design of your study or project.
- The assumptions, theories and data used in your analysis.
- The changes, policies or programs you are recommending.
- The costs and benefits and pros and cons of your recommendations.
- The actions you believe should be considered over the short and long term.

In preparing for your presentation and when delivering it, keep the following ten steps in mind:

1. Keep it simple.
2. Decide what is essential and then cut the presentation at least by half.
3. A briefing should have an easily understood structure. It should have a beginning, middle and end.
4. Keep details, numbers and data to a minimum – hit the highlights.
5. Be interesting enough to hold the attention of the experts, but simple enough to be understood by the novice.
6. Be prepared; thoroughly understand the substance of your project or study.
7. Speak lively – if you don't sound upbeat and interested in the topic no one else will be.
8. Slides, charts and handouts must be flawless – no typos, spelling errors or grammatical mistakes. They should reinforce and support your message, not dominate it.
9. Have paper back up for all audio-visuals and if the projector breaks down, do not attempt to fix it. Move quickly and positively to paper back up.
10. Practice, Practice, Practice.

The format of your PowerPoint presentation should be 4:3 ratio instead of 16:9. Opt for higher contrast and thick fonts to ensure legibility in case the projector light is not ideal during the briefings. Regarding the use of text in the slides, use a font size of at least 20 points, only use smaller sizes for picture credits or footnotes and avoid long sentences or paragraphs.

In order to present a cohesive briefing, only one presenter should give the briefing. This person should be a strong public speaker and/or very well practiced and comfortable with the briefing material. The presenter should also be familiar with all of the project content and well enough prepared to answer the majority of the audience members' questions. If you can't answer a question, seek the help of your colleagues or say "I don't know." Always be honest and promise to find the answers to questions you can't answer. Never become defensive or rude – even if your audience is being unpleasant.
Never go over the time limit – it is rude and a sign of poor preparation.

Think about your listener. Think about steps you can take to make it easier for them to understand the content of your talk. Generally, one person should give the briefing, or at a minimum moderate or anchor the talk if others must speak. The moderator should begin and end the talk. If the project is analytic in nature – do not become an advocate – present both sides of the story and let the data speak. If a recommendation is expected or required, point out the pros and cons of your recommendation.

1. **Planning and Conducting a Briefing**

   Each research team is responsible for presenting three formal briefings over the course of the semester. The first is a midterm progress report; the second is presented to the workshop class as a dry run for the final in class briefing and is based on the draft report submitted to the faculty advisor; the final will be the client briefing. The formal briefing session is a device frequently used to communicate new ideas to management. Briefings for the workshop are strictly 10 minutes long. The faculty advisor will assign you a time limit for your client briefing.

   Briefings should always be short and to the point. When reporting on a research project, they should include a statement of the problem, a brief discussion of the study's methodology, findings, and recommendations. Bear in mind that you are more familiar with the subject than your audience. When preparing a briefing, try to gauge the amount of knowledge your audience has. When in doubt, it is better to assume a lack of knowledge than to assume the presence of knowledge. Repetition is boring, but the absence of basic information is a significant obstacle to communication. It is better to be boring than incomprehensible – although it is best to be neither. Briefings should be lively and stimulating. Try to get your audience engaged in your topic. Explain your problem in terms that people can relate to and identify with.
   A briefing should never be scripted. However, it should always be practiced. The group should prepare talking points to guide the presentation. Visual aids are an essential element of a good briefing; they should serve, not dominate, the communication process. Visual aids should illustrate key points. We believe in giving a briefing book to each member of the audience. The book should contain a detailed outline of the briefing and may also include key charts, tables and findings.

   It is essential that briefings be rehearsed. A "dry-run" will tell you if you are within your time limit, and will allow you to work out bugs before you appear in public. Although more than one person may speak at a briefing, there must always be a briefing leader. A formal briefing should allocate a few minutes to answer questions from the audience, facilitating interest and communication through dialogue.

   Keep in mind that the midterm and final briefings are typically public events, where presenters use microphones. As part of preparing for the briefings, therefore, presenters should be ready to use the microphone effectively by adjusting it for height, speaking in a manner that allows for proper amplification, and avoiding anything that produces extraneous noise (e.g. moving papers, banging on the laptop on the podium, placing glasses on the podium, etc.). The professional delivery of the briefing is as important as the information that it contains.

2. **Mid-Term Briefing**

   The mid-term briefing is a ten-minute presentation that emphasizes how you are approaching the problem that you're trying to solve. The group is required to produce a PowerPoint deck of slides in electronic and hard copy form. Hard copy is required in case the electronic version fails and to provide

a “take-away” for the listener. The briefing should cover the following:

- What is the problem?
- Why is it an important problem?
- How did it develop?
- Who is the client?
- How are you analyzing the problem and seeking to formulate a solution?
- What other methods did you consider? Why did you reject these other strategies?
- A description of the data/information the team is collecting and its collection methodology. Was there any information that you wanted to collect, but could not? How did this shape the way you chose to conduct your analysis?
- A description of the major problems left to be resolved. These may be analytical problems or problems of some other nature, such as problems in your relationship with your client.
- A short summary of the tasks you have left to finish.

Following the group’s briefing, the audience will have an opportunity to ask questions. If you have any analytical problems that you think other students or faculty may be able to offer advice on, feel free to raise those during your briefing. This mid-term session should be a time for you to reassess your project and to get a fresh perspective from interested parties not directly involved in your work.

3. Final Briefing

The final briefing is a concise and selective summary of the outputs produced throughout the semester. A final briefing should be clear and straightforward. An audience unfamiliar with the semester’s work should be able to understand each group’s output along with the reasons behind that output.

Generally, groups will present two final briefings, one during class, and a second to the client. The final in-class briefing should be no longer than 10 minutes and is your group’s opportunity to present the analysis you have completed for your client.

It should include:

- A brief description of the final project scope, its significance, and the client.
- A description of key data collection efforts and analytical insights and findings.
- A description of your final methodological approach to the project and reasoning behind it.
- Identification of critical challenges you faced in conducting the project and developing the final report.
- A description of your major findings and recommendations to your client.
- Suggestions on how the client may use the report based upon your group interactions with the client throughout the development of the report.

The audience will have a brief period to ask questions following each group’s briefing. This final briefing is the culmination of your workshop experience. It is an opportunity for you to provide a highly professional presentation reflecting a semester’s work on a project or policy of current concern to a practicing client. Sometimes client representatives are present during the briefing, along with Columbia faculty. This final briefing should inform and interest the audience on the client’s project, and should be the basis of your final briefing for your client.

A second final briefing is presented to the client, when possible, at the client's place of work. This briefing is based on the in-class briefing and is often longer. It may include most of the same items that are presented to the class, but will be tailored by the group and the faculty advisor to meet the specific needs of the client.

VII. TEAM MANAGEMENT

A. Running a Team

The Team Handbook does an excellent job of providing guidance for running teams. The first step in running a team is meeting preparation. The second is running the meeting, and the third step is learning to deal with typical problems always faced when working in groups.

The Team Handbook sets out some guidelines for productive meetings (page 4-2). The key rule is to be prepared. Project Managers must do their homework before the group's first meeting. Pre-meeting work includes (4-33 through 4-35):

- Reserving a place to hold the meeting.
- Making sure that a blackboard, computer projector or flip chart (and chalk/pens/disks) are available for the meeting.
- Setting an agenda (see page 4-3).
- Assigning or assuming the role of meeting facilitator (see page 4-4).
- Assigning or assuming the role of meeting record-keeper (see pages 4-7 through 4-10).
- Making sure everyone on the team knows where and when the meeting will take place.
- Making sure the team member's supervisor knows about the meeting.

Agendas are critical. They should identify the topics to be discussed, the time allocated to each topic, and the person with responsibility for leading the discussion of the agenda item. Don't wing it. The best teams are those that are by Team Leaders (Team Manager and Deputy Manager) that make sure that pre-meeting work is taken care of.

B. Run Successful Meetings

Once you have taken care of your pre-meeting work the real fun begins. Successful meetings require effective discussion management. This means that the Team Leader has to make sure that the meeting itself is well-run. It is particularly important that you review the sections of the Team Handbook that cover discussion skills and first meetings with your team members.

One of the most important jobs that Team Leaders have is to encourage effective group discussion (pages 4-11 to 4-19). The Team Handbook provides an excellent summary of effective discussion skills. Some examples of key skills include:

- Listening - Trying to learn what team members are trying to say rather than debating what you guess they are driving at.
- Summarize - Restate what the group has decided or learned and then check to see if everyone agrees with your summary.
- Manage time - Use an agenda with specific time limits for each item. If more time is needed, either

rearrange the agenda, or set up a separate meeting to deal with the particular item.
- End the discussion - Learn when the topic is exhausted and it is time to make a decision or move on to the next issue.

For the first meetings, the Team Handbook discusses:

- Setting goals for your first meetings (pages 4-36 through 4-41).
- Preparing for the first meeting (page 4-33 through 4-41).
- How to conduct the first meeting (pages 4-42 through 4-44).

Please review these pages carefully with all team members. We are paying a lot of attention to preparing and holding the first team meetings because groups that get off to a good start usually succeed and groups that flounder at the start rarely recover.

Set goals for the first meetings. The Handbook (pages 4-36 through 4-41) lists three sets of goals for the first team meetings. We suggest ignoring (at the outset) what they call educational goals, and instead focusing on team building and project goals. We are less concerned that groups understand Total Quality Management (TQM) and more concerned that they work as a team and understand the assignment they've been given.

Team-building goals include:

- Getting to know each other.
- Learning how to work as a team.
- Setting ground rules for the group's operation.

Project goals include:

- Understanding the assignment.
- Understanding how the work now gets done.
- Developing a plan for completing the team's assignment and improving the work.

Prepare for the first meetings. Before the first meeting the Team Leader should meet with his or her unit head (faculty advisor) to:

- Discuss the assignment.
- Discuss the roles that various team members will need to be assigned.
- Identify any information (or data) that may be available for the group.
- Discuss and arrange meeting space, logistics and time (see page 4-35).
- Write out the first meeting's agenda (see the sample on page 4-3, 4-45, 4-47).

Team Leaders should never hold a first team meeting until a planning meeting with the management has been held. Don't wait to be called in for a meeting, once you receive the assignment as a Team Leader, find your faculty advisor and hold a pre-team-meeting planning session.

Conducting the first meeting. Pages 4-33 through 4-35 and 4-42 through 4-45 provide some excellent tips on

how to conduct a first team meeting. Read the Team Handbook description of the following points:

1. Arrive early
2. Greet arrivals
3. Start on time
4. Warm-up
5. Introduction
6. Review the team's assignment
7. Explain the goals of the first meeting
8. Get to know each other
9. Define roles
10. Set ground rules
11. Discuss and revise the agenda

Between Meetings and Regular Meetings. Once you get started the next steps involve keeping the group going between meetings and holding the team's regular meetings. Team Leaders should make certain that team members are given assignments between meetings. If you look at the "improvement loop" on page 4-54, note that many of the activities require work outside of the team meeting process. Look at the examples in the boxes entitled, "investigate the process," "analyze data and seek solutions," and "take appropriate action." While some of the steps listed under those boxes involve group discussion, most involve collecting and analyzing information, or doing things while working. These will need to be assigned to team members and then reported on at team meetings. Refer to the progress checklist on page 4-55. This can be used by the Team Leader as a reminder of the type of assignments that should be made.

Record Keeping. Pages 4-5 through 4-10 provide useful tips on how to keep records during a project. Three types of written work are helpful:

- Agendas: Describing what will happen at a future meeting.
- Meeting minutes or decision record: Describing what happened or at least what was decided at a meeting.
- Future action or "to do" lists: Describing what needs to be done or discussed next.

Regular Meetings. Once the first meeting(s) is held, the group should settle into a regular rhythm of meetings, assignments, pilot projects (experiments), and follow up meetings. Pages 4-46 through 4-47 discuss regular meetings. They include an agenda for a regular meeting (page 4-47) and a graphic of the meetings cycle (page 4-46). Team Leaders should read these pages to and work with your faculty advisor to develop the project's first regular meeting agenda.

C. Manage the Team

1. The Role of the Team Leader

   The Team Leader is the manager of the team's project. The Team Leader:

   - Schedules, organizes and facilitates meetings.
   - Ensures that all team members understand the group's work.
   - Helps address and resolve group conflict.
   - Ensures that group communication is good.

- Develops the team's workplan and ensures that the schedule is maintained.
- Keeps the team's records and files.

The Team Leader need not and probably should not be the most senior member of the team. He or she should not dictate or try to boss around the other members of the team. The trick to effective team management is to involve group members in the group's decision-making process. The Team Leader should never try to do all the work of the team. Instead tasks should be assigned to each member of the team organized into task groups with a Task Manager. However, the Team Leader is also a team member. The Leader should be assigned "non-management" work just like all the other members of the team.

2. The Role of Team Members

   Team members should recognize that the work of the team is now part of their studies at Columbia, and that they are expected to participate in group meetings and contribute their expertise to the team's work. This means volunteering their views and time. It means helping collect and analyze data on current levels of performance. It means following and understanding all the team's project assignments and tasks, not only those for which one is actively responsible.

3. Dealing with Group Conflict

   No matter how hard you've worked at preparing for your group meetings, conflict is unavoidable. This is because people working together focus on different aspects of a job, and because of background, training, or personality approach things differently. These different perspectives can cause conflict, but also provide the creative spark that makes groups worthwhile. The trick is to benefit from the insights derived from different points of view, without allowing them to explode into bickering and nastiness.

   Team Leaders should expect conflict, but should learn to deal with group problems. **Chapter 6** in the Team Handbook covers the basics of working in groups.

4. Avoiding Conflict

   While some conflict is inevitable, the best strategy for dealing with conflict is to avoid it in the first place. Pages 6-10 to 6-23 cover the recipe for a successful team. These include:
   - Clarity in Team Goals (page 6-10 through 6-11).
   - An "Improvement Plan" – this is a work plan for the project (pages 6-11 through 6-12).
   - Clearly Defined Roles – everyone on the team knows what their job is in the group (pages 6-12 through 6-13).
   - Clear Communication – no B.S. (pages 6-13 through 6-15).
   - Beneficial Team Behaviors – everyone in the group trying to make the group work better (pages 6-15 through 6-16).
   - Well Defined Decision Procedures – clear rules on how the group will decide what to do (Pages 6-17 through 6-18).
   - Balanced Participation – no one dominates the group discussion; everyone gets involved (pages 6-18 through 6-19).
   - Established Ground Rules – norms of behavior of group members (pages 6-19 through 6-20).
   - Awareness of Group Process – being sensitive to the group's dynamics and taking ownership for the group's health (pages 6-20 through 6-21).

5. Dealing with Group Problems

   Despite our best efforts, groups sometimes run into problems. The critical section in the Handbook for dealing with group problems is entitled "Ten common problems and what to do about them" (pages 7-13 through 7-23).
   The top ten group problems include:

   - Floundering – groups wandering around without a sense of direction (Pages 7-13 through 7-14).
   - Overbearing Participants – experts or senior management people who dominate discussions because of who they are or what they know. This inhibits creative dialogue (pages 7-15 through 7-16).
   - Dominating Participants – people who like to hear themselves talk (page 7-16).
   - Reluctant Participants – people who don't want to talk (page 7-17).
   - Unquestioned Acceptance of Opinions as Facts – people who pretend they know what they are talking about (page 7-18).
   - Rush to Accomplishment – people who want to do before they think (pages 7-19).
   - Attribution – assigning blame (page 7-20).
   - Discounts and “plops” – ignoring a team member's opinions, statements or beliefs (page 7-21).
   - Wanderlust: Digression and Tangents – groups that free associate from one topic into the next and don't stick to the business at hand (page 7-22).
   - Feuding Team Members – people who hate each other (page 7-23).

Chapter 7 includes a range of team building activities. You should read these for some ideas that you might apply, especially if you find your group is running into problems. However, we do not recommend any specific emphasis on team building techniques. We'd rather focus scarce time on the group management issues discussed in Chapter 6.

6. Conflict between students and the faculty advisor

   The program selects faculty advisors, who are experienced practitioners, to advise students in these projects. The program trusts and empowers these faculty members to lead student teams and to resolve conflicts that occur. Indeed, this trust and empowerment form the foundation of teaching at Columbia University. In cases, where there is conflict between students and the faculty advisor that the two sides are unable to resolve, then they should seek the assistance of the capstone coordinator, and if necessary, the program director.

VIII. EVALUATING STUDENT PERFORMANCE

Grades for the workshop will be based on the following criteria:

- Quality of individual written work.
- Demonstrated conceptual ability (in group meetings, in responding to faculty and client comments and demands, etc.).
- Quality of participation in group meetings.
- Ability to meet deadlines.
- Ability to work well with fellow team members.

- Quality of formal and informal oral briefings.
- Feedback from the client.
- Overall professionalism.
- Quality of final report and briefings.

Academic Integrity and Community Standards from the School of Professional Studies:

Columbia University expects that its students will act with honesty and propriety at all times and will respect the rights of others. It is fundamental University policy that academic dishonesty in any guise or personal conduct of any sort that disrupts the life of the University or denigrates or endangers members of the University community is unacceptable and will be dealt with severely.

Because the School of Professional Studies takes matters of intellectual integrity very seriously, academic dishonesty is not tolerated. Acts of academic dishonesty include but are not limited to:

- Cheating on examinations
- Making up information
- Misrepresenting one's academic record at Columbia or elsewhere
- Plagiarizing another's work or one's own
- Assisting others in plagiarism
- Making false statements in connection with any academic matter, including applications for admission and financial aid
- Creating, altering, or misusing University documents or credentials
- Improperly using libraries or materials contained therein

The School also prohibits conduct that disrupts or interferes with the operation of the University or with the activities of other members of the University community. Instances of such behavior include but are not limited to:

- Harassing, coercing, or intimidating others.
- Making rude, abusive, or derogatory remarks about another person's gender, race, ethnicity, religion, disability, age, or sexual orientation.
- Interfering with or disrupting research or instruction.
- Improperly using University services, equipment, or facilities, including University e-mail and telephones.
- Failing to comply with a legitimate order of a University authority acting in the line of duty.

Academic and behavioral infractions carry severe penalties. Plagiarism, for example, whether or not it is intentional, results in a failing grade on the assignment and in the course. For degree candidates, this means immediate dismissal from their program of study.

http://sps.columbia.edu/student-life-and-alumni-relations/academic-integrity-and-community-standards

ABOUT THE INSTRUCTORS

Thomas Abdallah

Thomas Abdallah, P.E. LEED AP, is the Chief Environmental Engineer for the MTA New York City Transit (NYCT). He holds a B.S. in Chemical Engineering from Rutgers University and is a Professional Engineer and a LEED® Accredited Professional. Thomas has been with MTA since 1987. He has extensive experience with all areas of the environmental engineering discipline including sustainable design, energy efficiency, noise and vibration, pollution prevention and waste management. He is directly responsible for his department's ISO 14001 Environmental Management System (EMS) that has been certified since 1999. As Chief Environmental Engineer since 2004, he provides expert environmental engineering services to ensure that all design and construction projects meet the environmental requirements of all Federal, State and Local regulations such as National Environmental Policy Act (NEPA) and New York State Environmental Quality Review Act (SEQRA).

Thomas has presented all over the country on sustainability issues through organizations such as the Transportation Research Board, American Public Transportation Administration, the New York Academy of Sciences, Greenbuild and has appeared in numerous media outlets touting sustainability efforts, including, Sundance Channel's Big Ideas for a Small Planet, Discovery's Science Channel, and PBS' Going Green New York television program. He has appeared in a short film documentary "Postcards from the Future" which detailed Hurricane Sandy's impact on the MTA New York City Transit system with a focus on climate change.

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Kizzy Charles-Guzman

Kizzy Charles-Guzman is the Deputy Director of the NYC Mayor's Office of Recovery and Resiliency (ORR) where she leads efforts to strengthen the City's community, social, and economic resiliency by expanding the City's social and economic resiliency program to encompass community-based organizations, emergency planning, workforce development, small businesses, and health programs. Prior to this position, she worked at the Nature Conservancy where she led the development and implementation of the Conservancy's NYC policy strategies and before this, she was the Director of the Climate Change and Public Health Program at the New York City Department of Health and Mental Hygiene (DOHMH) where she worked on strategies to prepare for and respond to climate-related impacts. She also has substantial experience in politics and government regulations, given her involvement in the passage of City and State legislation to reduce air emissions. Kizzy holds a BA in Geology from Carleton College, and an MS in Natural Resources Policy and Management from the University of Michigan.

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Robert Cook

Dr. Robert (Bob) Cook is a veterinarian who has spent his career in wildlife health, conservation and foundation philanthropy. Most recently he served as Program Director for Conservation and Basic Medical Research at the Helmsley Charitable Trust. Prior to that, he worked for the Wildlife Conservation Society serving as the Chief Veterinarian and then as the General Director. In this role he led a team responsible for the operations of 5 New York zoological parks including the Central Park, Queens and Prospect Parks Zoos, the New York Aquarium and

the Bronx Zoo. He has worked extensively in rural international settings and on global policy issues focused on the health of people, domestic animals, and wildlife. His work with Helmsley included support of community-based conservation, protected area establishment and management, biodiversity, marine conservation, food security, environmental justice and the sustainability of natural resources. Dr. Cook has served as an Adjunct Assistant Professor at SIPA from 2004 to2007 and then from 2013 to present. He has a BS in Microbiology and Public Health from Michigan State University 1976; VMD, University of Pennsylvania School of Veterinary Medicine 1980, Internship in Small Animal Medicine and Surgery, Animal Medical Center 1981; Residency in Zoological Medicine, Wildlife Conservation Society 1987; MPA, School of International and Public Affairs, Columbia University 2002.

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Susanne DesRoches

Susanne DesRoches is the Deputy Director of Infrastructure Policy in the NYC Mayor's Office of Recovery and Resiliency (ORR) where she leads efforts to adapt regional infrastructure systems to maintain continued services. She ensures coordinated adaptation efforts and works to adopt resiliency design guidelines for infrastructure systems that serve the City's residents and businesses. Susanne previously worked for the Port Authority of New York & New Jersey (PANYNJ) where she held the position of Chief, Resilience and Sustainability in the Engineering Department. She was the department's technical lead for Hurricane Sandy recovery and resiliency efforts and led the development of the PANYNJ Climate Resilience Guidelines, which incorporates future climate impacts into design strategies. Susanne holds a Bachelor of Industrial Design from Pratt Institute and an MPA in Environmental Science and Policy from Columbia University.

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Lynnette Widder

Lynnette Widder is the Principal and Co-founder of aardvarchitecture, a small architectural practice specializing in residential work with an emphasis on high-quality innovative construction. The practice's designs have been featured in various publications including the New York Times, Time Out New York, and the HGTV series, Small Space Big Style. Prior to starting aardvarchitecture, Widder was the English-language editor of Daidalos Architecture Quarterly, a Berlin-based publication covering contemporary architecture. In 2011, she worked as a consultant for Memorial Sloan Kettering Cancer Hospital Innovations Group. Widder has over fifteen years of experience teaching design, conducting seminars, and organizing architectural excursions for architecture students at both the undergraduate and graduate levels. She was an Associate Professor of Architecture, and later the head of the architecture department, at the Rhode Island School of Design. She has held teaching posts at ETH Zurich, University of British Columbia, Cornell University, Cranbrook Academy of Art, City College of New York, and Columbia University. Widder earned her B.A. in Architecture from Barnard College (1985), her M.A. in Architecture from Columbia University's Graduate School of Architecture, Planning and Preservation (1990) and her Sc.D. in Construction and Architectural History from the ETH Zurich (2016).

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EXHIBIT 1: OUTLINE FOR A WORKSHOP PROJECT CONTROL PLAN (SAMPLE PCP OR WORKPLAN)

I. Operational Definition of the Analytic Research Problem: What is the research team trying to find out?

II. Project Overview

Although the project will often determine the specific nature of the report, generally the overview should include:

A. Description of Available Data and Literature
B. Discussion of Data Needs
C. "First Cut" of Study Design and Methodology
    1. How data will be collected
    2. Probable study hypotheses
    3. Draft analytic strategy
D. Draft Outline of Final Report
E. Expected Result and Benefits

III. Brief Task Descriptions

A. Develop Final Study Design and Methodology
    1. Develop survey instruments and/or other data collection strategies
    2. Pose study hypotheses
B. Collect Data
    1. Interviews (who, what, where, when, why, how)
    2. File searches
    3. Literature review
    4. Other
C. Analyze Data
    1. Relate data to study hypotheses
    2. Develop and implement final analytic strategy
D. Develop Preliminary Report
    1. Summarize preliminary findings
    2. Brief client
E. Develop Draft Report
    1. Outline draft report
    2. Assigning writing tasks
    3. Edit draft report
F. Develop Workshop Briefing
    1. Assign responsibilities
    2. Develop A/V materials (if any) and briefing book
    3. Conduct dry run 21
G. Write Final Report
    1. Write outline
        a. Review with client
    2. Assign writing tasks
    3. Edit final report

IV. Assignment of Responsibilities

A. Project Manager
    1. Name
    2. Specific lead responsibilities
B. Editor
    1. Name
    2. Specific lead responsibilities
C. Fieldwork Coordinator
    1. Name
    2. Specific lead responsibilities
D. Others
    1. Name
    2. Specific lead responsibilities

V. Schedule of Tasks

A. Graphic display of tasks, responsibilities, milestones and outputs (see Exhibit 2.)
B. Week-by-week table of information summarized in the graphic display described above

EXHIBIT 2. SAMPLE WORKPLAN GRAPHIC

Cohen Summer Workplan

TASK	ASSIGNMENT	START/END
1.0 COORDINATE WORKSHOP		
1.1 MEET WITH FALL WORKSHOP FACULTY TO COORDINATE PROJECTS AND DISCUSS CURRIC.	COHEN	6/23-7/22
1.2 REVISE FALL WORKSHOP HANDBOOK	COHEN	6/23-7/1
1.2.1 DEVELOP PROJECT	COHEN	7/7-7/29
1.3 ENTER NEW PROJECTS	COHEN	7/7-8/1
1.4 COORIDNATE SECTION ASSIGNMENTS	COHEN	6/23-7/1
1.5 ARRANGE FOR REPRINT OF GUIDEBOOK	COHEN/ DEGNAN	7/7-8/1
1.6 PRINT HANDBOOK	COHEN/ DEGNAN	7/7-8/1
2.0 DRAFTING OF EFFECTIVE PUBLIC MANAGER 3RD EDITION	**COHEN/EIMICKE**	**5/26-8/29**
2.1 REVISE ASSIGNED CHAPTERS, ADD NEW CHAPTERS	COHEN/EIMICKE	5/26-7/1
2.2 EXCHANGE CHAPTERS FOR COMMENTS	COHEN/EIMICKE	7/7-8/8
2.3 FINAL DRAFT	COHEN	8/11-8/29
2.4 FINAL EDITS	COHEN/ EIMICKE	8/29-9/19
2.5 DRAFT COVER LETTER & SUBMIT TO JOSSEY-BASS	COHEN	9/19
3.0 COMPLETE FIELDING CURRICULUM FOR EMPA PROGRAM		
3.1 REPLACE MARKETING PROFS & SUBMIT CVS AND SYLLABI FOR APPROVAL	COHEN	6/6-7/1
3.2 REVIEW SUMMER COURSE EVALUATIONS	COHEN	8/11-8/29

3.3 DECIDE ON SUMMER 02 TEACHING ASSIGNMENTS	COHEN	9/5
4.0 STUDENT ORIENTATION	**PICKER STAFF, COHEN**	
4.1 PLAN ORIENTATION	PICKER STAFF	6/6-7/1
4.2 ATTTEND ORIENTATION	COHEN, PICKER STAFF	8/30
5.0 REVISE EMPA AND MPA PUBLIC MANAGEMENT SYLLABI	**COHEN/ EIMICKE**	**6/30-7/18**
5.1 SUBMIT REVISION FOR COURSE WEB SITES	COHEN	7/18
6.0 CONDUCT E-GOVERNMENT FUTURES STUDY	**COHEN/ EIMICKE**	**6/23-10/3**
6.1 OUTLINE PROPOSED REPORT	COHEN	6/24-7/1
6.2 DEVELOP INTERVIEW GUIDE	COHEN/EIMICKE	6/17-7/1
6.3 DEVELOP KEY INFORMANT LIST	EIMICKE	6/24-7/1
6.4 CONDUCT LITERATURE REVIEW	COHEN	6/24-7/25
6.5 CONDUCT INTERVIEWS AND DRAFT SUMMARIES	EIMICKE/COHEN	7/8-8/2
6.6 1ST DRAFT REPORT	COHEN	8/4-9/2
6.7 EDITS & FINAL REPORT TO PWC	COHEN/EIMICKE	9/2-10/3

INTEGRATIVE CAPSTONE WORKSHOP IN SUSTAINABILITY MANAGEMENT

SUMA PS5200: Spring 2019

Project Selection Form

Name: _____

UNI: _____

Part 1: Please rank the following projects in order of preference, 1 being most preferred and 4 being least preferred:

_____ **Project: Making the Grade on Reducing Lead in New York's Public School Drinking Water**
Client: New York League of Conservation Voters Education Fund (NYLCVEF)
Instructor: Kizzy Charles Guzman

_____ **Project: Making Craigville Net Zero by 2050**
Client: Christian Camp Meeting Association (CCMA) of Centerville, MA
Instructor Thomas Abdallah

_____ **Project: Embedded Carbon for Decision Making at the Port of Seattle**
Client: The Port of Seattle
Instructor: Susanne DesRoches

_____ **Project: Advancing Marine Conservation in New York Waters through Ecological Valuation**
Client: Wildlife Conservation Society's New York Seascape Program
Instructor: Dr. Bob Cook

Part 2: Please indicate your interest in serving as either the manager or deputy manager of your project team by checking one or both of the selections below:

_____ Manager _____ Deputy Manager

Spring 2019 Integrative Capstone Workshop Project Descriptions

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PROJECT DESCRIPTION

Project title: Making the Grade on Reducing Lead in New York's Public School Drinking Water
Client: New York League of Conservation Voters Education Fund (NYLCVEF)
Instructor: Kizzy Charles Guzman

Purpose: To inform NYLCVEF's efforts to make existing regulations more protective of children's health by educating state officials about the need to lower the current action level of 15 parts per billion (ppb), by statute or regulation, before the next round of mandated testing in 2020.

Background:

Lead poisoning affects every bodily system and can result in severe developmental and behavioral problems. Children are especially susceptible to lead poisoning because of their small body size and the fact that their brains are rapidly developing. Despite substantial declines in children's blood-lead levels nationwide over the last 30 years, more than 17,000 children in New York under the age of six (3% of those tested) had elevated blood-lead levels in 2016. Exposure comes from many sources and drinking water contributes to a child's blood-lead levels. Lead in school drinking water is a particular concern since children often spend all day in school facilities and receive much of their daily drinking water intake from them.

In 2016, New York Governor Andrew Cuomo enacted a law requiring public schools statewide to test and remediate any drinking water outlet where lead contamination is found. NYLCVEF was a driving force behind the law. New York's statute did not specify the level at which lead would be considered elevated, leaving this decision to the state Health Department which set 15 ppb as the action level. The 15 ppb action level is based on the federal Environmental Protection Agency (EPA) standard set for public drinking water systems in the 1991 Lead and Copper Rule (LCR). Of more than 400,000 water outlets tested in New York State's 4,660 public school buildings in 2016, 12% reported above the action level of 15 ppb, according to New York State Health Department data.

Unfortunately, the action level of 15 ppb recommended by the EPA, and followed by New York State, is outdated. In 1992, the World Health Organization recommended that governments set lead action levels at 10 ppb, which the European Union and Canada have followed for decades. More recently, the District of Columbia and several states including Michigan and Illinois are all moving toward more protective levels than the EPA recommendation, setting action levels as low as 5 ppb. The European Union and Canada are also considering lowering their action levels to 5 ppb.

Per the New York regulations, the next round of mandated testing will be in 2020, and every five years after that, which makes this a timely concern to examine, analyze, and develop recommendations for state level action.

Project Description and Expected Outputs:

One deliverable of this capstone project is to build a case for lowering New York's public school drinking water lead action level. To achieve this, the project team will review and compile research and analysis of the health and economic impacts of elevated water-lead levels, and catalog international and domestic drinking water policies and recommendations.

In order to understand the impact that a policy change would have in New York, another deliverable is for the capstone students to analyze data collected and prepared by NYLCVEF researchers. Initially, capstone students will work with a dataset from New York City schools, which identifies all drinking water outlets that revealed lead concentrations between 5 ppb and 14.9 ppb during the initial round of testing in 2016. Students will conduct a case study with the New York City data to better understand the geographic, socioeconomic, and other impacts that an action level change would have on this school district, representing the drinking water for 1.1 million children.

Following the completion of the case study, capstone students will need to determine the overall quantitative impact of lowering the action level from 15 ppb to 5 ppb. NYLCVEF is currently in the process of collecting and preparing data from non-NYC schools and we will provide this dataset to the students as it becomes available so that this information can be integrated into the final report.

A final deliverable of this project is to develop a communications strategy and action plan to convey our findings and recommendations. In view of the fact that New York State already has the most rigorous testing, reporting, and remediation program in the country, the public perception is that this mission has been accomplished when in fact there is more work to be done to protect children from lead exposure. This is also not an easy story to tell as we will need to explain, from a children's health perspective, why the current recommended EPA standard for schools is not protective enough.

Students ought to summarize their work in a final report that:

- Integrates existing international and domestic scientific research, public policies, and recommendations,
- Performs a case study analysis of New York City's public-school drinking water data,
- Quantifies the statewide impact of lowering the action level, and
- Outlines a strategy to effectively communicate with various audiences, including technical and non-technical experts and the media.

Key Tasks:

Through this project, students will gain experience conducting research and developing materials that NYLCVEF and its partners can use to inform and educate decision-makers, school communities, and the media. Students will also have opportunities to communicate and collaborate with other nonprofits and community groups who are involved in this real-world issue.

Task 1: Conduct research to support lowering the water-lead action level from 15 ppb to 5 ppb. Research should include an examination of public health information, economic impacts, and an analysis of similar domestic and international policies and recommendations.

Task 2: Analyze 2016 data from drinking water outlets in New York City public schools and prepare a case study that will surface relevant trends such as:

- Spatial distribution of water-lead levels in NYC at the lower 5 ppb level (i.e., citywide, by borough, by school district);
- Overlay results with socioeconomic and demographic data; and
- Other relevant factors such as school population size and age of children.

Task 3: Determine the overall quantitative impact of lowering the action level from 15 ppb to 5 ppb by analyzing 2016 data from drinking water outlets in New York City public schools and non-NYC public schools.

Task 4: Develop a communications strategy and action plan directed to three distinct audiences:

1. Technical (i.e., health department, facilities managers)
2. Non-technical (i.e., school leadership, parent-teacher organizations, elected officials)
3. Media (i.e., print and social media)

Client contact:

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PROJECT DESCRIPTION

Project title: Making Craigville Net Zero by 2050
Client: Christian Camp Meeting Association (CCMA) of Centerville, MA
Instructor: Thomas Abdallah

Purpose: Provide a strategy and tools so that Craigville can become a Net Zero community by 2050.

Background:

The CCMA was founded as a camp meeting ground in 1872. The Board of the CCMA approved the Net Zero goal in April 2018. The CCMA comprises the Craigville Retreat Center, which is a series of buildings owned by the CCMA that host nearly 12,000 guests/year and is managed by United Camps, Conferences & Retreats; the Craigville Beach Association, which is owned and managed by the CCMA and sits on Nantucket Sound; and the Craigville Cottage Owners Association, which represents the owners of more than 90 private homes that surround the Retreat Center.

Project Description and Expected Outputs:

The student team will analyze the programs/sustainability plans being implemented by other communities to identify applicable "best practices" in achieving net zero environmental impacts associated with residential energy and water usage and solid waste management. In addition, the team is to examine CCMA's risk to sea-level rise and offer CCMA a strategy for safeguarding the community.

The team's main tasks will include the following:

1. Benchmarking of other communities' sustainability and climate action plans to identify recommendations to CCMA. This assessment should not be limited to communities of similar size to Craigville and towns in Massachusetts, but should include communities of different size and geography, whose strategies may be applicable to the client.
2. Analyze and benchmark energy usage, water usage, storm water runoff, and solid waste production. CCMA will provide access to all utility data for CCMA owned buildings and will attempt to get similar data from private homeowners.
3. Recommend a plan of action, including goals and performance metrics.
    a. In the area of residential energy usage, identify and compare trends or patterns according to different types of housing stock, based on method of heating, age of residential units, and size of units. Provide data on effects of future trends, including increased use of electricity for electric vehicles, air- and potentially ground-sourced heat pumps; the potential for increased solar photovoltaic installations, etc.
    b. In the area of water consumption, recommend strategies to take advantage of the work previously performed by the Red Lily Pond Project to ensure the lasting availability of quality drinking water, management of the quality and quantity of waste and storm water and continued long term sustainability of Craigville's surrounding aquatic habitats.
    c. Regarding solid waste, make recommendations for increasing recycling and composting and reducing the amount of solid waste sent to landfill.
    d. Regarding sea level rise, identify practices to avoid potential risks.

4. Analyze relevant financial incentives and other resources/mechanisms, such as federal, state or local grants, incentives or programs. Identify costs, co-benefits, scope and potential annual greenhouse gas reduction for potential actions.

Final Deliverables:

Students will produce a final report that includes an executive summary, support analyses, and recommendations for the CCMA to consider, as it implements a Climate/Sustainability Action Plan.

Client contact:

Sam Carpenter
CCMA Board
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PROJECT DESCRIPTION

Project title: Embedded Carbon for Decision Making at the Port of Seattle
Client: The Port of Seattle
Instructor: Susanne DesRoches

Purpose: Determine whether and how the Port of Seattle might consider embedded carbon in materials as part of its decision making on capital projects.

Background: The Port of Seattle has ambitious organization-wide goals for carbon emissions reduction. To date, efforts have focused on carbon emissions from fuel use by Scope 1 and 3 sources. The Port has not yet considered the embedded carbon in materials as part of its decision making, partly because of the difficulties of calculating it reliably. As a result, a portion of the Port's true carbon emissions has not been accounted for in greenhouse gas emissions inventories.

The Port is in the midst of major construction projects (totaling $3B) at Seattle-Tacoma International Airport, and could be spending another $4.5B on airport construction in the coming decade. The Port has an informal goal of achieving at least Leadership in Energy & Environmental Design (LEED) Silver rating at its major building projects, and it is aware that some aspects of LEED (such as use of locally manufactured materials) might reflect embodied carbon indirectly. A more detailed consideration of embedded carbon could lead to additional carbon savings, but could also result in increased costs.

The Port is seeking assistance in understanding whether (1) there is enough knowledge/practice to calculate embedded carbon in building materials and construction processes reliably, and (2) whether there are practical techniques for considering embedded carbon as part of its decision making on capital projects. Answers to these questions will help the Port understand whether it is doing its best to consider carbon emissions as part of capital project decisions.

Project Description and Expected Outputs:

The project team will research embedded carbon in building products, including rating/certification systems, and well-known methods for calculating embedded carbon. The team will also benchmark the use of embedded carbon information by organizations in infrastructure projects to identify successful carbon accounting methods and the difficulties of using them. The team will apply its findings to pilot the accounting of embedded carbon in 5-8 capital projects. Combining these results with the benchmarking findings, the group will provide a recommendation(s) for how the Port could reliably include embedded carbon in its project decision-making.

Data availability:

The Port will provide the project team a short list of sample projects that are representative of its capital projects. The team will be responsible for identifying and quantifying the embedded carbon in building materials. Because this is a nascent area the sustainability management, the team could be faced with large amounts of data, which are difficult to assess, or alternatively, insufficient data. The Port expects the team to provide guidance about the appropriate methodology given this level of uncertainty around the data

Project key tasks:
Task 1: Conduct literature review of embedded carbon rating/certification systems and methods for calculating embedded carbon in building products.
Task 2: Benchmark5-8 infrastructure projects where embedded carbon in building products was used as part of the decision-making process.
Task 3: Based on the results, determine whether a cost per ton of embedded carbon avoided, or other another metric, can be used to assess embedded carbon in building products.
Task 4: Develop recommendations regarding the use of embedded carbon in capital project decision making.

Final Deliverables:
A final report (with links to key sources)
A final oral briefing
Key internal milestones to be determined by project team.

Client contact:
Arlyn Purcell
Director, Aviation Environment and Sustainability
Port of Seattle, Washington

PROJECT DESCRIPTION

Project: Advancing marine conservation in New York waters through ecological valuation

Client: Wildlife Conservation Society's New York Seascape Program

Instructor: Dr. Bob Cook

Purpose: To develop compelling economic arguments for the sustainable management and conservation of marine wildlife, habitats, and ecosystem services in and around the NY Bight.

***** In ranking this project on your preference form, please indicate if you have previously taken a course in cost-benefit analysis. Having taken such a course is <u>not</u> a requirement to participate in the project. However, if one or two team members have the cost-benefit analysis experience, it will be helpful to everyone. *****

Background

Recent marine planning efforts have set goals of securing a healthy ocean ecosystem in New York and the Mid-Atlantic region. The goals may only be achieved by implementing adequate protections and effective management of ecological resources in these increasingly busy waters. Environmental policy debates and management forums are greatly influenced by economic arguments, particularly those related to jobs and availability of resources, but often fail to consider alternative uses or other value constructs of those same resources. For example, Mid-Atlantic fishery managers considered the economic value of local squid fisheries as they determined the potential boundaries for deep sea coral protection zones offshore that would restrict fishery access, but had no corollary data on the ecological value of these coral communities (e.g., as habitat for other species).

Measures of ecological importance for species, habitats, and services are rarely defined or valuated in economic terms. At the same time, the local fisheries and other resource intensive industries provide strong economic arguments that influence local constituencies and their policy decision-makers. The lack of economic valuation puts scientists and environmentalists at a great disadvantage when pressing for sustainable management of our oceans. Not only can extractive industries be managed more sustainably, greater attention must be placed on non-consumptive uses that also provide economic (and other) benefits. For example, whale- and bird-watching, other ecotourism, citizen science, and recreational activities (surfing, boating, swimming, and catch-and-release only fisheries) depend on sustainable wildlife populations and healthy waters. Education and conservation institutions also provide tangible economic benefits. For example, the New York Aquarium, as well as numerous conservation organizations, provide jobs and other multiplier benefits to coastal communities. In addition, living shorelines, barrier islands, estuaries, offshore sand furrows, and other natural systems, provide ecological services and habitats, and contribute to coastal resilience, which benefit many stakeholders.

To demonstrate the economic value of marine wildlife conservation, the Wildlife Conservation Society's (WCS) New York Seascape Program is seeking support from Columbia University graduate students to better understand and apply the most advanced ecological valuation techniques to the diverse marine species and habitats found in the New York Bight. This will provide invaluable arguments that WCS staff and our diverse audiences (aquarium and zoo visitors, school groups, online supporters, key marine stakeholders, and conservation partners) can use to advocate for marine wildlife and habitat conservation to state, regional, and federal government decision-makers.

The New York Bight encompasses more than 16,000 sq. miles of coastal and ocean waters from

Montauk, New York, to Cape May, New Jersey. It is an ecological treasure trove, providing critical migration routes for globally threatened species, including sea turtles, whales, and sharks, as well as nursery grounds and essential habitat for hundreds of other marine species. The Wildlife Conservation Society is committed to protecting the New York Bight and its iconic marine wildlife. With more than 20 million people living along this coastline and one of the busiest ports in the world, these waters and wildlife face significant challenges including:

- Pollution, dredging, and increased vessel traffic;
- Overfishing, bycatch, and inadequate fisheries management;
- Coastlines that are vulnerable to natural disasters;
- Climate change and its associated impacts, such as storm events and rising sea levels; and
- Lack of a New York ocean ethic, and under-prioritization of marine conservation efforts.

These threats are all associated with a range of human activities both on land and in the ocean. Historically, these activities were regulated in a way to maximize resource extraction and economic gain. Even today, management efforts and needs for recreational and commercial fishing, shipping and offshore energy development are almost exclusively couched in terms of economic benefits. According to the National Oceanic and Atmospheric Administration, New York's ocean economy employed 364,000 New Yorkers, generated $12.7 billion in wages and contributed $26.1 billion in gross domestic product.[1] What these statistics do not illustrate is that in many ways, a strong ocean economy depends on a healthy ocean ecosystem. The coastal tourism and recreation sector is the largest element of the state's ocean economy: these uses would undoubtedly face significant challenges from an oil spill that either reached or were perceived to impact local beaches.

Project description and deliverables

Task 1: Conduct background research on the following: 1) Human uses (current and emerging), e.g., shipping, offshore wind energy exploration and development, recreational fishing, commercial fishing, other ecotourism, and sand mining; 2) Key living marine resources in NY waters, e.g., menhaden, Atlantic herring/forage species, sharks & skates, American eel (based on their fisheries); and 3) Previous studies on ecological valuation as applied to marine biodiversity in NY, the Mid-Atlantic, and/or from other regions.

- Sub-Task 1: Collate and summarize available economic data on human uses and living marine resources in New York Bight;
- Sub-Task 2: Interview local experts (e.g., resource economists, recreational and commercial fishers and managers, offshore wind experts, ecotourism operators); and
- Sub-Task 3: Create an annotated reference library of sources.
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Task 2: Based on the above literature review and interviews:

- Sub-Task 1: Provide a critical review of ecological valuation methodologies; and
- Sub-Task 2: Develop best-practice recommendations for their application within the New York Bight.

[1] National Oceanic and Atmospheric Administration (NOAA), Office for Coastal Management. 2018. NOAA Report on the U.S. Ocean and Great Lakes Economy: Regional and State Profiles. Charleston, SC: Office for Coastal Management. Available at http://coast.noaa.gov

Task 3: Develop 3 to 5 case studies assessing and clearly documenting ecological valuation as applied to marine wildlife and habitats in the New York Bight. Final selection of case studies will be made via consultation with the client but may likely include:

- Marine ecotourism industry (e.g., whale- and bird- watching, etc.);
- Aquarium industry in the Mid-Atlantic (including the NY Aquarium);
- Catch-and-release only fishing for sharks and other species (e.g., tunas, billfish etc.);
- Forage fish populations (menhaden and other species that play an important role in marine food webs); and
- Offshore sand furrows.
-

In addition to the above, team members will be invited to a behind-the-scenes tour of the New York Aquarium; may be invited to observe wildlife policy meetings (e.g., fishery management and/or offshore wind energy development); and volunteer to participate in New York Seascape field research (e.g., electrofishing and eel tagging in local rivers).

The primary product to come out of this project is a **white paper** that consolidates valuation research, lessons learned, recommendations, and case studies to guide and inform WCS's work to conserve marine biodiversity in diverse policy decision-making forums, especially for fisheries management in the New York Bight. The Columbia student team will also provide a presentation to the WCS New York Seascape staff summarizing their findings. In addition, *should time permit*, we would welcome the development of a public-facing sample infographic and/or a public education one-pager that could be used to inform the key audiences about ecological valuation and as applied to one of the case studies.

Client Description:

The Wildlife Conservation Society's mission is to save wildlife and wild places worldwide through science, conservation action, education, and by inspiring people to value nature. We work in nearly 60 countries across 16 priority landscapes and seascapes to protect 50 percent of the planet's biodiversity. The organization also runs four zoos—the Bronx Zoo, Central Park Zoo, Queens Zoo and Prospect Park Zoo—and the New York Aquarium (NYA) which extends our impact by welcoming more than 4 million guests a year and serving as a platform to educate and inspire conservation action. In 2018, the New York Aquarium opened *Ocean Wonders: Sharks!* that highlights our marine work globally, as well as in the New York seascape.

Through local field research, policy initiatives, and public outreach, WCS's NY Seascape program, based at the New York Aquarium, seeks to protect and restore threatened species and critical habitat, encourage smart ocean planning to ensure a place for wildlife in our busy waters, and build ecological resilience in nearshore and river habitats. Ecological valuation data will be incredibly helpful in highlighting the importance of a healthy ocean ecosystems and for NY Seascape staff and partners to advocate for conservation outcomes that benefit local marine life and habitats.

PROJECT DESCRIPTION

Project: Inclusive Development of Household Waste Value Chains in Conakry, Guinea
Client: United Nations Development Programme Guinea
Professor: Lynnette Widder

Purpose
The project objectives are to develop a pragmatic process for managing household waste in ways that bolster livelihoods for Guinea's most-severely underemployed groups, women and young people.

Background
Guinea's rivers and coastal resources are intrinsic to the populace's livelihoods. However, watershed health is often ignored at the expense of urban development. Similarly, women and youths are often ignored in the employment initiatives of this developing country, disenfranchising a huge portion of the population. Based in large part on these two factors, the United Nations Development Programme in Guinea has articulated a national sustainable development agenda that emphasizes youth and women's empowerment, biodiversity, coastal resilience, sustainable livelihoods, and urban development. These national priorities overlap in many areas, but they intersect in management of municipal waste.

Municipal waste management in Guinean cities is decentralized and underdeveloped, even in its capital city of Conakry. Whereas water, emergency services, electricity and transportation infrastructure in Conakry are covered in city bylaws, solid waste management is not administered by any single branch of government. The Ministries of Health, Transportation and Environment are all potentially responsible, but none has explicit oversight (World Bank Group, Solid Waste Management in Conakry; UNDP Guinea). As a result, city services are wholly reliant on small informal crews who walk neighborhoods to gather trash and move it to designated locations, although subsequent pick-up using trash trucks is sporadic. Accumulation of uncollected waste creates health hazard for residents, and runoff from this waste damages the waterways and coastal ecosystem that are so vital to the city. Waste clogs storm water drainage gullies which, in an area that receives 13 feet of rain annually, is particularly impactful.

Waste management has become an increasingly significant problem as Conakry grows; the city's population has increased 150% in the past decade (citypopulation.de), in a period during which urbanization in Guinea has grown 3.5% annually (CIA World Factbook). Demographics reflect this explosive growth, with >40% of the population younger than age 14 (*ibid*.) In a country dependent on fishing and agriculture for nutrition and livelihoods (USAID SPRING study), degraded ocean health extends beyond ecological impacts – it has existential consequences. Transition to viable urban processes is therefore critical for social and environmental sustainability.

Other West Africa nations face similar challenges and are beginning to establish systems to bridge gaps left by municipal inadequacies while also promoting livelihoods for underemployed groups. Attempts to build capacity by donating garbage trucks and analyzing the feasibility of a waste-to-energy plant have not yet achieved a durable solution. There are, however, bright spots. First, a Dutch project determined that goods made from recovered waste could be a significant source of economic growth (Cortaid, 2016). Second, a consortium of investors (e.g., IMF) in neighboring Senegal have successfully implemented programs ranging in scale from production of artisanal goods and building materials through waste reclamation, to recovery of landfill gas for fuel. Notably, community-scale waste collection has proven effective at creating livelihoods. UNDP Guinea seeks to leverage these precedents and, with the help of Columbia's SUMA Program, to find new, innovative synergies between household waste reclamation and women and youth employment.

Project description and expected outcome/deliverables:
This student team will assist UNDP with the base knowledge for collaborations with governmental, civic and third party organizations to design programs for value creation from and management of solid waste in Conakry. Generally, the student team will make recommendations for capacity building through assessment of current municipal waste protocols; critical evaluation of past capacity-building efforts; distillation of effective methods to engage and empower women and youths in community benefaction; characterization and quantification of waste streams; compilation of best practices along the value chain of waste management; and, most importantly, development of a range of recommendations for process transformation that are applicable specifically in Guinea.

The team will work directly with the UNDP Guinea staff, with the support of UNDP Country Director Mr. Lionel Laurens. Mr. Ousmane Bocoum, who was a collaborator on the initial SUMA-UNDP Guinea study, will be available via Skype for the project kick-off and final briefing, as well as for weekly/biweekly discussions of progress. UNDP Guinea will provide existing data on Conakry (infrastructure, population, consumer habits, waste collection, environmental status etc.).

Overview of Potential Project Outputs:
- Compilation of model-based and on-the-ground methodologies for tracking solid waste in Conakry;
- Assessment of waste origins and type, based upon existing information, as well as recommendations for methods to be applied to future tracking;
- Case studies and best practices for management of and value creation from solid waste in comparable contexts to Conakry;
- Case studies for small scale entrepreneur involvement in waste collection and waste-to-goods regimes in comparable contexts;
- Identification of prospective products and production modalities matched to Guinea's women and youth workforce;
- Identification of and guidelines for assessment potential environmental and public health risks stemming from inadequate urban solid waste management in contexts comparable to Conakry;
- Recommendations for innovations in waste collection regimes for future study;
- Assessment of the city/country's capacity to realize recommendations, and of likely capacity-building measures.

References: https://www.cordaid.org/en/news/cleaning-conakry/; https://www.spring-nutrition.org/publications/reports/guinea-nutrition-assessment; http://siteresources.worldbank.org/INTUSWM/Resources/KouyateEng.pdf; http://habitat-worldmap.org/en/pais/africa/guinea-conakry-2/; https://www.cambridge.org/core/journals/journal-of-modern-african-studies/article/disorderly-dakar-the-cultural-politics-of-household-waste-in-senegals-capital-city/B9C93BDF8531ABDA353081633293AA72