

# CENDS30:50

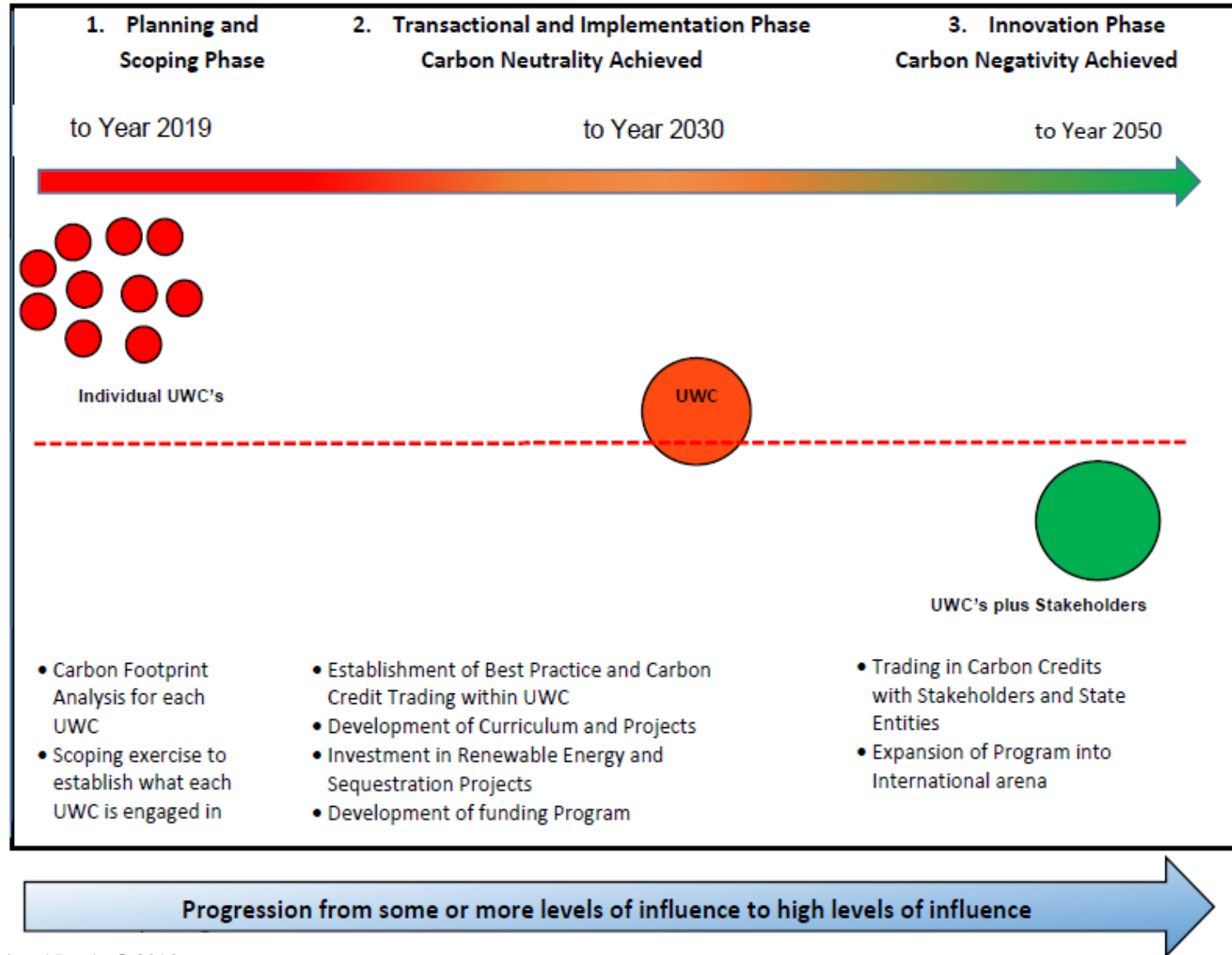
## Carbon Neutral Carbon Negative Principles into Practice

1

*Without practising the principles we teach, we run the risk of creating a hypocritical gap*

# PROJECT PHASES

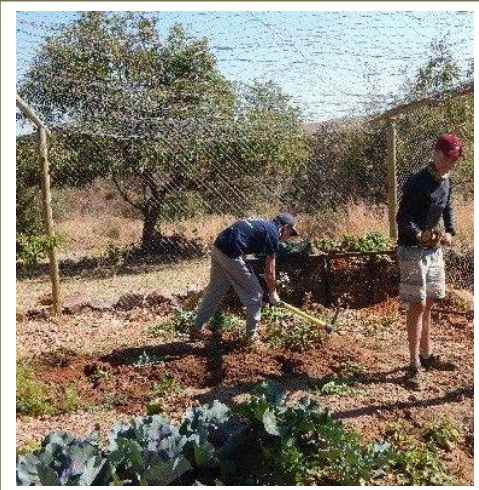
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## Impacts, Education & Practices: Kamoka Bush School

- Off the Grid – solar PV (10) & micro wind (76)
- Permaculture (16)
- Composting (60)
- Experiential learning
- Resilience
- Sustainable building (79)
- Recycling (55)
- Managed grazing (19)



# Building Materials

4

- ▶ Reuse instead of destroying
- ▶ Use of on site materials
- ▶ Minimize cement



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# Thoughtful Building

## *Retrofitting (80)*

- White roofs – albedo effect
- Redesigned for solar PV panels (10)
- Insulation to eliminate cooling (1)
- Passive heating for winter (1-refrigeration management)
- Preventative maintenance (windows)
- LED (44)

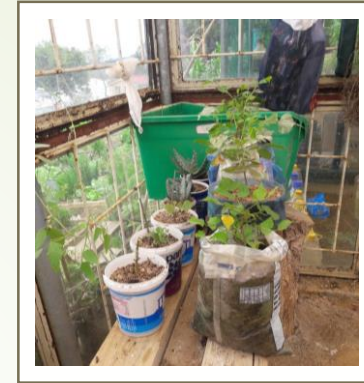


# Circular Economy: Waterford Kamhlaba

- ▶ Permaculture Gardens (16)
- ▶ Meatless Mondays and water efficient meals (4)
- ▶ All Food sold to Dining Hall & Staff

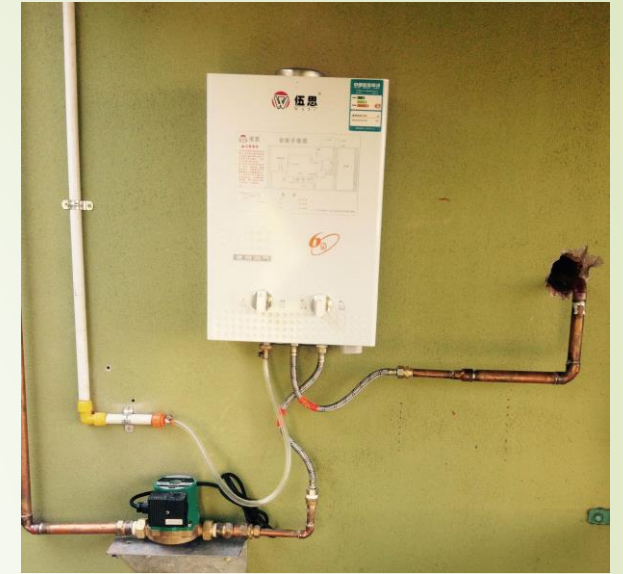


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# Circular Economy: Waterford Kamhlaba

- Waste audit to reduce waste (3)
- Waste food to bio digester (64)
- Gas to heat hot water for kitchen
- Liquid fertilizer to permaculture gardens (60)
- All rain water captured and first returned to kitchens for washing – overflow to capture dams



# Waterford Kamhlaba: Efficiencies

- LED Lights (33)
  - Smart timers (57)
  - Lagging hot water (41)
  - Ongoing Solar Geyser retrofit program (41)
- 
- Challenges include maintenance to ensure efficiencies are maintained – requires investment in staff training
  - All measures had a cost benefit analysis done before implementation
  - Result: **Green Fund**





## Other initiatives

- Demonstration wind turbine (76) – wind study being undertaken to test feasibility of larger turbine
- (10) Solar PV array – 22kW as a pilot phase. Full feasibility completed for ideal rooftop installation – 207kW. Now awaiting development of a disruptive financial model (vested interests of the toxic triangle)
- Scenario planning and Futures exercise for water scarcity problems led to redesign of water capture system
- Education – initially a student led project however fell apart once students left and no replacements – importance of embedding the subject into the curriculum





# Great Projects

11

- ▶ UWC Maastricht Geothermal (18) Plant, LED(44), Building Automation (45) and Smart Thermostats (57)
- ▶ Woodcote School (UK) - Biomass (34) and Solar PV Rooftop (10) Cogeneration for power
- ▶ Buckswood House (UK) – 500kW Biomass (34)



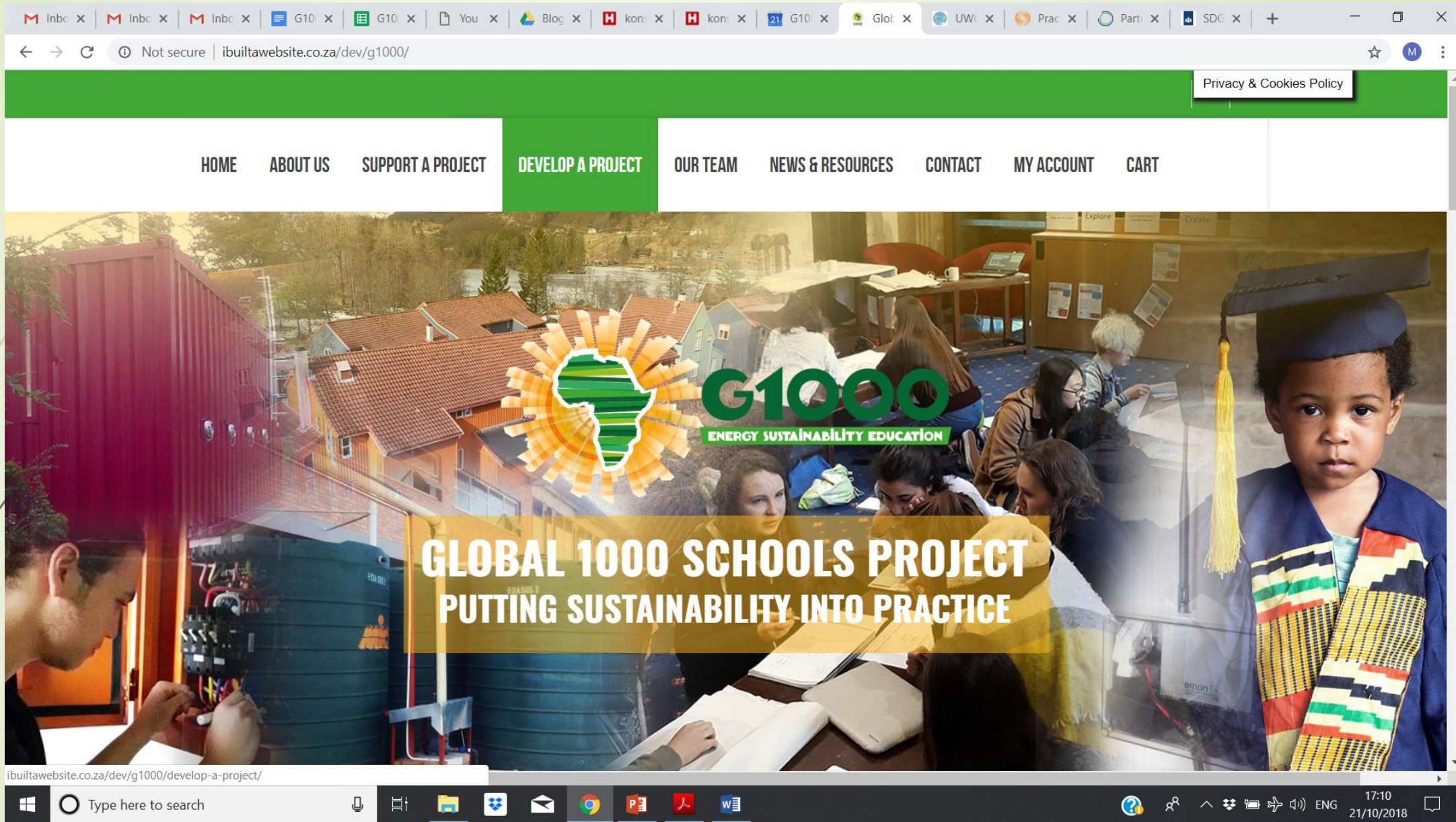
## UWC PROJECT COSTS

## UNITED WORLD COLLEGE PROJECTS REQUIRING FUNDING

NAME	LI PO CHUN	ROBERT BOSCH	UWC MAASTRICHT	WATERFORD KAMHLABA	MAHINDRA UWC	ATLANTIC COLLEGE	UWCT	UWC CHANGSHU	RED CROSS NORDIC	TOTAL OF PROJECTS	Indicative Budget	
LOCATION	HONG KONG	GERMANY	NETHERLANDS	SWAZILAND	INDIA	WALES	THAILAND	CHINA	NORWAY			
CARBON FOOTPRINT ANALYSIS	YES	YES	COMPLETED	YES	COMPLETED	YES	COMPLETED	YES	YES	6	66 000	WILL IDENTIFY FURTHER PROJECTS
SUSTAINABLE POLICY DEVELOPMENT	YES	YES	YES	YES	YES	YES	YES	YES	YES	9	44 550	WILL EMBEDD POLICY
FOREST AND ECOSYSTEM REGENERATION FOR CARBON OFFSET	YES	YES	YES	YES	YES	YES	YES	YES	YES	9	550 000	SEQUESTER 1.4 TCO2E PER ACRE ANNUALLY.
PERMACULTURE FARM DEVELOPMENT AND OUTDOOR EDUCATION			YES	YES	YES	YES		YES			55 000	
IB CURRICULUM DEVELOPMENT	YES	YES	YES	YES	YES	YES	YES	YES	YES	9	75 000	IMPACT IS INCALCULABLE - 2000 GRADUATES
ROUTES TO RESILIENCE SEMINAR - EDUCATORS AND STUDENTS	YES	YES		YES	YES		YES	YES		6	65 000	COULD BE COMBINED PER REGION
ROUTES TO RESILIENCE SEMINAR 2 - COMPLEXITY AND SYSTEMS						YES				1	10 000	
SOLAR PV ROOFTOP (KWP)			120	200		140	250	100	100	910	1 092 000	CARBON CREDITS CALCULATED BY PROJECT
SOLAR PV GROUND ARRAY (KWP)				400	200					600	720 000	CARBON CREDITS CALCULATED BY PROJECT
OTHER SOLAR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	9	90 000	CARBON CREDITS CALCULATED BY PROJECT
SOLARWOOD BIOMASS CONTAINER SOLUTION				200	200					400	1 400 000	CARBON CREDITS CALCULATED BY PROJECT
BIODIGESTER GAS					Yes					1	30 000	CARBON CREDITS CALCULATED BY PROJECT
LED, SMART TECHNOLOGY RETROFIT				Yes	Yes		Yes	Yes	Yes	5	55 000	CARBON CREDITS CALCULATED BY PROJECT
WASTE MANAGEMENT CENTRE			Yes	Yes	Yes		Yes			4	100 000	
											4 352 550	
G1000 PLATFORM FEE TO EXPAND THE G1000 PROJECT TO OTHER SCHOOLS										7%	304 679	
										<b>TOTAL</b>	<b>4 657 229</b>	

# UWC International Ongoing Projects

- ▶ UWC Maastricht – Carbon Management Plan
- ▶ UWC Thailand – CFA and feasibilities into 250kW Solar PV array
- ▶ UWC RC Nordic – Global Concerns Conference and Scoping exercise and operations seminar in January
- ▶ UWC Atlantic – Conference plus follow up in November
- ▶ UWC Waterford – Conference, Carbon Management Plan, Solar PV array
- ▶ UWC Mahindra – Mangrove regeneration and Carbon Footprint Analysis
- ▶ UWC Dilijan – Green design
- ▶ UWCSEA – reforestation project in India
- ▶ UWC Waterford – Completed feasibility for 210kW rooftop solar PV plus hosting regional conference next May in Swaziland




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All Affordable Clean Energy Clean Water and Sanitation Climate Action Featured Gender Equality Good Health Infrastructure Life Below Water Life on Land Privacy & Cookies Policy  
 No Poverty Partnership Peace and Justice Quality Education Reduced Inequalities Responsible Consumption Sustainable Cities Work + Economic Growth Zero Hunger

### GLOBAL 1000 ADMIN FUND

Project Type: Global 1000 Admin Fund  
Country: The Netherlands




[View Project](#)

**CARBON MANAGEMENT**  
€20.00

### GLOBAL 1000 DISRUPTIVE FUND

Project Type: SDG Deserving Projects  
Country: The Netherlands




[View Project](#)

**CARBON MANAGEMENT**  
€20.00

### UWC RED CROSS NORDIC

Project Type: Sustainability Workshop  
Country: Norway




[View Project](#)

**CARBON REDUCTION**  
€20.00

### WATERFORD BLOCKS B&C

Project Type: Solar PV Rooftop  
Country: Swaziland




[View Project](#)

**CARBON REDUCTION**

### WATERFORD CCLD

Project Type: Solar PV Rooftop  
Country: Swaziland




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**CARBON REDUCTION**

### WATERFORD DINING HALL

Project Type: Solar PV Rooftop  
Country: Swaziland



[View Project](#)

**CARBON REDUCTION**

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