



NDU Sustainability Task Force

Yearly Progress Report 2017-2018

Table of Contents

I. Summary.....	4
II. ESTF Formation.....	5
III. Working Groups.....	5
WG I – Waste Management	6
WG II & WG IV – Water Conservation & Land Use and Ecosystems	7
WG III – Carbon Footprint Reduction	7
WG V – Sustainable Procurement	9
WG VI – Annual Conference	9
WG VII – Monitoring and Reporting.....	9
IV. Achievements	10
1. Partnerships.....	10
2. Waste Management Campaign	10
3. Climate Action Plan.....	12
4. National and International Recognitions.....	13
5. Meetings and Trainings	14
6. Data Collection:	14
V. SDG linked Initiatives	15
APPENDIX 1: SIGNED MEMORANDUM.....	26
APPENDIX 2: WASTE MANAGEMENT	27
APPENDIX 2.A: ORGANIC WASTE TREATMENT.....	27
APPENDIX 2.B: HANDLING & STORAGE OF HAZARDOUS WASTE.....	27
APPENDIX 2.C: INCINERATION OF BIOHAZARDOUS WASTE.....	28
APPENDIX 2.D: ON-CAMPUS WASTEWATER TREATMENT PLANT.....	28
APPENDIX 3: WATER CONSERVATION & LAND USE AND ECOSYSTEMS.....	29
APPENDIX 3.A: WATER CONSERVATION IMPLEMENTATION SITES.....	29
APPENDIX 3.B: NDU WASTEWATER TREATMENT PLAN	30
APPENDIX 3.C: WATER EFFICIENT APPLIANCES.....	31
APPENDIX 4: CARBON FOOTPRINT REDUCTION.....	32
APPENDIX 4.A: SMART BUILDINGS IMPLEMENTATION	32
APPENDIX 4.B: GREEN BUILDINGS IMPLEMENTATION	32
APPENDIX 4.C: ELECTRICITY USAGE PER YEAR	33
APPENDIX 4.D: TOTAL CARBON FOOTPRINT	33

APPENDIX 4.E: RENEWABLE ENERGY SOURCES	34
APPENDIX 5: PEDESTRIAN PATH.....	35
APPENDIX 6: VISUALS	36
APPENDIX 7:.....	42
APPENDIX 7.A: STUDENT PRESENTATION: SELECTED SLIDES.....	42
APPENDIX 7.B: FOLLOW UP STUDENT BOOTH	44
APPENDIX 8: INVOLVING STUDENTS IN WASTE CHARACTERIZATION	45
APPENDIX 9: QUANTITATIVE OUTCOME FOLLOWING THE CAMPAIGN.....	49
APPENDIX 10: SUMMARY OF NDU CLIMATE ACTIONS 2018-2019	51
APPENDIX 11: TRAINING SESSION - CLEANING AND CATERING SERVICES.....	53
APPENDIX 12: DATA COLLECTION TABLE	55

I. Summary

NDU started with the environmental initiatives years ago across its 3 campuses, these initiatives should become coordinated and serve one goal; the environmental sustainability plan. Accordingly, NDU “Environmental Sustainability Task Force” was announced and chaired by President Fr. Pierre Najem. The NDU Environmental Sustainability Task Force (ESTF) was established at the beginning of the academic year 2017-2018. A first progress report was submitted at the end of the Fall 2017 semester, covering three main achievements: (1) the completion of the NDU Environmental Sustainability Action Plan; (2) the “Toward No-Waste” sorting campaign; and (3) the first sustainability conference, in collaboration with Benedict XVI chair, titled “Our common home: towards a green and clean campus”. Three MOUs were signed for partnership with L’Ecoute Association, Beeatouna and Compost Baladi. The full report is available

at: <http://www.ndu.edu.lb/Library/Assets/Micro/Files/Sustainability/Progress%20Report%20-%20Fall%202017.pdf>

Starting Spring 2018, a new “Working Groups” structure was established. The main activities achieved in Spring and Fall 2018 are briefly listed below:

1. Establishing seven Working Groups (WG), addressing each focus areas of NDU action plan:

- WG I – Waste Management
- WG II – Water Conservation
- WG III – Carbon Reduction
- WG IV – Land Use and Ecosystems
- WG V – Sustainable Procurement
- WG VI – Annual Conference
- WG VII – Monitoring and Reporting

2. Monitoring and data collection:

The efficiency of the waste sorting initiative was monitored through a two-week data collection campaign. The results are as follows:

- 51% recovery of plastic bottles (280 kg per month)
- 57% recovery of cans (45 kg per month)
- 1 ton of paper sent for recycling every month
- 0.5 – 1 ton of landscaping waste sent for composting every month
- NDU general waste is composed of 43% organic material, 32% plastic, 12% carton, 9% glass and 3% aluminum

[The results report is attached](#)

3. UNDP Lebanon Climate Act championship:

NDU was awarded the Lebanon Climate Act championship for year 2018, by UNDP and Green Minds. A climate action plan was submitted that covers key initiatives in energy, transportation, waste and water, with the aim of reducing the carbon footprint of NDU. The Climate action plan is available

at: <http://www.ndu.edu.lb/Library/Assets/Micro/Files/Sustainability/Climate%20Actions%202018-2019.pdf>

4. UNGC SDG Academia Award:

NDU received the United Nations Global Compact SDG Milestones Award for the Academia category for demonstrating its dedication and outstanding efforts toward the UN’s 17 Sustainable Development Goals through diversified initiatives and projects.

5. UI-Green Metric World University Ranking:

NDU submitted an application to UI-Green Metric World University Ranking on sustainability, administered by University of Indonesia (UI). The ranking process relies on six sustainability areas: setting and infrastructure, energy and climate change, waste, water, transportation, education and research. NDU scored

6. USAID funding of student projects, under Lebanon Water Project:

Six (out of seven) student proposals were selected for funding (with a total of \$38,000) by the USAID Lebanon Water Project. The competition was organized by the office of Research and Graduate Studies in collaboration with ESTF.

II. ESTF Formation

The university-wide task force committee will support all 3 campuses. Its main mandate is to finalize NDU's environmental sustainability plan (in line with the Strategic Plan section 5.6.8 of Goal V), to monitor, review and evaluate any existing environmental initiative, be it academic or non-academic, to facilitate the creation of synchronized efforts towards the mentioned plan, to lead the way and support all entities as need arises. Signed Memorandum is provided in **Appendix 1**.

The Task Force members are as follows:

Technical sub-committee:

- Dr. Sophia Ghanimeh (co-chair for technical matters) - Associate Professor, FE, Civil and Environmental Engineering
- Dr. Pauline Aad - Assistant Professor, FNAS, Sciences
- Mr. Omar Sakr - Lecturer, FBAE, Hospitality and Tourism Management
- Mr. Sayed Ghossain - Director, Office of Campus Services
- Mr. Salim Iskandar - Director, Office of Physical Plant

Outreach sub-committee:

- Mrs. Emma Shaffu Chacar (co-chair for outreach matters) - Director, Office of Communications
- Mrs. Joyce Menassa - AVP for Academic Support, Senior Lecturer, Office of Academic Affairs. FBAE, Management and Marketing
- Mr. Andre Fahed – Creative Director, Office of Communications
- Ms. Nesrine Sfeir – Assistant to the President for University Advancement
- Dr. Lara Khabbaz – Director, Office of Marketing
- Dr. Charbel Zgheib - Dean of Students, Office of Student Affairs; Associate Professor

III. Working Groups

The working groups at NDU aim to raise sustainability awareness within the University and beyond the University gates, and work closely with a host of partners as well as the larger community to ensure that building a better tomorrow goes beyond ink on paper. In addition, the groups were formed with the purpose of designing and implementing initiatives related to the focus areas of NDU Environmental Sustainability Action Plan

WG I – Waste Management

Members

Sophia Ghanimeh (Lead); Andre Fahed; Karen Abou Jawdeh; Rita el Aam; Leila Khalaf Keirouz; Patricia Eid

This working group leads NDU's initiatives toward achieving the goals set under Focus Area I (Waste Management) of NDU Environmental Sustainability Action Plan:

1. Sorting of waste:

NDU recycling program is extensive. It includes sorting and handling of general waste, hazardous waste, and e-waste products with the aim of redirecting the University toward the long-term "no-waste" path. In order to ensure high recovery efficiency, a campus-wide campaign was launched during Fall 2017.

An extensive plan is deployed at NDU for recovery of recyclables. The clean MRF approach is adopted with a twin-bin system. Inorganic materials are collected in blue bins/bags. They are further sorted on-campus, then stored for subsequent delivery to the collection company: ASSOCIATION L'ECOUTE (<http://lecouste-ls.org>). A Memorandum of Understanding is signed with BEEATOONA (www.beeatoona.org) to collect e-waste separately.

Also, a conference was held in collaboration with Benedict XVI endowed chair at NDU covering several aspects of environmental sustainability with emphasis on the engagement of students and faculty members in promoting environmentally sound behavior on campus.

2. Reduction of paper and plastic waste:

Several initiatives and programs were designed to reduce NDU's dependence on plastic & paper material. In cafeterias, where plastic is often contaminated with food, and not easy to sell to recycling industries, plastic is being gradually replaced with biodegradable material (like carton, paper, biodegradable plastic bags) for a lower end-of-life impact.

3. Organic waste:

NDU has three cafeterias, all of which receive pre-processed and cooked food from the main catering company (outside NDU). Only sandwiches are prepared on-campus. As result, the generation of food waste is negligible (< 10 kg per day). The only considerable biodegradable waste is the landscaping waste, which is shredded on-campus and transported to the premises of Compost Baladi (www.compostbaladi.com) according to a Memorandum of Understanding for composting with other types of biodegradable material. **(Appendix 2.A)**

4. Chemical waste:

All chemical hazardous wastes are collected, labeled and stored in a dedicated area for subsequent collection and shipment, following the guidelines of the Ministry of Environment in Lebanon to meet the requirements of Basel Convention **(Appendix 2.B)**. All acids and bases are neutralized before disposal in sewage. All biohazardous wastes are incinerated using an advanced dual-chamber incinerator. **(Appendix 2.C)**

5. Wastewater

NDU has a full-fledge treatment plant that includes: primary sedimentation, secondary biological treatment, and chlorination. The effluent is discharged into an irrigation channel. In addition, the Working Group on Water Conservation is currently undertaking systematic testing of the effluent with the purpose of investigating the feasibility of upgrading the effluent quality for more valuable reuse applications. **(Appendix 2.D)**

WG II & WG IV – Water Conservation & Land Use and Ecosystems

WG II Members

Pauline Aad (Lead); Maya Atieh; Jacques Harb

WG IV Members

Maher Ghostine (Lead); Tanos Hage; Carole Assaf

These working groups work hand-in-hand leading NDU's initiatives toward achieving the goals set under Focus Area II (Water Conservation) and Focus Area IV (Land use and ecosystem preservation) of NDU Environmental Sustainability Action Plan.

1. Water Conservation Program Implementation Sites

The Working Group on Water Conservation (WG III), under NDU Environmental Sustainability Task Force, has been formed in May 2018 in order to develop a water conservation program. WG III is in the process of establishing baseline consumption and defining hotspots. Rainwater harvesting from rooftops is under investigation, considering the suitability of the rooftops – in their current condition. (**Appendix 3.A**)

2. Water Recycling Program

NDU has, since its inception, constructed a complete wastewater treatment plant, with secondary stage treatment and a final chlorination phase seen in **Appendix 3.B**. The sedimentation stages reduce the suspended solids, the secondary treatment (aeration tank) reduces the organic content and chlorination disinfects the water. As a result, the effluent can be considered adequate for irrigation of forests and trees. All generated wastewater is treated on-campus and the effluent is discharged into an irrigation channel that feeds into Nahr-El-Kalb valley. Further up-cycling is under consideration.

3. Water Efficient Appliances Usage

NDU has adopted water efficient hand washing taps (automated faucets) and water saving flushing systems as seen in **Appendix 3.C** in most (>70%) of its bathrooms, break areas, and kitchens. The few (<30%) remaining conventional systems are being replaced progressively.

WG III – Carbon Footprint Reduction

This working group is split into two of the following sections with initiatives toward achieving the goals set under Focus Area III (Carbon Footprint Reduction) of the NDU Environmental Sustainability Action Plan.

1. Energy

Members

Salim Iskandar (Lead); Ghassan Kraidy; Fakherdine Keyrouz; Mariette Hazoury

a. Smart Building Implementation

As provided in **Appendix 4.A** smart buildings are employed in the NDU Campus

b. Green Buildings Implementation

Elements of green building implementation are reflected in all construction & renovation policies. Full natural day lighting, natural ventilation and low energy dissipation glass and double glazing are implemented on campus as shown in **Appendix 4.B**.

c. Energy Efficient Appliances

The following are examples of phasing out low-efficiency appliances and shifting to energy-efficient technologies: LED light bulbs, ENERGY STAR certified equipment, LED TV Screens, and Variable Refrigerant Flow (VRF) Systems.

The Electricity usage per year (in kilo watt hour) is provided in **Appendix 4.C**, the total electricity consumption during the year 2017 = 4,630,185 + 1,589,804 = 6,219,989 kWh.

d. Total Carbon Footprint

The Total (direct) carbon footprint (CO₂ emission in the last 12 months, in metric tons) is 5421 metric ton of CO₂ equivalent per year, shown in **Appendix 4.D**

In order to include all carbon sources, considering the specificities of energy generation in Lebanon (including a combination of national and local energy generation with different efficiencies and emission rates), carbon footprint calculations were performed following the guidelines and carbon calculation tool of the Ministry of Environment,

Lebanon: <http://climatechange.moe.gov.lb/youandcc>

The results were officially reported to the Ministry of Environment through Lebanon Climate Act, in September 2018: <https://www.lebanonclimateact.com>

e. Renewable Energy Sources

All dormitory buildings at NDU are equipped with solar water heating systems (**Appendix 4.E**)
The equivalent total heat energy generation is 245,191 kWh per year.

2. Transportation

Members

Dima Jawad (Lead); Elie Najem; (FAAD Faculty Member); (Unknown); (Unknown)

a. Pedestrian Path Policy on NDU Campus

Safe and convenient pedestrian paths and area are provided all over NDU campus. All areas are equipped with disabled-friendly access either by ramps or special elevators where needed.

Images provided in **Appendix 5** show protected pedestrian path, pedestrian crossing, wheelchair access ramps in different areas around the campus.

b. Shuttle Service

A shuttle service is provided at NDU campus on a daily basis at fixed times transporting students and staff to/from the NDU campus. The shuttle times at the main gates are the following:

Monday, Wednesday, Friday: 7:30 AM - 8:30 AM - 9:30 AM - 10:30 AM - 12:00 PM - 14:00 PM - 15:00 PM

Tuesday, Thursday: 7:30 AM - 9:00 AM - 10:30 AM - 12:45 PM - 14:45 PM

WG V – Sustainable Procurement

Members

Sayed Ghossain (Lead); Edy Lteif; Nada Maalouf

This working group leads NDU's initiatives toward achieving the goals set under Focus Area V (Sustainable Procurement) of NDU Environmental Sustainability Action Plan:

- Developing a sustainable supply chain system and establishing a management system
- Consulting with and assessing NDU suppliers and help them meet NDU sustainability goals
- Favoring products with lower life cycle impacts
- Favoring local sources and services, wherever possible, to encourage local business and cut down on the need for transportation and distribution
- Buying bulk to reduce the amount of packaging

WG VI – Annual Conference

Members

Emma Chacar (Lead); Majed Bou Hadir; Omar Sakr; Sophia Ghanimeh; Pauline Aad; Lara Khabbaz

This working group prepares for the yearly conference of NDU Environmental Sustainability Task Force. It is an essential component of the communication and outreach activities of the Task Force. Last year's conference, in the fall of 2017-2018, was held in collaboration with Benedict XVI endowed chair at NDU covering several aspects of environmental sustainability with emphasis on the engagement of students and faculty members in promoting environmentally sound behavior on campus (<http://www.ndu.edu.lb/news-and-events/news/our-common-home-201>)

Prof. Victoria Charles, from Santa Monica College, was invited as a keynote speaker. A set of 4 short videos were created and posted on the University's Facebook page:

(<https://www.facebook.com/NDULEbanon/videos/vb.11843824738/10156095126534739/?type=2&theater>)

The conference was reported in the media, including the prestigious French Newspaper, L'Orient Le Jour: <https://www.lorientlejour.com/article/1083375/la-ndu-renouvelle-son-engagement-en-faveur-de-lenvironnement-et-du-developpement-durable.html>

WG VII – Monitoring and Reporting

Members

Lara Khabbaz (Lead); Re-mi Hage; Doris Jaalouk; Theresa Hajjar; Maria Tawk Massaad

This working group assists the other WGs in assessing their performance by monitoring KPIs, analyzing the data and reviewing the adopted methods. It also compiles the data and develops semester and annual reports. It works toward achieving the goals set under Focus Area VII (Monitoring and Review) of NDU Environmental Sustainability Action Plan:

- Defining Key Performance Indicators and maintaining an up-to-date database.
- Submitting bi-annual reports to the President of NDU

- Publishing an annual Environmental Sustainability Report online showing our objectives, methods, and progress
- Benchmarking NDU's performance against peer institutions
- Reviewing the action plan every two years and incorporating emerging challenges and opportunities

IV. Achievements

1. Partnerships

NDU initiated partnerships with Non-Governmental Organizations (NGOs) and environmental companies, including:

- L'Ecoute Association to collect sorted recyclables;
- Beeatuna to collect and ship electronic waste;
- Compost Baladi SAL to receive and compost landscaping waste.

2. Waste Management Campaign

Throughout the academic year, a campaign was designed and implemented by NDU Environmental Sustainability Task Force. NDU began initiating sustainability projects in 2013 when a team of internal experts worked, under the European Union's TEMPUS program, on a self-study to evaluate and report all potential areas for development and growth in that direction. Further, a new Presidential Environmental Sustainability Task Force (ESTF) was created to develop an action plan and ensure that those sustainability projects were considered a top priority across all three of its campuses, i.e. Zouk Campus, North Lebanon Campus (NLC), and Shouf Campus (SC).

A waste management project is one of NDU's most recent initiatives, and it includes the sorting and handling of general waste, hazardous waste, and e-waste products with the aim of redirecting the University toward the long-term "no-waste" path. In order to ensure high recovery efficiency, a campus-wide campaign was launched during fall 2017. This news was shared with the internal and external community via the website and the social media platforms (<http://www.ndu.edu.lb/news-and-events/news/ndu-supports-ungc-17-sdg>).

Recently, local communities, NGOs, and institutions have begun initiating many waste-sorting campaigns across the country. These waste management campaigns namely promoted the negative environmental impacts to create behavioral change; unfortunately however, following many trials, this approach failed to resonate with the majority of the audience. The campaign launched at NDU however aimed to tackle things differently and to have a positive twist by focusing on positive social impacts of adequate on-campus waste-sorting. With this in mind, the campaign was titled, "Sort Properly – For All The Right Causes," and was developed in partnership with three local NGOs: L'Ecoute, Beeatuna, and Compost Baladi, which handle different types of waste management in Lebanon.

The objective behind the campaign was two-fold: to tactically explain "how" one should sort on-campus and to spread awareness about the "social benefits" of sorting by highlighting the good causes that would be supported in the process. Those include buying wheelchairs, respiratory assist devices, and hearing aid kits for the physically challenged through the selling of all sorted

material. The target audience for this campaign includes the internal community (students, faculty and staff members) along with the external audience. Different initiatives were done and phased out as explained below in order to reach out to each segment within the target audience. The social impact behind this campaign includes encouraging internal teamwork that results in a positive common goal and making a positive difference on the environment, which in turn results in a humanitarian benefit, as previously explained.

In order to have the campaign spread and reinforced periodically throughout the academic year, it was rolled out in phases as follows:

Phase 1 (Fall 2017-2018) was the visual creative campaign that included the following items:

- Drop-down banners hung around Faculties and digital versions used on internal LED screens (**Appendix 6 – Visuals A, B, C, D**);
- Stickers used on paper bins used as visual aids to assist in paper sorting (**Appendix 6 – Visual E**).
- Inside classroom activation: stickers of bins that say “moved out” and “sort properly” to encourage students to dispose of the classroom waste in the sorting bins (**Appendix 6 – Visual F**).
- Visual aids placed on top of sorting bins (**Appendix 6 – Visual G**)

From an academic stance, a conference was held in collaboration with Benedict XVI endowed chair at NDU covering several aspects of environmental sustainability with emphasis on the engagement of students and faculty members in promoting environmentally sound behavior on campus (<http://www.ndu.edu.lb/news-and-events/events/announcements/-sustaining-a-green-and-clean-campus>). Students were also invited to submit their projects in environmental sustainability to be part of the conference: <http://www.ndu.edu.lb/news-and-events/news/the-benedict-xvi-chair-call-for-environmental-sustainability>. Prof. Victoria Charles, from Santa Monica College, was invited as a keynote speaker. A set of 4 short videos were created and posted on the University’s Facebook page:

(<https://www.facebook.com/NDULebanon/videos/vb.11843824738/10156095126534739/?type=2&theater>),

The conference was reported in the media, including the prestigious French Newspaper, L’Orient Le Jour: (<https://www.lorientlejour.com/article/1083375/la-ndu-renouvelle-son-engagement-en-faveur-de-lenvironnement-et-du-developpement-durable.html>).

In parallel, different e-mails were sent out to faculty, staff, and students—each containing details relevant to the particular audience segment.

Phase 2 (Early Spring 2018) moved into on-ground activations where different student focus groups were established to retrieve student insights about the efficiency and effectiveness of the Phase 1 of the campaign. A simple yet impactful PowerPoint presentation that answers these student concerns was created by ESTF. To deliver the presentation, the peer-education approach, known for its effectiveness, was adopted. Student volunteers were recruited and trained to deliver the presentation and spread more awareness about sorting properly and the causes behind them in the 50 most-populated classes (**Appendix 7.A**). Follow up student booths were set (**Appendix 7.B**) and reminder e-mails were also sent out to the community during this phase.

Phase 3 (late Spring 2018) initiates preliminary data collection to monitor the efficiency of the campaign and detect areas for potential improvement. The characterization of the “general waste” was performed, at the sorting point, by three groups of students (**Appendix 8**) and the quantity of recovered material was monitored over three weeks. The outcomes so far are very promising and are shown in **Appendix 9**. During the first six months of campaign implementation, about 3500 kg of landscaping waste was converted into organic (contaminant free) compost; and 6000 kg of paper, 1600 kg of plastic, and 300 kg of aluminum were sorted and delivered to L’Ecoute association. The income from selling the recovered material to the recycling industry was used to buy a Super Power hearing aid for Serge, an underprivileged Lebanese young man suffering from cerebral motor infirmity – in addition to the indirect contribution to the salary of L’Ecoute personnel, mostly consisting of physically challenged and unprivileged citizens.

Phase 4 (Fall 2018-2019 onward) will consist of a campaign relaunch every semester, mainly for newly-enrolled students by re-activating LED screen announcements and repeating student presentations (i.e. Phase 2) in highly populated sophomore classes. Also, it will include more on-ground activations, namely the creation of short videos that highlight again how sorting should be done and an activity in an open area to encourage students to sort in a creative, game-style way. In parallel, dedicated containers for e-waste and hazardous chemical waste (along with information stickers) have been designed and are being manufactured. They will be available in labs by the beginning of Fall 2018-2019. Procedures for incineration and disposal of biological wastes are currently being developed. Finally, a webpage for the ESTF is under construction (under NDU main website) to communicate the campaign outcomes and incentivize both internal and external audience. The webpage will be available before the beginning of Fall 2018-2019.

3. **Climate Action Plan**

NDU carbon footprint was calculated; using the model adopted by the Ministry of Environment, and was found to be about 1 Mg CO₂-eq per student. A Climate Action Plan, initiated by WG III, was developed to address opportunities of carbon emission reduction in the following areas: Energy, Transportation, Waste Management, Water Conservation, Land use & Ecosystems, Purchasing, Outreach, Monitoring & Review. The complete action plan is provided in **Appendix 10**.

4. **National and International Recognitions**

- **UNGC SDG Milestones Award**

NDU was presented with the award, during the “Multi-Stakeholder SDG Forum” held on October 18, 2018, in the Grand Serail, under the patronage of His Excellency Prime Minister-designate Saad Hariri and in the presence of H.R.H. Crown Princess Victoria of Sweden, Duchess of Västergötland, at the Grand Serail.

The event was organized to recognize and highlight the outstanding efforts of Lebanese businesses and organizations that have adopted and implemented the necessary actions toward the advancement of the 2030 agenda in Lebanon. This ceremony brought together members from the Lebanese network to highlight the most significant achievements of their companies, involving CSR initiatives and their advancements toward achieving the 17 SDGs, the 10 principles of the UNGC and the 2030 agenda.

For its part, NDU has demonstrated dedication toward the UN’s 17 Sustainable Development Goals through the initiatives and projects articulated around the 5P’s of development: People, Planet, Peace, Prosperity, and Partnership. Further details are provided in the following link:

<http://www.ndu.edu.lb/news-and-events/news/ndu-wins-sdg-milestones-award>

- **Global University Ranking**

NDU submitted an application to UI-Green Metric World University Ranking on sustainability, administered by University of Indonesia (UI). The ranking process relies on six sustainability areas: setting and infrastructure, energy and climate change, waste, water, transportation, education and research.

- **Climate Championship**

NDU was nominated Climate Champion for year 2018, by The Lebanon Climate Act, an initiative by the United Nations Development Program (UNDP), Lebanon National Bank, The Federation of the Chambers of Commerce in Lebanon, and Green Mind. The initiative aims at encouraging and recognizing private companies and institutions applying climate action plans. Further information is provided on the following links:

<http://www.ndu.edu.lb/news-and-events/news/ndu-joins-leading-climate-change-champions-2018>

<http://beirutenergyforum.com>

- **SAID Funding of Student Proposals**

Six (out of seven) student proposals were selected for funding (with a total of \$38,000) by the USAID Lebanon Water Project. The competition was organized by the office of Research and Graduate Studies in collaboration with ESTF.

5. **Meetings and Trainings**

- **Catering and Cleaning Services:**

Two yearly training sessions have been held for the catering and cleaning services to follow up on sorting activities and guidelines. Outcomes of the meeting included: (1) designating a color coding system for the trash generated at NDU where black is organic, yellow is paper and blue is all other, (2) a brief guiding table for collection of the waste. (**Appendix 11**)

- **Management of special wastes**

Workshops waste – Meetings were held with the Dean of FAAD to initiate a specific sorting project for their workshops and design rooms.

Electronic waste – A meeting was held with Dr. Fawzi Baroud and Mr. Ziad Azzi in order to assess the current practices in handling NDU's e-waste. Dr. Baroud's recommendations were taken into account in designing an e-waste collection scheme, to be adopted starting Spring 2019.

Hazardous waste – Inventory of chemical waste is being developed, while seeking an agreement with a private company to ship the waste according to the requirements of the Basel Convention.

6. **Data Collection:**

In late Spring 2018, preliminary data collection was initiated. The characterization of the "general waste" was performed, at the sorting point, by three groups of students the quantity of recovered material was monitored over two weeks. Pictures are provided and previously shown in Appendix 3.

During the first six months of campaign implementation, about 3500 kg of landscaping waste was converted into organic (contaminant free) compost; and 6000 kg of paper, 1600 kg of plastic, and 300 kg of aluminum were sorted and delivered to L'Ecoute Association. The income from selling the recovered material to the recycling industry was used to buy a Super Power hearing aid kit (\$750) for Serge, an underprivileged Lebanese young man suffering from cerebral motor infirmity. A summary of the data is provided in **Appendix 12**.

V. SDG linked Initiatives

Following are the SDG linked Initiated events divided by Event Title, Organizer, and Date:

SDG 1 - No poverty		
		
Donation Campaign (Old shoes, clothes, etc...)	Student Affairs Office The Department of Community Service and Awareness	Throughout the year
Bake sale fundraising event	Faculty of Natural and Health Sciences	November 7-9 2017 December 5-7 2017
Underprivileged children Christmas party (Gift Donation)	Campus Ministry	December 21, 2017
Help refugees and youth achieve potential through programs in education	FH/DPED	May 18, 2018
SDG 2 – Zero Hunger		
		
“Together Against Hunger” event and conference part of Zero Hunger Challenge	Faculty of Natural and Health Sciences Office of Student Affairs	November 8, 2017
SDG 3 - Good Health and Well-being		
		
Elderly Caregiving Conference	Faculty of Natural and Health Sciences	Throughout the year
World Mental Health Day	Faculty of Natural and Health Sciences Faculty of Humanities NDU Library	November 7-9 2017 December 5-7 2017
Counseling & Calorie Count Workshop	Faculty of Natural and Health Sciences	November 9, 2017

"Youth & Marijuana" awareness lecture	Faculty of Natural and Health Sciences Faculty of Humanities	November 23, 2017
Food, Nutrition, & Health building workshops	Faculty of Natural and Health Sciences	November 24, 2017 March 2, 2018
Nutrition Fair	Faculty of Natural and Health Sciences	April 13, 2018
Family Violence lecture	Faculty of Natural and Health Sciences	October 16, 2017
Drug Addiction Conference	Faculty of Natural and Health Sciences Office of Student Affairs Faculty of Law and Political Science	December 12, 2017
Attending & assisting at the Elderly Home	Campus Ministry Pastoral	February 9, 2018
Vital Food Safety and Environmental Toxins Conference	Faculty of Natural and Health Sciences	May 22, 2017
Food safety and new food product development workshop at Rayak Air Base	Faculty of Natural and Health Sciences	July 3, 2018
Seminar on Sexually Transmitted Diseases (STDs)	Faculty of Natural and Health Sciences	April 26, 2018
Seminar on maintaining food safety in hospitals	Faculty of Natural and Health Sciences	June 25, 2018
Launching the Holistic Presidency Initiative to prevent and mitigate risks related to Internet and technology addiction.	Office of the President	September 8, 2018
NDU hosts panel to discuss online game addiction.	Faculty of Natural and Applied Sciences	November 19, 2018

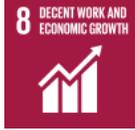
SDG 4 - Quality Education



NECHE Accreditation	Office of the President	September 27, 2018
ABET: Accreditation Board for Engineering and Technology, Inc.	Faculty of Engineering	August 22, 2016
ABET: Accreditation Board for Engineering and Technology, Inc.	Faculty of Natural and Applied Sciences	August 29, 2018
CILECT: Centre International de Liaison des Ecoles de Cinéma et de Télévision	Faculty of Humanities	March 1, 2018
ACCA: Association of Chartered Certified Accountants	Faculty of Business Administration and Economics	April 13, 2018
Introduce Open Educational Resources (OER) for teaching & research	Office of Academic Affairs	
The Father Walid Moussa Award in Civic Engagement	Lebanon Dialogue Initiative	September 15, 2017
SAIL Exchange Program	Faculty of Humanities / Benedict XVI Chair	September 24, 2017
FE Students Win "Charles T. Main Leadership Award"	Faculty of Engineering	September 29, 2017
Highest Number of Accepted Funding Proposals at National Council for Scientific Research of Lebanon (CNRS-L)		December 6, 2017
NDU Exchange Student in University College Copenhagen (UCC) in Denmark	Faculty of Humanities	January 11, 2018
NDU Alumnus wins "Christopher Andrew-Michael Handel Prize" for best article		January 9, 2018
"YES NDU" : Entrepreneurship competition for high school students	Faculty of Business Administration and Economics	January 28, 2018

NDU student selected as part of the Global UGRAD program to study in the U.S. for one semester	Notre Dame University - Louaize Model United Nations (NDU - MUN)	June 28, 2018
The graduate division became the first Project Management Institute Registered Education Provider (PMI R.E.P.) in Lebanon, offering courses at the graduate level	Faculty of Business Administration and Economics	May 2, 2018
NDU students participated in a Confucius Institute-organized Summer Camp in China this month.		July 6 till July 20, 2018
FBAE NDU winning students for the AUF-organized "Lebanese Student Entrepreneurship" project to spend three weeks in a PEPITE centre (pôles étudiants pour l'innovation, le transfert et l'entrepreneuriat) in France to develop their entrepreneurship skills	Faculty of Business Administration and Economics	June 2, 2018
Media Studies Forum (MSF18) - Countering Digital Extremism Through Activism	Faculty of Humanities	April 23, 2018
Alumni Briefcase Event was held. This event aims at connecting students and alumni with talented NDU alumni	Office of Development and Alumni Affairs	April 27, 2018
"Computer Science Summer Camp" for school students	Faculty of Natural and Applied Sciences	July 20, 2018
15 selected architecture students took part of the "Bauhaus 100" study trip to Germany, as part of the traveling studio tradition at the department – FAAD	The Ramez G. Chagoury Faculty of Architecture, Arts & Design	August 29, 2018
NDU students participated in an Erasmus+ exchange program at Technische Universität Berlin, Germany		December 21, 2018
Following are the winning Competition/awards won by NDU Students/Alumni:		
1 st prize "Al-Chadurji Award for Lebanese Students of Architecture" Winner of the Byblos Bank Award for Photography 2017 "IBDAA 2018" for a project that creates a sustainable solution	The Ramez G. Chagoury Faculty of Architecture, Arts & Design	

THE KPMG Lebanon Case Competition	Faculty of Business Administration and Economics	
National Rounds of Philip C. Jessup International Law Moot Court Competition	Faculty of Law and Political Science	
"Christopher Andrew-Michael Handel Prize" for best article		
Rhodes works Design Studio (Rhodes works) competition for best proposal in response to "Resolute Arch," the new sculpture by studio principal Richard Rhodes		
"Alfa-Ericsson IoT Awards 2018		
Agence Universitaire de la Francophonie (AUF) for Lebanese Student Entrepreneurship Project		
Popsicle Stick Bridge Competition	Faculty of Engineering	
2018 National ACI Eco-Concrete Student Competition organized by the Lebanese Chapter of the American Concrete Institute (ACI), Advanced Construction Technology Services (ACTS), and the Lebanese Concrete Society.		
SDG 5 - Gender Equality		
Gender Based Violence Studies Workshop	Faculty of Law and Political Science	September 29, 2017
Child Bride Campaign	Faculty of Humanities	October 11, 2017
Launching a Code of Conduct (CoC) and a pioneer toolkit regarding protection and mitigation of GBV against women and girls	Faculty of Law and Political Science	June 2, 2018
Gender Based Violence (GBV) course launched at NDU	Faculty of Law and Political Science	September 29, 2017
Campaign against extremism "Box Out Extremism" - FH/DMS	Faculty of Humanities	November 10, 2017

SDG 6 - Clean Water and Sanitation		
Environmental Sustainability Plan: NDU Sustainability Task Force Water Conservation: <ul style="list-style-type: none"> Evaluating water usage on campuses Reducing water consumption Reducing landscaping water use Diversifying the sources of fresh water Waste Management: <ul style="list-style-type: none"> Developing the scope and approaches for a comprehensive, university-wide, life-cycle Deviating the waste from landfills Developing a waste reduction policy Processing the biodegradable waste Promoting a sustainable food system 		Faculty of Engineering
SDG 7 - Affordable and Clean Energy		
NDU hosted two emerging start-ups, Lebanon Buses and Smart Bus Stops, that work on the Bus Map Project, a grassroots initiative to fix Public Transport in Lebanon	The Ramez G. Chagoury Faculty of Architecture, Arts & Design	February 5, 2018
Solar Power Heating on NDU Campus	NDU Sustainability Task Force	
SDG 8 - Decent Work and Economic Growth		
Winning KPMG Leb. case business strategy competition	Faculty of Business Administration and Economics	October 11, 2017
NDU Model United Nations (MUN) is a replication of the United Nations in an academic setting, which permits student to debate issues at the forefront of international relations. It has organized and participated in many International and local activities.		
Signed (MOU)s with companies for recruitment purposes: <ul style="list-style-type: none"> ITG Holding (November 28, 2018) KPMG (March 9, 2018) Lebanese Solar Energy Society (October 25, 2018) 		

SDG 9 - Industry, Innovation, and Infrastructure		
		
Street Renovation Architectural Competition	The Ramez G. Chagoury Faculty of Architecture, Arts & Design	October 31, 2017
Students Partake in Restoration of Monuments	The Ramez G. Chagoury Faculty of Architecture, Arts & Design	October 24, 2017
Passageway Shelter Competition for Students' Parking	The Ramez G. Chagoury Faculty of Architecture, Arts & Design	October 25, 2017
Students Win Saida Festival Kiosk Design Competition	The Ramez G. Chagoury Faculty of Architecture, Arts & Design	October 30, 2017
SDG 10 - Reduced Inequalities		
		
Counseling & Psychotherapy Training session to help faculty members identify students with learning difficulties and to provide instructors with the necessary tools to support those students, depending on their learning difficulties	The Office of Students Affairs	September 18, 2017
SDG 11 - Sustainable Cities and Communities		
		
Sustaining a Green and "Clean" Campus Conference	President's Office	November 2017
NDU hosted two emerging start-ups, Lebanon Buses and Smart Bus Stops, that work on the Bus Map Project, a grassroots initiative to fix Public Transport in Lebanon	The Ramez G. Chagoury Faculty of Architecture, Arts & Design	February 5, 2018
Initiative to renovate the Phoenicia Hotel Canteen	The Ramez G. Chagoury Faculty of Architecture, Arts & Design	April 10, 2018

SDG 12 - Responsible Consumption and Production



<p>Environmental Sustainability Plan: Sustainable Procurement:</p> <ul style="list-style-type: none"> • Developing a sustainable supply chain system and establishing a management system • Consulting with and assessing NDU suppliers to meet NDU sustainability goals • Favoring products with lower life cycle impacts • Favoring local sources and services to encourage local business and decrease need for transportation and distribution. • Buying bulk to reduce the amount of packaging. <p>Waste Management:</p> <ul style="list-style-type: none"> • Developing the scope and approaches for a comprehensive, university-wide, life-cycle • Deviating the waste from landfills • Developing a waste reduction policy • Processing the biodegradable waste • Promoting a sustainable food system 	<p>Faculty of Engineering</p>	
<p>NDU hosted two emerging start-ups, Lebanon Buses and Smart Bus Stops, that work on the Bus Map Project, a grassroots initiative to fix Public Transport in Lebanon – RC-FAAD Sustaining a Green and “Clean” Campus Conference</p>	<p>The Ramez G. Chagoury Faculty of Architecture, Arts & Design</p>	<p>February 5, 2018</p>
<p>Four NDU Projects selected for LIRA Industrial Oriented Project Funding – FE Projects were: Asthma Device Calibration, Shotgun Cartilage Recycling Machine- CARL, Vertical Axis Wind Turbine- VAWT, and Internet of Trees- IO Tree</p>	<p>Faculty of Engineering</p>	<p>June 27, 2018</p>
<p>Christmas Fiesta: (Upcycling) Christmas Tree Competition</p>		
<p>International Solid Waste Association Seminar about Solid Waste Management</p>	<p>Faculty of Engineering</p>	<p>May 2, 2018</p>

SDG 13 - Climate Action		
Environmental Sustainability Plan: <ul style="list-style-type: none"> • Carbon Footprint Reduction: • Establishing a monitoring system for emissions of Greenhouse Gases • Reducing energy requirements • Improving energy conservation • Switching to cleaner renewable types of energy 		Faculty of Engineering
Organized oil and natural gas (ONG) event, addressing technical, operational, environmental, and public policy issues to raise awareness	Department of Civil and Environmental Engineering (DCEE) Department of Government and International Relations (GIR)	May 10, 2018
SDG 15 - Life on Land		
Environmental Sustainability Plan: <ul style="list-style-type: none"> • Land use and ecosystem preservation: • Increasing green areas • Adopting an Integrated Pest Management approach • Optimizing water consumption • Improving resource conservation 		Faculty of Engineering
Saving the Planet One Cedar Tree at a	Faculty of Natural and Applied Sciences	November 11, 2017
Seminar on Agriculture in Hasbaya	Faculty of Natural and Health Sciences	January 23, 2018
Sustaining a Green and “Clean” Campus: Conference on sustainable development	President’s Office	November 2, 2017
An NDU-supported invitation to clean up our beaches for the “National Beach Cleanup” campaign planned by Operation Big Blue Association (OBBA)	The Office of Student Affairs	April 29, 2018

SDG 16 - Peace, Justice, and Strong Institutions



Human Rights Trivia Competition	Faculty of Law and Political Science	January 19, 2018
Monroe Price Media Law Moot Court Competition + Oxford University (Freedom of speech)	Faculty of Law and Political Science	January 30, 2018
Young LeaderShe Program	The Office of Student Affairs	February 6, 2018
Gender Based Violence Studies Workshop	Faculty of Law and Political Science	September 29, 2017
FLPS and German NGOs Pilot Service Learning	Faculty of Law and Political Science	December 5, 2017
A Media Perspective on how to vote for the Elections 2018 from a Media Perspective	Faculty of Humanities	March 22, 2018
Youth and Elections in Lebanon 2018	Faculty of Law and Political Science	February 26, 2018
Introducing the US Electoral System - Primaries, Midterm Elections, Out-Of-Country Voting debate session	Faculty of Law and Political Science	September 5, 2018
Launching the Holistic Presidency Initiative to prevent and mitigate risks related to Internet and technology addiction. The first-of-its-kind Lebanese Institute for Internet and Technology Addiction (INTA) seeks to continue in its noble quest to research, raise awareness, and prevent Internet and technology addiction.	Office of the President	September 8, 2018
Lecture on the evolution of evidence usage in the international criminal courts given by the General Prosecutor of the Special Tribunal for Lebanon (STL), Norman Farrell. The lecture was delivered to students participating in the Inter-University Programme on International Criminal Law and Procedure (IUP-ICLP).	Faculty of Law and Political Science	December 12, 2018

SDG 17 - Partnerships for the Goals



Signed (MOU)s with companies for recruitment purposes:

- ITG Holding (November 28, 2018)
- KPMG (March 9, 2018)
- Lebanese Solar Energy Society (October 25, 2018)
- BMW (December 14, 2018)

Signed (MOU)s with the following institutions:

- Concordia University in Canada “Agreement of Academic Cooperation in Education and Research.”
- The ICT Institut Catholique de Toulouse,
- The University of Dayton (UD), Ohio - USA
- The McDougall School Of Petroleum Engineering, University Of Tulsa (TU) – USA,
- Lebanese American University MoU on educational, training, and research cooperation.
- Eastern Mediterranean University, North Cyprus
- The American Institute of Architects
- Ovidius University Of Constanta, Romania
- University of Nottingham Ningbo China
- The University of Illinois

Signed Memorandum of Understanding (MOU)s with NGOs:

- Association l'Ecoute
- Beeatuna - بيتتنا
- Compost Baladi
- Oum El Nour - جمعية أمّ النور
- Teach for Lebanon

Participation (IAA) Apprentice Conference in Dubai

European Union’s Erasmus and funded exchange program to support education, training, youth, and sport, between NDU and UOC (Ovidius University of Constanta)

Full departmental membership in the American Political Science Association (APSA)

The Faculty of Law and Political Science

Collaboration between MTV Lebanon channel and NDU to shed light on Lebanon's current entrepreneurial ecosystem.

The Notre Dame University-Louaize International Film Festival (NDUIFF) became an official member of the Belt and Road (B&R) Film Festival Alliance

APPENDIX 1: SIGNED MEMORANDUM



OFFICE OF THE
PRESIDENT

MEMORANDUM



To : All Deans and Heads of Departments
From : Fr. Pierre Najem, President
Date : October 12, 2017
Subject : Announcement of Environmental Sustainability Task Force
Ref : Pr.O/013/F17

"We are all responsible for the protection and care of the Environment. This responsibility knows no boundaries" *Pope Emeritus Benedict XVI*.

Indeed we are all responsible, and change starts from within. These words of Pope Benedict XVI were re-emphasized by Pope Francis who calls upon all of us to drive change and safeguard our "Common Home" in his encyclical on the environment *Laudato Si*.

I was committed as Vice President for Administration and am still committed, today, as President to this. NDU has started years ago environmental initiatives across its 3 campuses, these initiatives should become coordinated and serve one goal: the environmental sustainability action plan. For that, I am announcing the creation of the University "**Environmental Sustainability Task Force**" that I will chair personally with the support of professional and knowledgeable staff and faculty members who are all passionate about the Environment.

This University-wide Task Force committee will support all 3 campuses. Its main mandate is to finalize our environmental sustainability plan (in line with the Strategic Plan section 5.6.8 of Goal V), to monitor, review and evaluate any existing environmental initiative, be it academic or non-academic, to facilitate the creation of synchronized efforts towards the mentioned plan, to lead the way and support all entities as need arises.

The task force will require support from everyone: faculty, staff and students. It is, as of today, your official reference in all matters related to sustainability and will be accountable to leading NDU towards meeting sustainability goals addressing:

- Waste Management
- Water Conservation
- Carbon footprint reduction
- Land use and ecosystem preservation
- Sustainable procurement
- Environmental outreach and service to the community

www.ndu.edu.lb

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APPENDIX 2: WASTE MANAGEMENT

APPENDIX 2.A: ORGANIC WASTE TREATMENT



APPENDIX 2.B: HANDLING & STORAGE OF HAZARDOUS WASTE



APPENDIX 2.C: INCINERATION OF BIOHAZARDOUS WASTE

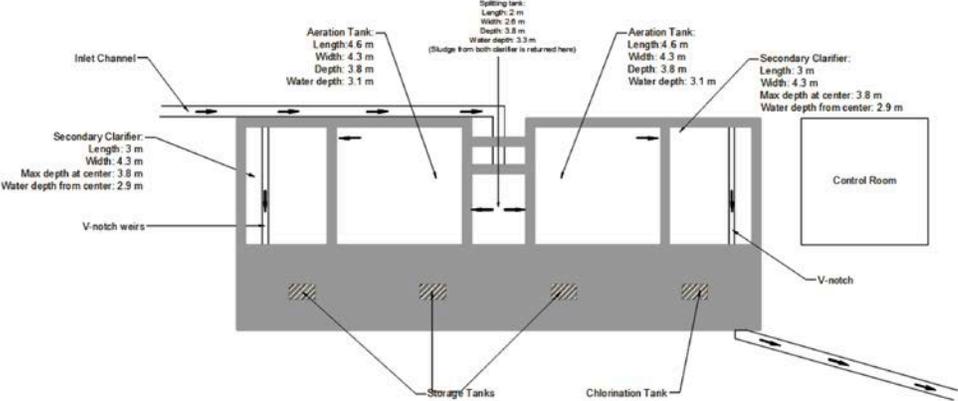


APPENDIX 2.D: ON-CAMPUS WASTEWATER TREATMENT PLANT









Inlet Channel

Aeration Tank:
Length: 4.6 m
Width: 4.3 m
Depth: 3.8 m
Water depth: 3.1 m

Spilling tank:
Length: 2 m
Width: 2.6 m
Depth: 3.8 m
Water depth: 3.3 m
(Sludge from both clarifier is returned here)

Aeration Tank:
Length: 4.6 m
Width: 4.3 m
Depth: 3.8 m
Water depth: 3.1 m

Secondary Clarifier:
Length: 3 m
Width: 4.3 m
Max depth at center: 3.8 m
Water depth from center: 2.9 m

Control Room

V-notch

Storage Tanks

Chlorination Tank

V-notch weirs

APPENDIX 3: WATER CONSERVATION & LAND USE AND ECOSYSTEMS

APPENDIX 3.A: WATER CONSERVATION IMPLEMENTATION SITES

NDU campus showing most roof space for rain water harvesting



Detail of NDU rooftop showing potential for water harvesting



APPENDIX 3.B: NDU WASTEWATER TREATMENT PLAN

NDU wastewater treatment plant, with secondary treatment and disinfection

Sideview of the treatment plant



Aeration tank



Chlorination point



Effluent Discharge into irrigation channel



APPENDIX 3.C: WATER EFFICIENT APPLIANCES

Automated Faucets Installed Across all Campus

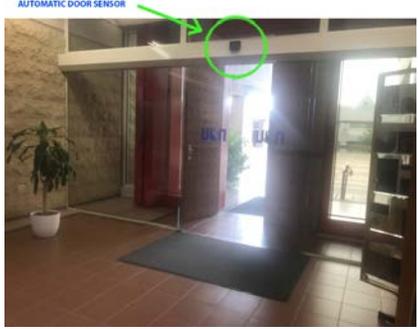


Water Saving Flushing System



APPENDIX 4: CARBON FOOTPRINT REDUCTION

APPENDIX 4.A: SMART BUILDINGS IMPLEMENTATION

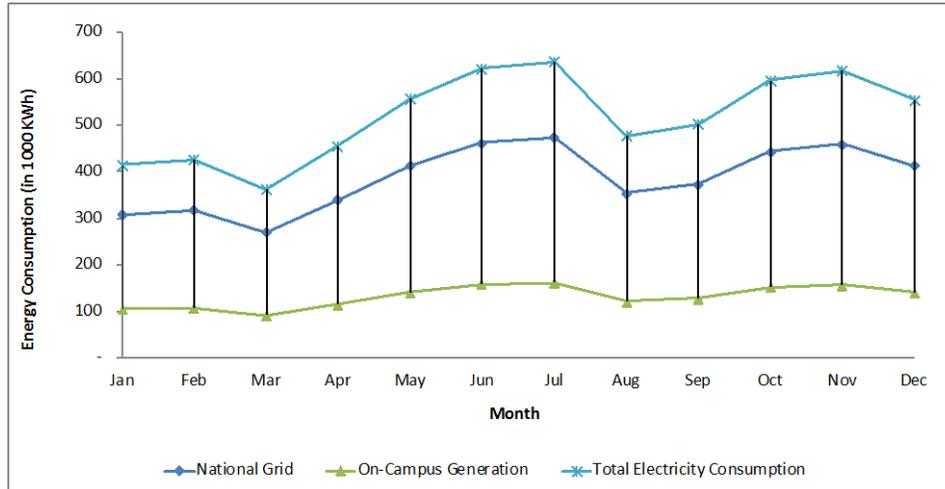
<p>IP Cameras; Automatic Heat Detectors; Automatic Motion Detectors</p>	<p>Automated General Control and Synchronization Panels of On-Campus Electrical Generators</p>
	
	<p>Automatic Door Sensors</p>
	

APPENDIX 4.B: GREEN BUILDINGS IMPLEMENTATION

<p>Full Natural day-lighting</p>	
	
<p>Natural Ventilation System</p>	<p>Low Energy Dissipation Glass Panels</p>
	

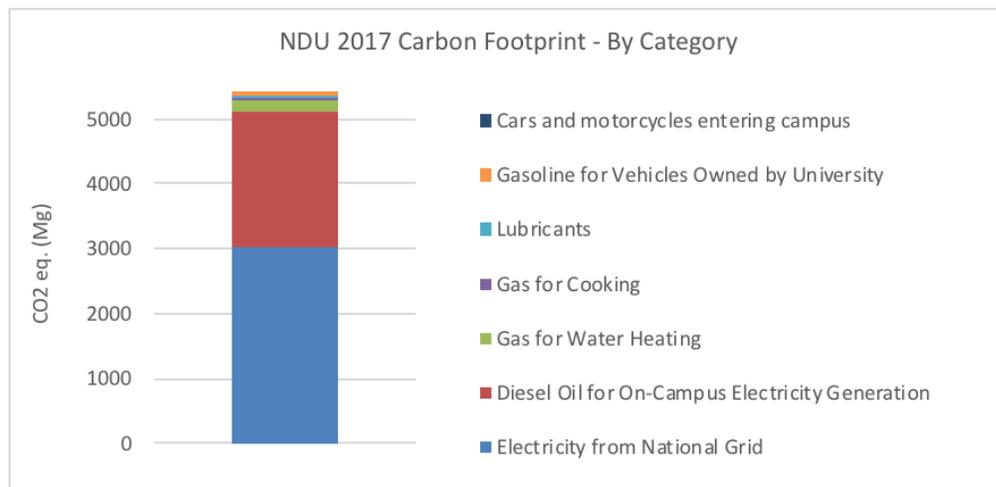
APPENDIX 4.C: ELECTRICITY USAGE PER YEAR

Electricity consumption for year 2017



Month	National Grid	On-Site Generation
Jan	308,544	105,941
Feb	317,341	108,961
Mar	270,340	92,823
Apr	339,576	116,596
May	413,578	142,005
Jun	462,135	158,677
Jul	473,659	162,634
Aug	355,235	121,972
Sep	373,999	128,415
Oct	443,127	152,151
Nov	459,422	157,746
Dec	413,229	141,885
Total	4,630,185	1,589,804

APPENDIX 4.D: TOTAL CARBON FOOTPRINT



Category	Calculations	CO2 Eq. (Mg)
Electricity from National Grid	$4630185 * 0.65 / 1000$	3,009.62
Diesel Oil for On-Campus Electricity Generation	$795700 * 0.83 / 1000 * 43.33 * 20.2 * 0.99 * (44/12) / 1000$	2,098.33
Gas for Water Heating	$64000 * 0.83 / 1000 * 43.33 * 20.2 * 0.99 * (44/12) / 1000$	168.77
Gas for Cooking	$36000 * 0.54 / 1000 * 47.31 * 17.2 * 0.99 * (44/12) / 1000$	57.42
Lubricants	$3500 * 0.88 / 1000 * 40.19 * 20 * 0.99 * 0.5 * (44/12) / 1000$	4.49
Gasoline for Vehicles Owned by University	$36222 * 0.74 / 1000 * 44.8 * 18.9 * 0.99 * (44/12) / 1000$	82.39
Cars and motorcycles entering campus	$(2196 + 20) * 2 * 1 * 240 / 100 * 0.02$	212.74
Total		5,421.03

APPENDIX 4.E: RENEWABLE ENERGY SOURCES

Solar Water Heating System Installed over All Dormitory Buildings



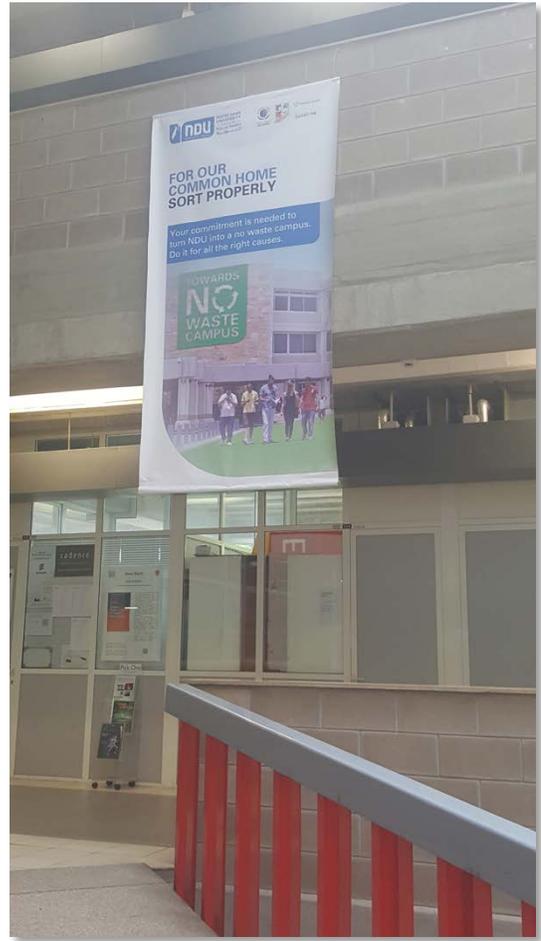
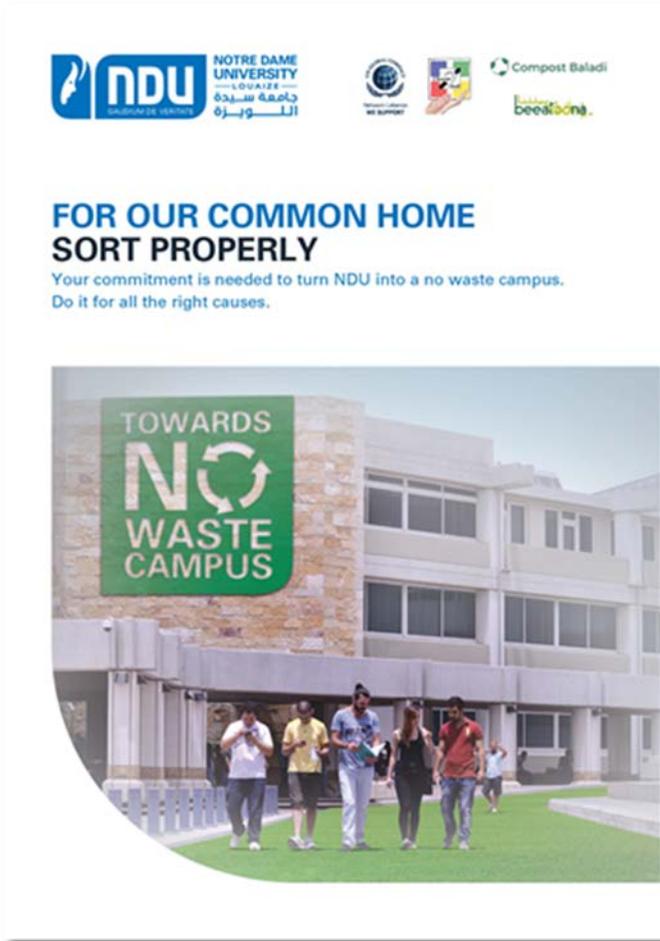
APPENDIX 5: PEDESTRIAN PATH



APPENDIX 6: VISUALS

Visual A:

Description: Visual A is the generic one created to introduce the campaign – this was used as drop down banners across faculties and digitally on the LED screens.



Visual B:

Description: Visual B is an adaptation of the main visual that highlights one of the humanitarian causes (this one refers to the creation of hearing aids) following the recycling exercise.



Visual C:

Description: Visual C is an adaptation of the main visual that highlights one of the humanitarian causes (this one refers to the respiratory assist device) following the recycling exercise



Visual D:

Description: visual B is an adaptation of the main visual that highlights one of the humanitarian causes (this one refers to the creation of wheelchairs) following the recycling exercise

NDU NOTRE DAME UNIVERSITY
UNIVERSITY OF LOUAÏSE
جامعة اللوزة
اللويزة

United Nations
Network of Higher Education Institutions

Compost Baladi
beelabong

FOR OUR COMMON HOME SORT PROPERLY

Your commitment is needed to turn NDU into a no waste campus.
Do it for all the right causes.

Every time you recycle, you provide physically challenged people with a hearing aid kit, a respiratory assist device or an electric wheel chair.

TOWARDS
NO
WASTE
CAMPUS

Visual E:

Description: The sorting sticker placed on cardboard boxes for paper disposal



Visual F:

Description: The sticker found in all classrooms to encourage students to step out of the classroom to dispose of the waste



Visual G:

Description: The sorting visual placed on top of every bin to encourage the students to sort properly.



Visual H:

Description: another example of sorting bins and posters – for liquids and paper



APPENDIX 7:

APPENDIX 7.A: STUDENT PRESENTATION: SELECTED SLIDES



NDU
Environmental Sustainability
Three Year Action Plan

- I. Waste Management
- II. Water Conservation
- III. Carbon Footprint Reduction
- IV. Land use
- V. Sustainable Procurement
- VI. Outreach & Community
- VII. Monitoring and Review

Questions raised
by NDU community
in focus group meetings

Question 1
**What method is
NDU adopting?**

Clean MRF approach

BLUE =
CLEAN material

BLACK =
Biodegradable material

Clean MRF approach

Training **Daily Sorting**

Question 2
 What is NDU doing
 with the waste?

On-campus sorting...



Question 3
 Can't you make it easier?

**Recycling is NOT Convenient...
 BUT... Do the right thing!**



Black : Food waste;
 Tissues;
 Contaminated Papers

**Giving it away
 for charity**

L'Ecoute Association

to provide
 Hearing aid
 kits...



Do it for All the Right Causes!

Our Partners

- L'Ecoute Association → *Recyclables*
- Compost Baladi → *Landscape waste*
- Beeatouna → *E-Waste*

and more will be joining...

APPENDIX 7.B: FOLLOW UP STUDENT BOOTH



APPENDIX 8: INVOLVING STUDENTS IN WASTE CHARACTERIZATION









APPENDIX 9: QUANTITATIVE OUTCOME FOLLOWING THE CAMPAIGN

A. General Waste

A.1. Composition:

General waste is defined here as the waste collected in the blue-black twin bins, i.e. all waste excluding lab waste, e-waste and other special types of waste. The main constituent of NDU general waste is organic material (43%), followed by plastic (32%), carton (12%) and glass (9%). Aluminum and chocolate wraps constitute 3% and 1%, respectively (Figure 1).

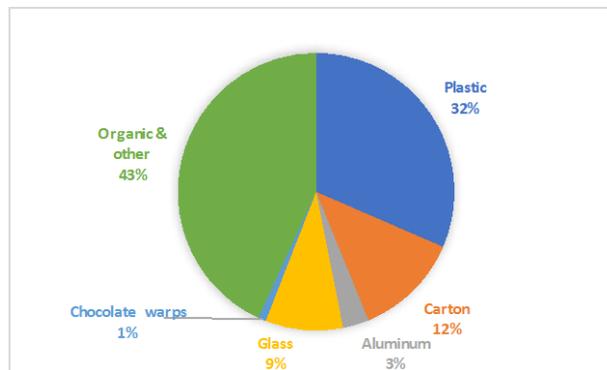


Figure 1. Average composition of campus general waste*

** sample size = 55 kg*

A.2. Recycling outcomes:

NDU is recovering, monthly, 1000 kg of paper, 280 kg of plastic and about 50 kg of aluminum (Figure 2). The recycling rates of plastic bottles and aluminum cans are 51% and 57%, respectively (Table 1).

During the first six months of campaign implementation, about 6000 kg of paper, 1600 kg of plastic, and 300 kg of aluminum were sorted and delivered to L'Ecoute Association. The income from selling the recovered material to the recycling industry was used to buy a Super Power hearing aid for Serge, an underprivileged Lebanese young man suffering from cerebral motor infirmity.

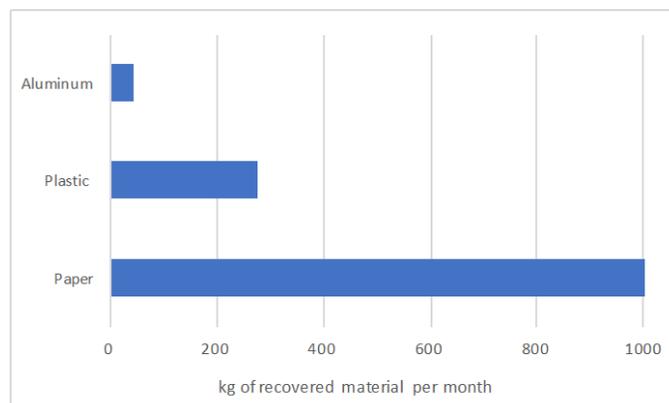


Figure 2. Average monthly recovery of recyclable materials

Table 1. Summary of recycled quantities

	Paper	Plastic	Aluminum
Total recycled material in six months	6025 kg	1663 kg	265 kg
Quantity purchased at cafeterias		7561 bottles	1261 cans
Quantity recovered		3848 bottles	714 cans
Proportion of recovered plastic & aluminum		51%	57%

B. Landscaping waste

B.1. Composition:

On average, NDU landscaping waste is 48% weeds and dead leaves, 33% tree trimmings and 19% turf (Figure 3.a). The monthly composition varies with the season, as shown in Figure 3.b.

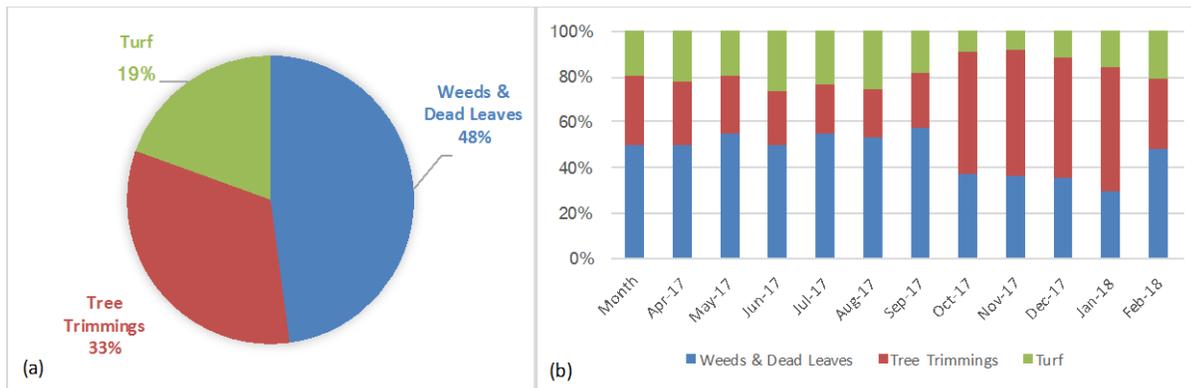


Figure 3. NDU landscaping waste: (a) average composition; (b) monthly composition

B.2. Composting

NDU generates about 2000 kg of landscaping waste monthly. About 30% (tree trimmings) is distributed as fuel replacement for indoor heating. The rest is dried, shredded and sent for composting. During the last six months, about 3500 kg of landscaping waste was converted into a high-quality (contaminant free) soil enhancer at the premises of Compost Baladi (Figure 4).



Figure 4. Quantity of landscaping waste sent for composting

APPENDIX 10: SUMMARY OF NDU CLIMATE ACTIONS 2018-2019

Climate Topic	Target	Measures	Initiatives
Energy	Determine energy baseline and identify hotspots	Assess NDU's energy profile	- Collect and analyze the data of energy consumption and production at NDU
	Initiate preliminary energy conservation actions	Shift toward energy efficient appliances and systems	- Phase out conventional light bulbs and gradually replace them with LED - Install motion detection sensors - Upgrade heating and cooling equipment for higher energy efficiency
	Involve NDU community	Encourage energy saving behavior	- Launch a campaign to educate the community on the importance and impacts of energy-saving actions, including, but not limited to: <ul style="list-style-type: none"> o Turning off the lights when not needed o Relying on natural means to stay comfortable in cold or hot seasons (window ventilation, convenient clothes, rugs, etc.) o Turning down/off air conditioners when not necessary o Adopt sleep mode when computers are idle and turn them off overnight
		Initiate a "Green Office Program"	- Develop a list of actions to be undertaken by offices, departments and faculties to contribute to achieving NDU's sustainability goals
Transportation	Reduce indirect GHG emissions	Decrease distances travelled by students, staff and faculty members	- Review parking pricing to affect behavior - Promote carpooling, pedestrian and biking to campuses - Increase vehicle occupancy rates through encouraging rideshare programs and mechanisms between campuses by faculty members and students - Encourage class time management and telecommuting to reduce commute distances - Initiate consultations with authorities regarding the planned BRT system as an alternative transit mode to ensure its access to/from NDU. Park and ride facilities are integral to this. - Investigate implementing employee commuter programs and other programs aimed at reducing trips from campuses

Climate Topic	Target	Measures	Initiatives
Waste Management	Reduce waste-related emissions (GHG & SLCPs)	Deviating NDU waste from landfills and open dumps	<ul style="list-style-type: none"> - Sort recyclable items and send them for recycling - Collect e-waste and hazardous waste separately; and ship them according to Basel convention on transboundary movements & disposal of hazardous waste - Compost and reuse the landscaping waste - Assess the potential reuse of on-campus treated wastewater
Water Conservation	Reduce energy needed for water pumping	Reducing water consumption	<ul style="list-style-type: none"> - Identify major contributors to high water consumption - Recommend water efficient solutions
Land use & Ecosystems	Protect the surrounding ecosystems	Adopt low-impact management methods	<ul style="list-style-type: none"> - Reduce the impact of landscaping activities by converting gradually to drip irrigation and Integrated Pest Management approach - Assessing the potential of increasing green areas in NDU main campus
Purchasing	Reduce indirect GHG emissions	Adopt sustainable procurement methods	<ul style="list-style-type: none"> - Favor products with low impact on the environment
Outreach	Involve the community outside NDU	Educate the community and providing tools for contribution	<ul style="list-style-type: none"> - Organize a yearly conference on selected topics of sustainability - Provide opportunities for students to take part of planned initiatives - Develop an awareness/communication plan
Monitoring & Review	Secure continuous improvements	Adopt a dynamic approach	<ul style="list-style-type: none"> - Define key performance indicators and monitor them - Review the outcomes and suggest improvements to the plan

APPENDIX 11: TRAINING SESSION - CLEANING AND CATERING SERVICES

A. Agenda:

Agenda

1. Review of Janitorial guidelines →
2. The new plan of twin plastic bins (with stickers) →
3. What to throw in blue and black bags →
4. Changes in the sorting method →
5. Inspection and Supervision →
6. Ways and frequency of collecting special waste →
7. Waste in cafeterias →
8. Janitors test on collection/sorting →

B. Janitorial Guidelines:

Location		BAG COLOR	Frequency	Measure	Other
Cafeteria & Across Campus	Twin Bins	Black	Once a day	Food, tissues, dirty paper	Keep Blue and Black Separate at all times
		Blue	As needed	Anything other than food, tissues, and dirty papers	
	Blue Paper Bin	White	Once a day	Paper only	Take with blue bags to sorting station
	Red Bin and Liquid dispenser	Liquid Dispenser	As needed	Drain	
Blue		As needed	Only plastic bottles and cans	Place with other blue bags	
Offices	Cardboard boxes	No bag	Once a week or as requested	Paper and Books Only	A white bag is needed to collect from offices
	Trash bin	Black	as usual	Black Bag	Merge with other Black Bag Trash
Toilets		Black	as usual	Collect all in black	Send with black bags for disposal

C. Training Sessions for NDU Employees:



APPENDIX 12: DATA COLLECTION TABLE

SPRING 2018: Data Collection

- Summary

Recovery during the first 6 months (April-May 2018)

	Paper	Plastic	Aluminum
Total recycled material in six months	6025 kg	1663 kg	265 kg
Quantity purchased at cafeterias		7561 bottles	1261 cans
Quantity recovered		3848 bottles	714 cans
Recovered proportions		51%	57%