13.4.1 COMMITMENT TO ACHIEVE CARBON NEUTRALITY AT THE UNIVERSITY: ACHIEVED ALREADY IN (INDICATE YEAR)

Introduction

The United Nations, in September 2015, outlined the 2030 Agenda for Sustainable Development, which includes 17 comprehensive and detailed Sustainable Development Goals (SDGs). These goals are designed to help alleviate poverty and climate change affecting the world. Member countries have taken the initiative to address the rapid changes in society. Princess Nourah bint Abdulrahman(PNU)has been at the forefront of establishing itself as a leader in sustainable development in the GCC region. PNU has aligned its strategy and policies to help meet the requirements of the SDGs in the area of Climate Change(SDG13, including making a formal commitment to reduce the effects of its operations on climate change. This report will detail the university's actions on greenhouse gas emissions and present a plan for eliminating the university's contributions to climate change.SDG-13defines goals for climate action that strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries. This goal aligns directly with the vision of PNU of reducing energy consumption and implementing renewable energy initiatives, with the knowledge to sustain it for future generations. We have established programs and practices to directly support the UN's SDG-13and work diligently every day to implement them. In April of 2010,H.M. King Abdullah bin Abdul-Aziz Al Saud established King Abdullah City for Atomic and Renewable Energy (K.A.CARE), with the aim of conducting applied research in the area of sustainable energy development. PNU in its design has focused on efficiency to its central heating and cooling plants as they are the largest contributors to its emissions profile. The plan focused on the heating and cooling distribution systems, lighting retrofits, fully utilizing the existing

chiller plant, and various policy and conservation initiatives. Princess Nora University has partnered with a consulting firm to perform an assessment on the central heating plant and distribution of hot water, decentralization of heating loads from the central heating plant. The combined effect of these two agendas–the central plant renovation and distribution system replacement–will result in a reduction in greenhouse gas emissions. The second phase of the Climate Action Plan will continue to include a heavy focus on energy systems and energy efficiency as the largest components of our emissions profile. While there are important carbon reduction strategies in this section of the plan, the university is committed to continuing an on-going review of energy options that reflects the anticipated further development of renewable technologies.

Low carbon energy use

13.4	Low carbon energy use	
	Total energy used	30,176KWh
	Energy used from low-carbon sources: No fossil fuels	10,540KWh
	Energy used from low-carbon sources: renewable sources (biomass, hydropower, geothermal)	12,490KWh
	Energy used from low-carbon sources: Power generation sources (wind, solar, nuclear)	5,320KWh
	Energy used from low-carbon sources: Electricity (renewable)	2,435KWh
	Energy used from low-carbon sources: Electricity (nuclear)	8,432KWh

The purpose is to promote the reduction of greenhouse gases so that carbon

Electricity Usage per year In KWH	513,000,000 KWH
Coefficient to convert from KWH to Metric Ton	0.84
Number of shuttle bus in university	1,000
Number of cars in university	15,000
Approximate travel distance of vehicle each day	3.5 KM
Total trips for a vehicle per day	2 trips
Number of Student: 41,456	41,456
Number of Academic and Administrative Staff: 6,300 + contractors 6000	12,300
Number of Working days per year	180
Coefficient to calculate the emission in metric ton per 100 KM for bus	0.01
Coefficient to calculate the emission in metric ton per 100 KM for car	0.02

CO2 emission from electricity

= (electricity usage per year in KwH / 1000) x 0.84

= (513,000,000 KwH/1000) x 0.84

CO2 emission from electricity

= (electricity usage per year in KwH / 1000) x 0.84

= (513,000,000 KwH/1000) x 0.84

= 430,920 metric ton

Transportation Per Year (Bus)

= (Number of shuttle bus in your University * total trips for shuttle bus service each day * approximate travel distance of a vehicle each day inside

campus only (in kilometers) * 180/100) * 0.01 = ((1000 x 2 x 3.5 x 180)/100)) x 0.01

= 126 metric ton

Transportation Per Year (car)

= (Number of cars entering your University * 2 * approximate travel distance of a vehicle each day inside campus only (in kilometers) * 180/100) * 0.02

= ((15000x 2 x 3.5 x 180)/100)) x 0.02

= 3780 metric ton

Total CO2 Emission Per Year

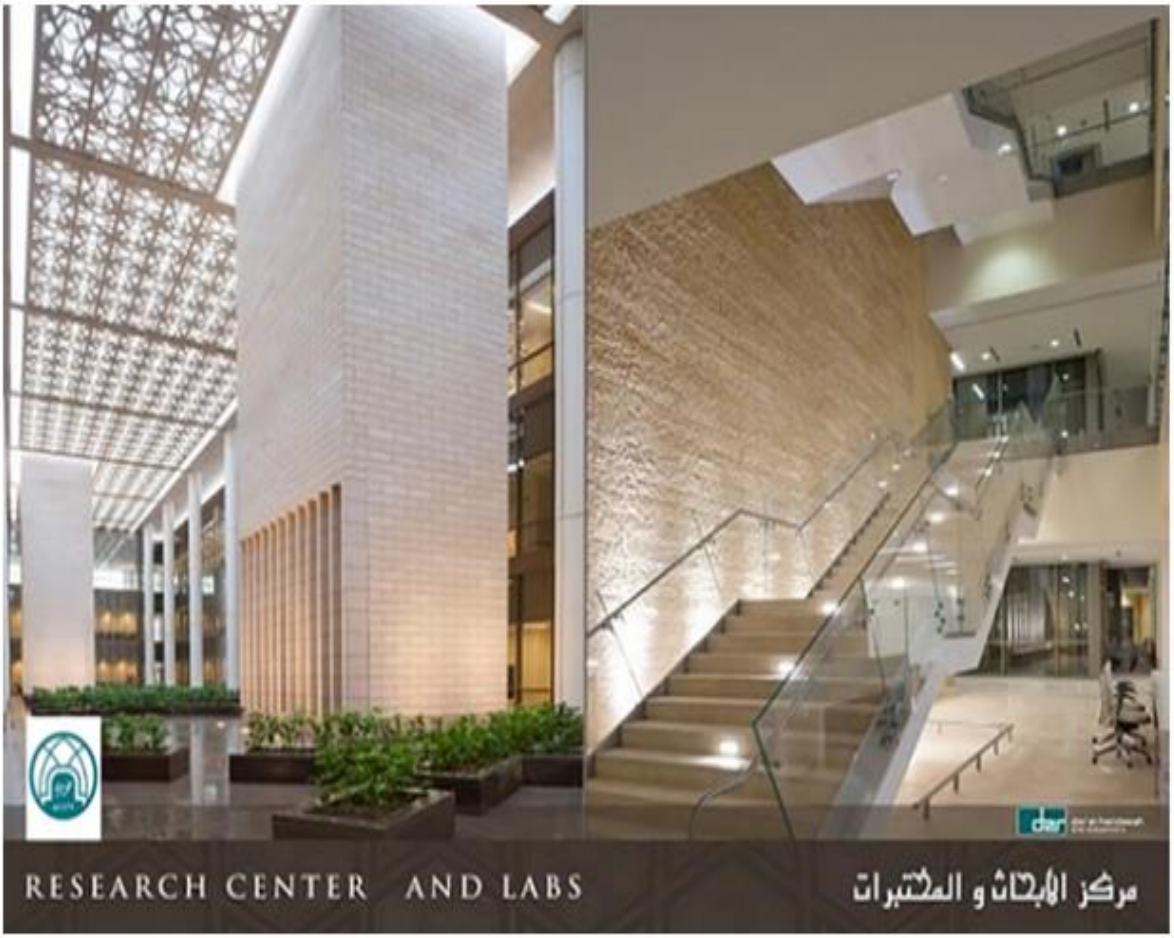
= total emission from electricity usage + transportation (bus, car, motorcycle)

= 430,920 + (126 + 3,780)

= 434,826 Metric ton

Elements of Green Building Implementation as Reflected in Al Construction and Renovation

The Princess Nourah University set itself the goal of constructing and renovating the facilities in addition to the construction of new buildings. The purpose of the university is the intelligent design of buildings that implement renewable energy, natural ventilation and lighting, and green building elements to increase energy efficiency in the building.



Environment Department
dar al-handasah
shair and partners

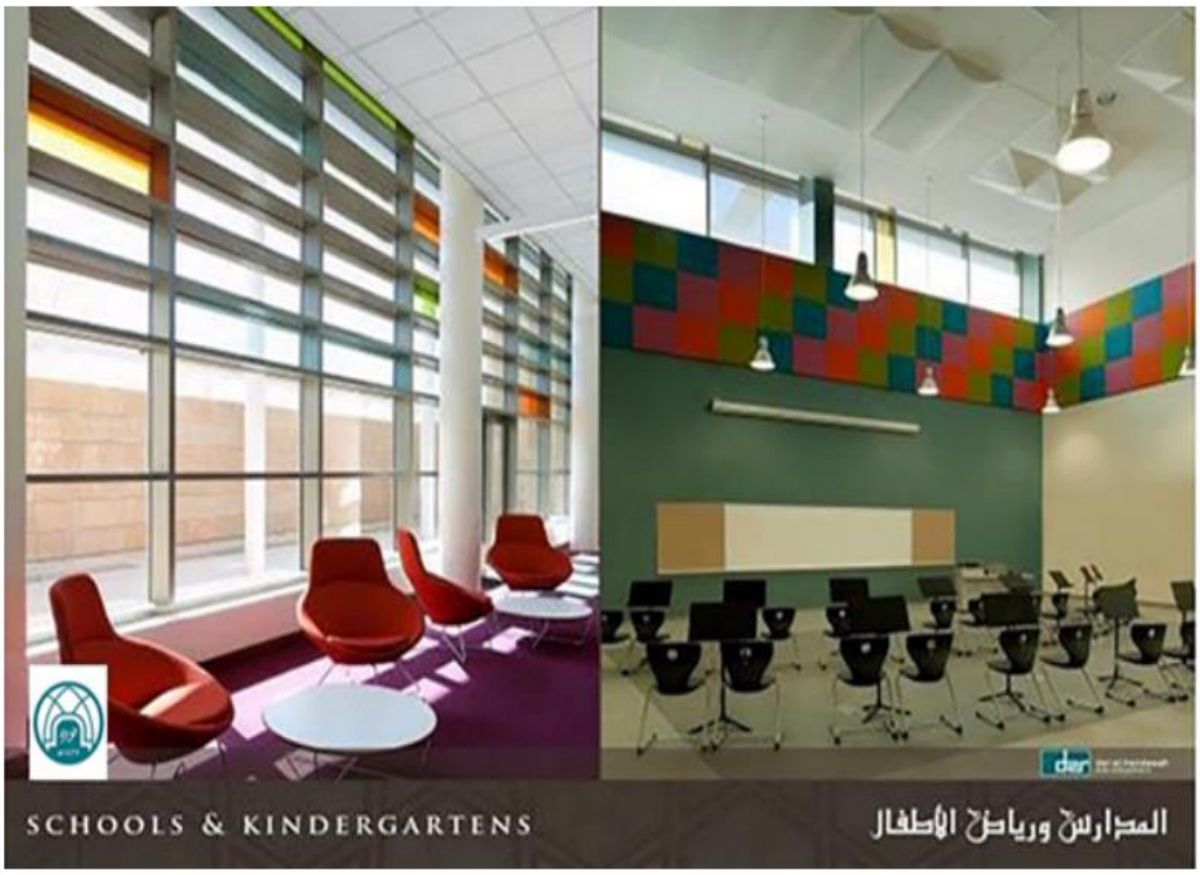
The color coded trash bags and stickers used in PNU
ألوان أكياس النفايات والملصقات المستخدمة في الجامعة

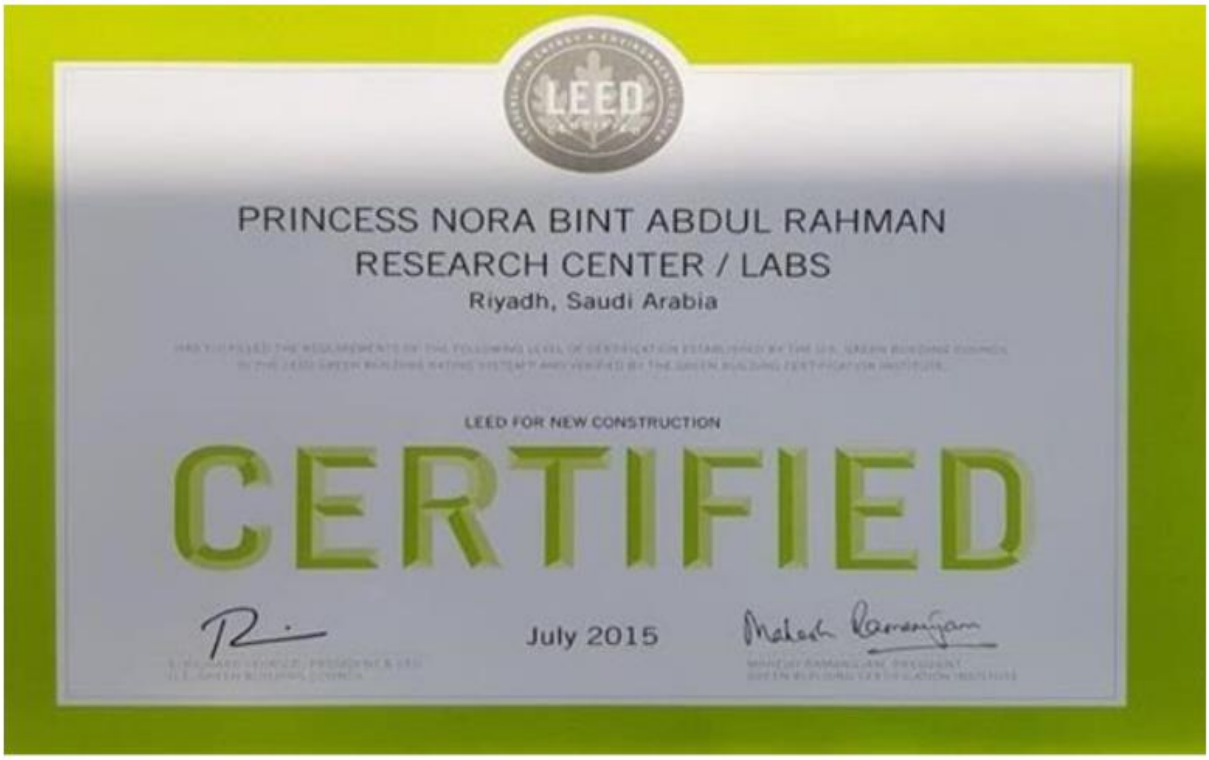
Black for General Waste
الأسود للنفايات العامة

Blue for Recyclables
الأزرق للمواد القابلة للتدوير

White for Paper
الأبيض للورق

Red and Yellow for Medical Waste
الأحمر والأصفر للنفايات الطبية


SCHOOLS & KINDERGARTENS
المدارس ورياض الأطفال


LEED
PRINCESS NORA BINT ABDUL RAHMAN
RESEARCH CENTER / LABS
Riyadh, Saudi Arabia
LEED FOR NEW CONSTRUCTION
CERTIFIED
July 2015