THE 20TH INTERNATIONAL OPERATIONS & MAINTENANCE CONFERENCE IN THE ARAB COUNTRIES

Sustainable Campus

(Effective implementation of sustainability in the Educational Facilities)

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Agenda:

01

SUSTAINABILITY

Definition – Capron
Footprint - SDGs

02

SUSTAINABLE O&M MANAGEMENT

Inputs – Process – Outputs

03

SMART CAMPUSES

AI & IOT

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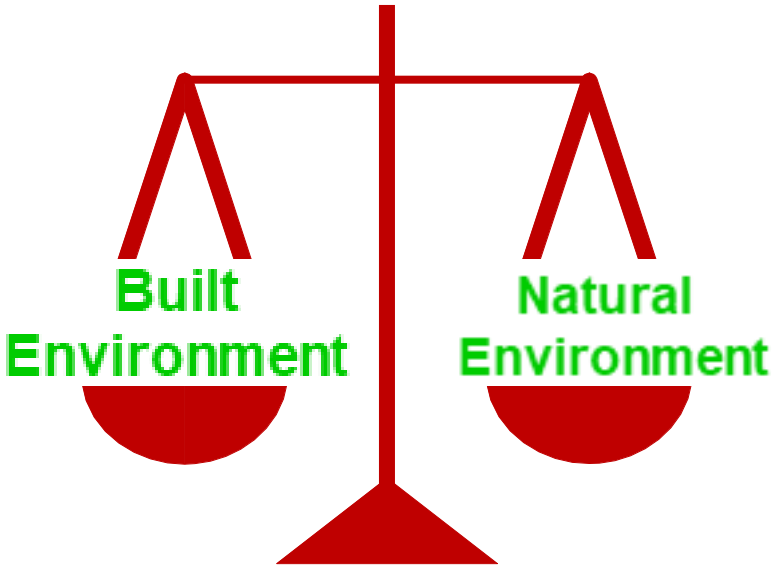
DEFENTION

" DEVELOPMENT THAT MEETS THE NEEDS OF THE PRESENT WITHOUT COMPROMISING THE ABILITY OF FUTURE GENERATIONS TO MEET THEIR OWN NEEDS "

01

Balancing Goals

All buildings and living spaces that are created or modified by people, including infrastructure elements



Forests, trees, rivers and streams that help to clean the air, cool buildings and provide areas of relaxation

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BALANCING GOALS

BUILT NATURAL

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Benefits & Risks of Sustainability

Benefits of sustainability practices

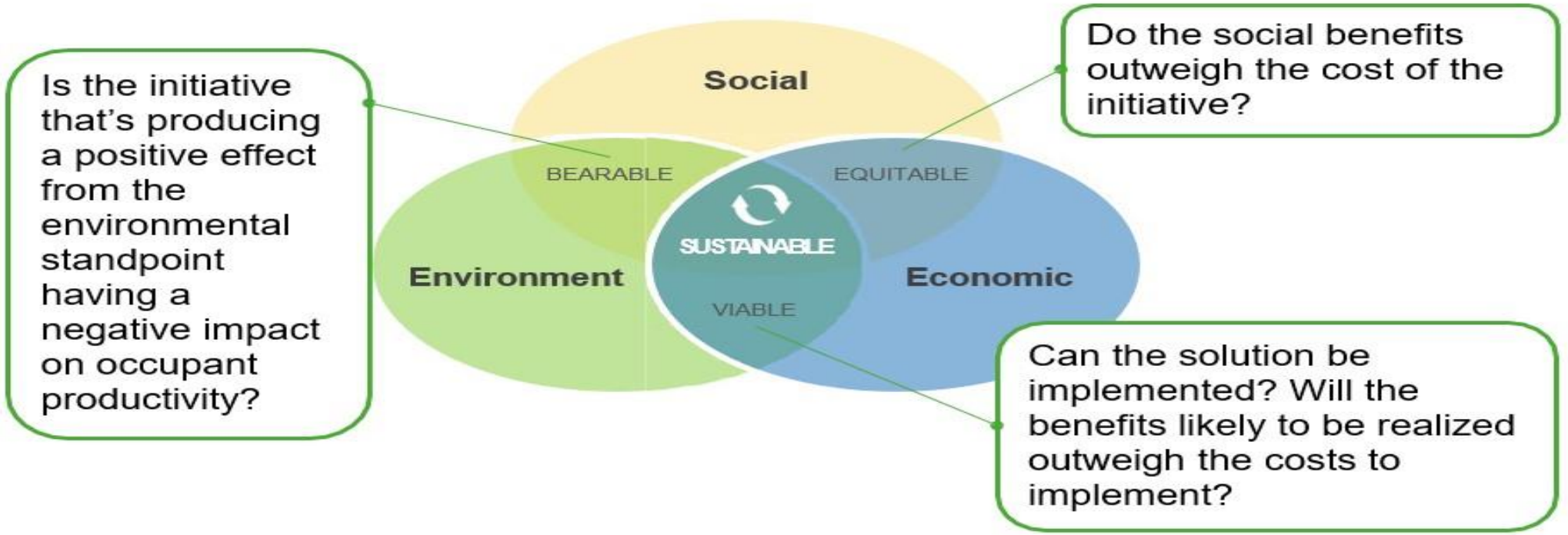
- Reduced demand for resources
- Increased innovation
- Improved employee productivity
- Cost-efficient
- Money-saving measures
- Profit-making activities
- Greater competitive edge
- Enhanced organization image
- Increased employee satisfaction

Risks of not pursuing sustainability

- Liability for pollution
- Supply chain issues
- Emerging regulations Image
- Bad affect employee‘s morale
- Decreased occupant health, comfort and productivity
- Increase pollution and landfill waste
- Decreased competitive advantage
- Decreased brand strength

The Triple Bottom Line

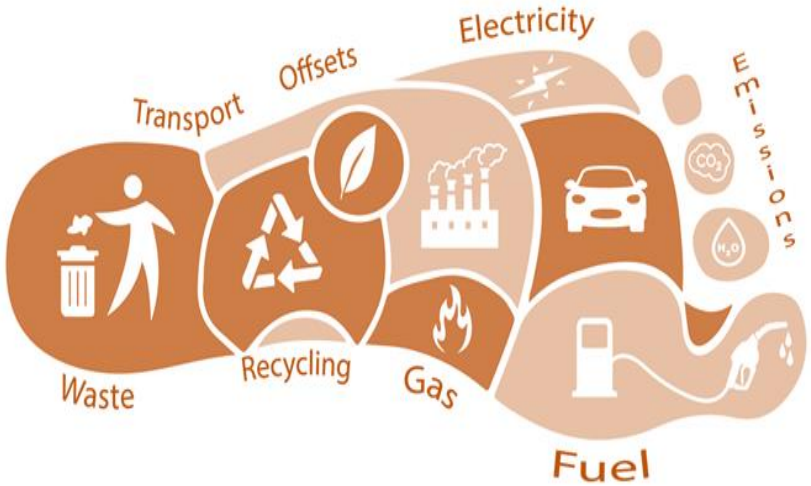
Achieving Balance



Sustainability Measures:

Social Measures	Environment Measures	Economic Measures
How the facility impacts employees, suppliers and the community at large Aspects important to facility manager: Community involvement Occupant well-being Healthier environment Safer environment	An organization's ability to avoid harming the environment and preserve scarce resources for future generations Reduce organization's environmental footprint: Managing consumption of energy and resources Reducing waste Recycling and reusing Decreasing organization's carbon footprint Decreasing or eliminating hazardous waste Create building processes that abolish toxic material	The value created by the organization after deducting the cost of all inputs Aspects important to facility manager: Lower operating cost Increased asset value Higher ROI Increased efficiency Long-term savings

Carbon Footprint:



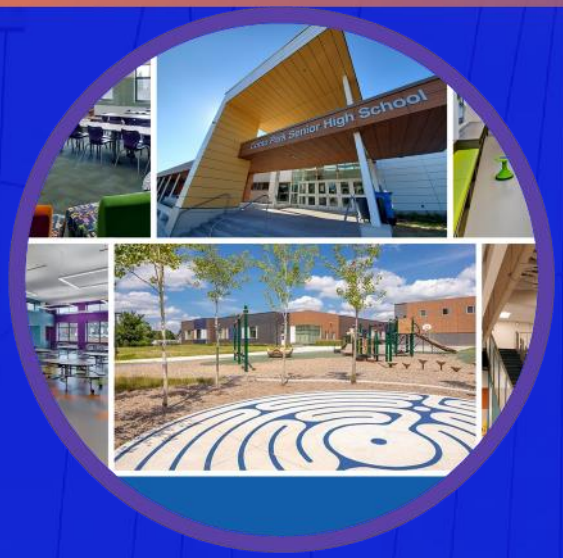
The measure of the amount of greenhouse gases produced by human activities

Primary footprint:
The measure of the direct emissions of CO2. These come from the burning of fossil fuels for energy consumption and transportation. The organization has direct control over.

Secondary footprint:
The measure of the indirect emissions of CO2. These come from the whole life cycle of a product, cradle to grave. Generally, the organization does not have direct control over these.

SDG's (The UN Sustainable Development Goals

Part Two: Sustainable O&M Educational Facilities:



Educational Facilities
Definition – Specifications - User's

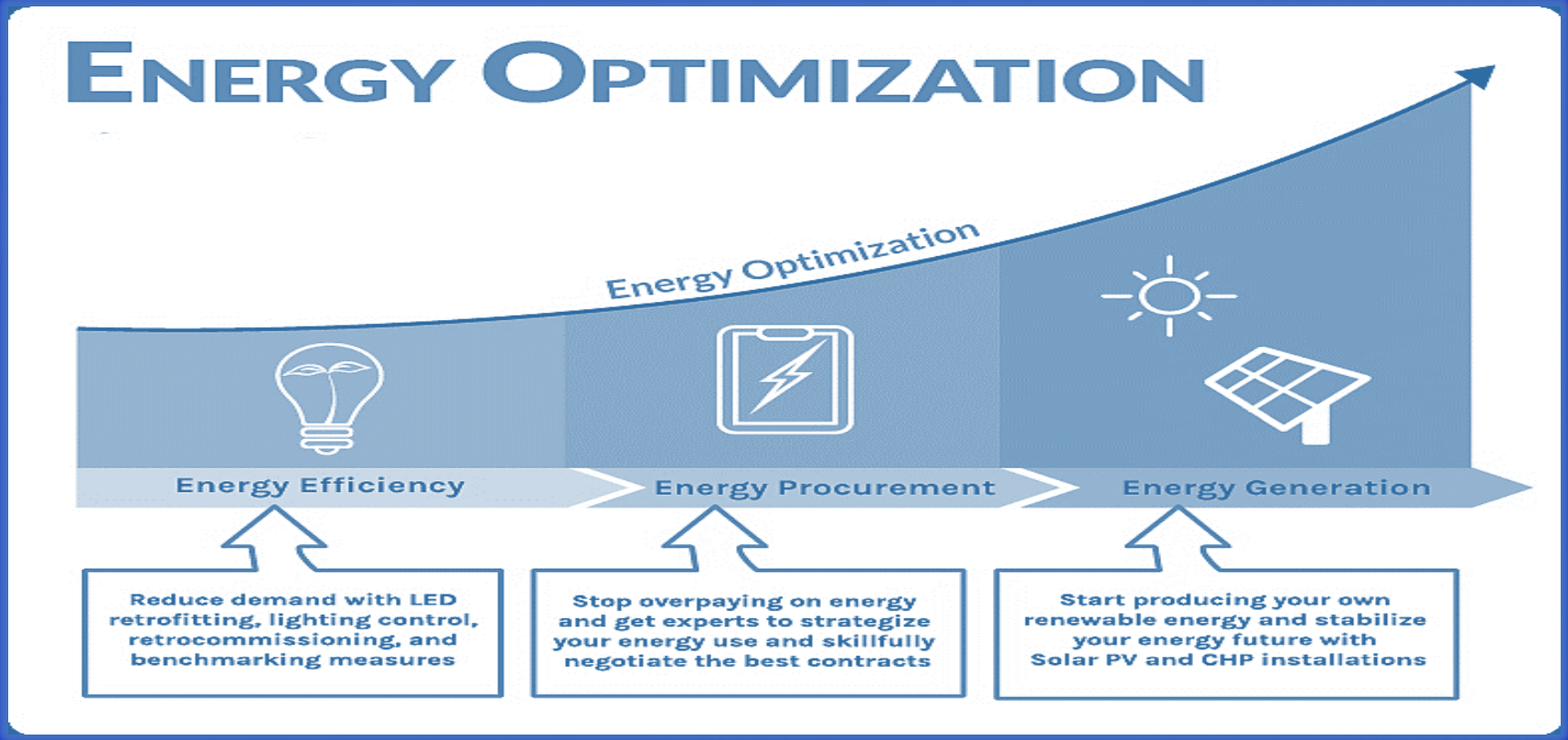
Managing Facilities Resources
Input's – Process - Output's

Sustainable Educational Facility
Green Institution

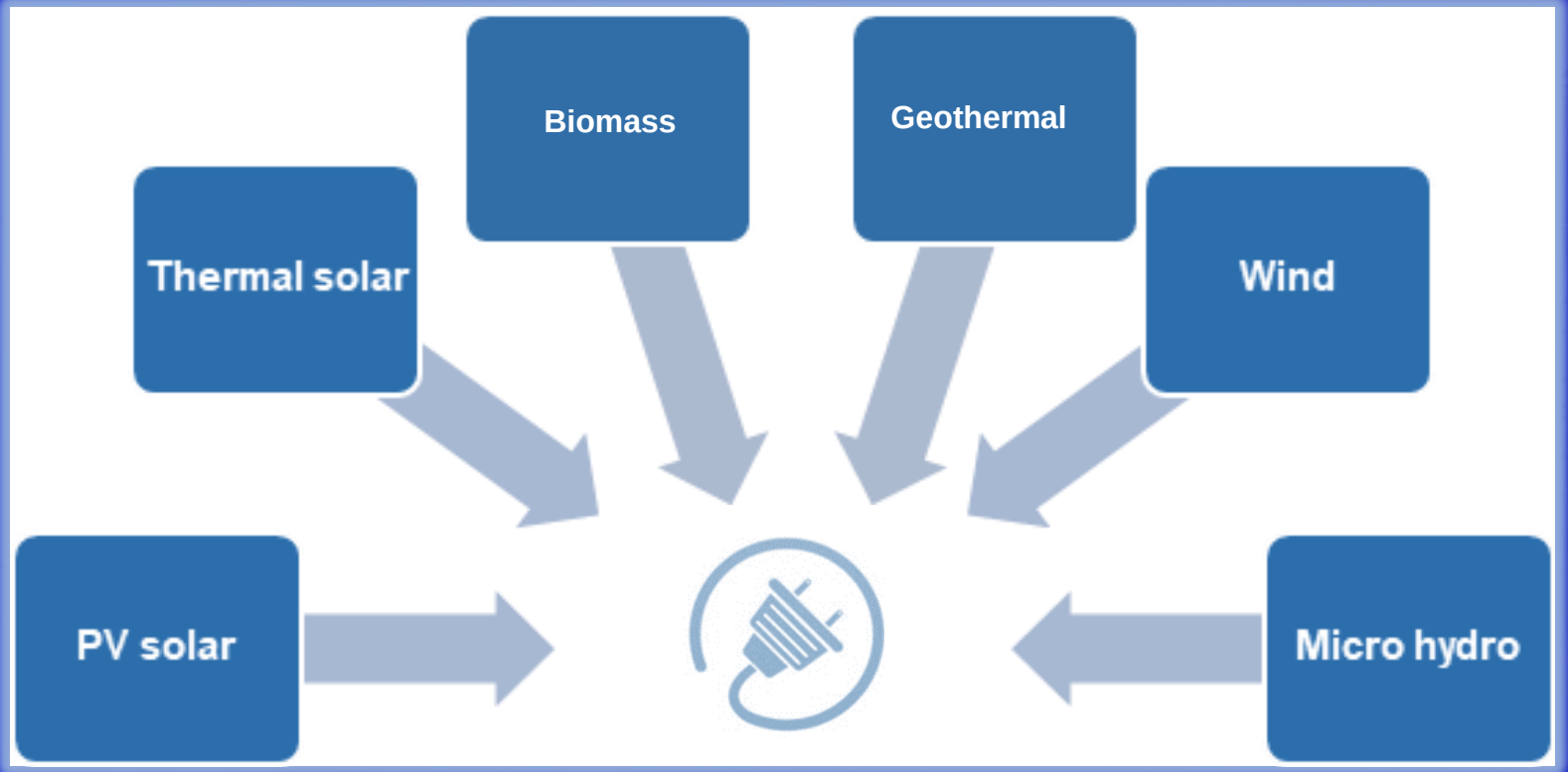
Educational Facilities

- Building, vehicles, and equipment that are built, installed or established to serve educational purposes and are designated for student occupant stations or to facilitate the delivery of educational services. including, but not limited to, classrooms, laboratories, administrative buildings, equipment, utilities and other property.

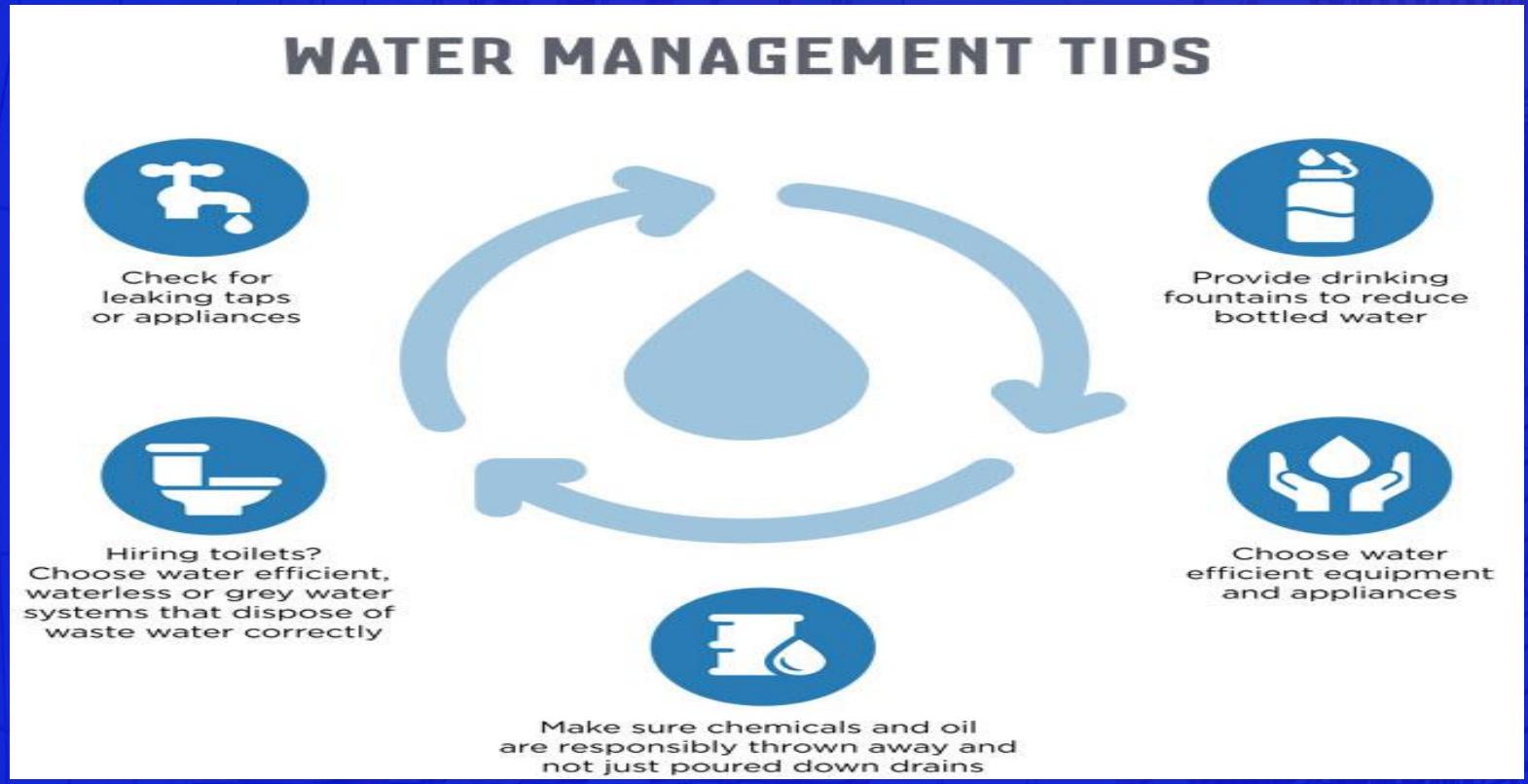
Managing Facilities Resources Inputs:



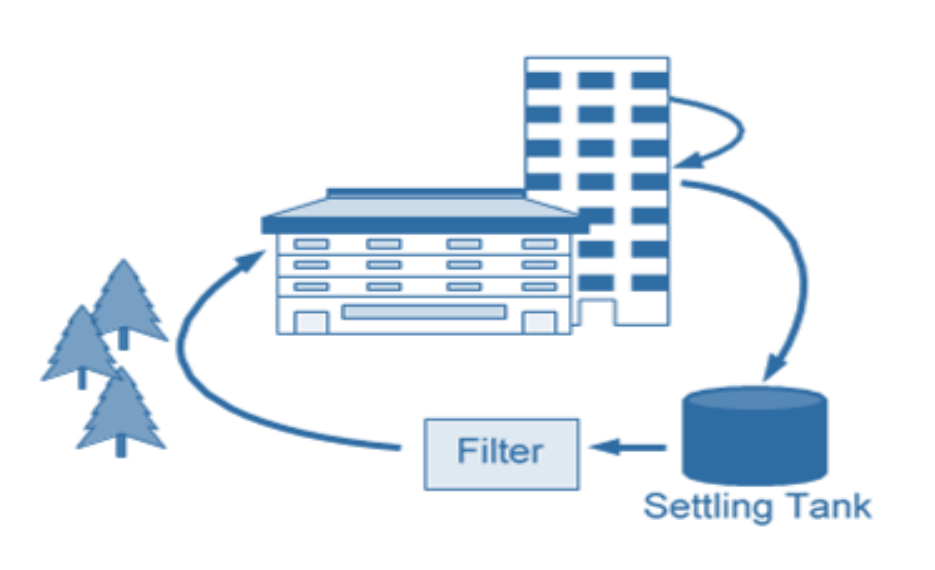
Renewable Energy Sources:



Managing Facilities Resources Inputs:



Reusing and Recycling Water:



Materials and Resources:

- Use less materials and resources to avoid depleting finite resources.
- Use materials made from sustainable sources and/or recycled content.
- Purchase in a sustainable manner.
- Avoid use of materials that contribute to pollution or pose hazards to occupants' health or safety.
- Develop sustainable procurement policy and ensure that it is followed.

Managing Facilities Resources Output's:

Waste:

- Reduce waste. (Reduce consumption - Implement sustainable procurement – Donate)
- Recycle waste.(Recycling/3rd party contractors - Composting - Thermal treatment)
- Dispose of hazardous waste in a sustainable manner. (Strictly regulated. Do not dispose in sewer, ground or in the trash).

Reduce Site Impact on the Environment:

- Avoid degrading site's ecosystem through the facility's presence.
- Undertake initiatives to upgrade site's ecosystem.
- Use principles of biomimicry.
- Think in terms of systems.
- Consider future as well as present.
- Affect wildlife.
- Diminish aesthetic appeal. Interfere with Traffic lines.
- Diminish the well- the vision of being and property enjoyment of the facility neighbors.

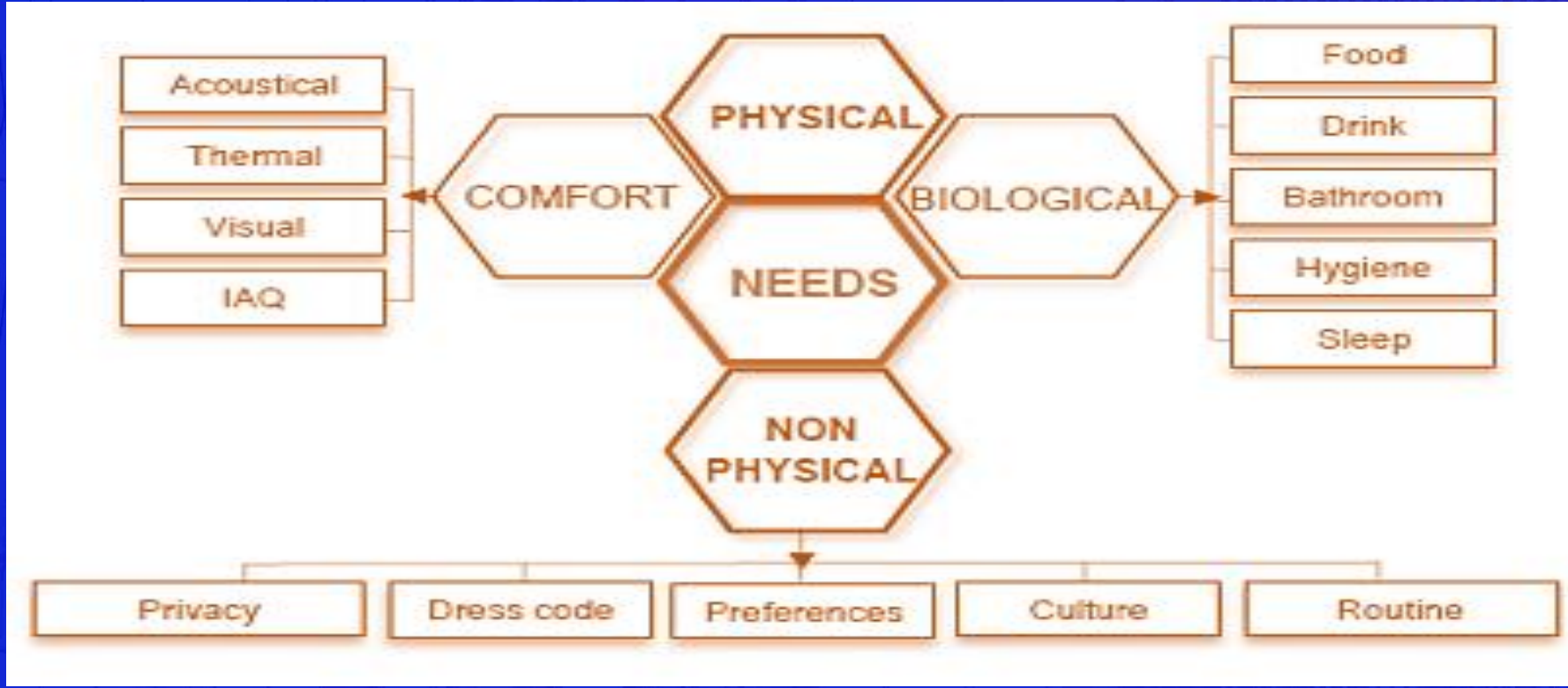
Sustainable Educational Workplace:

Goals

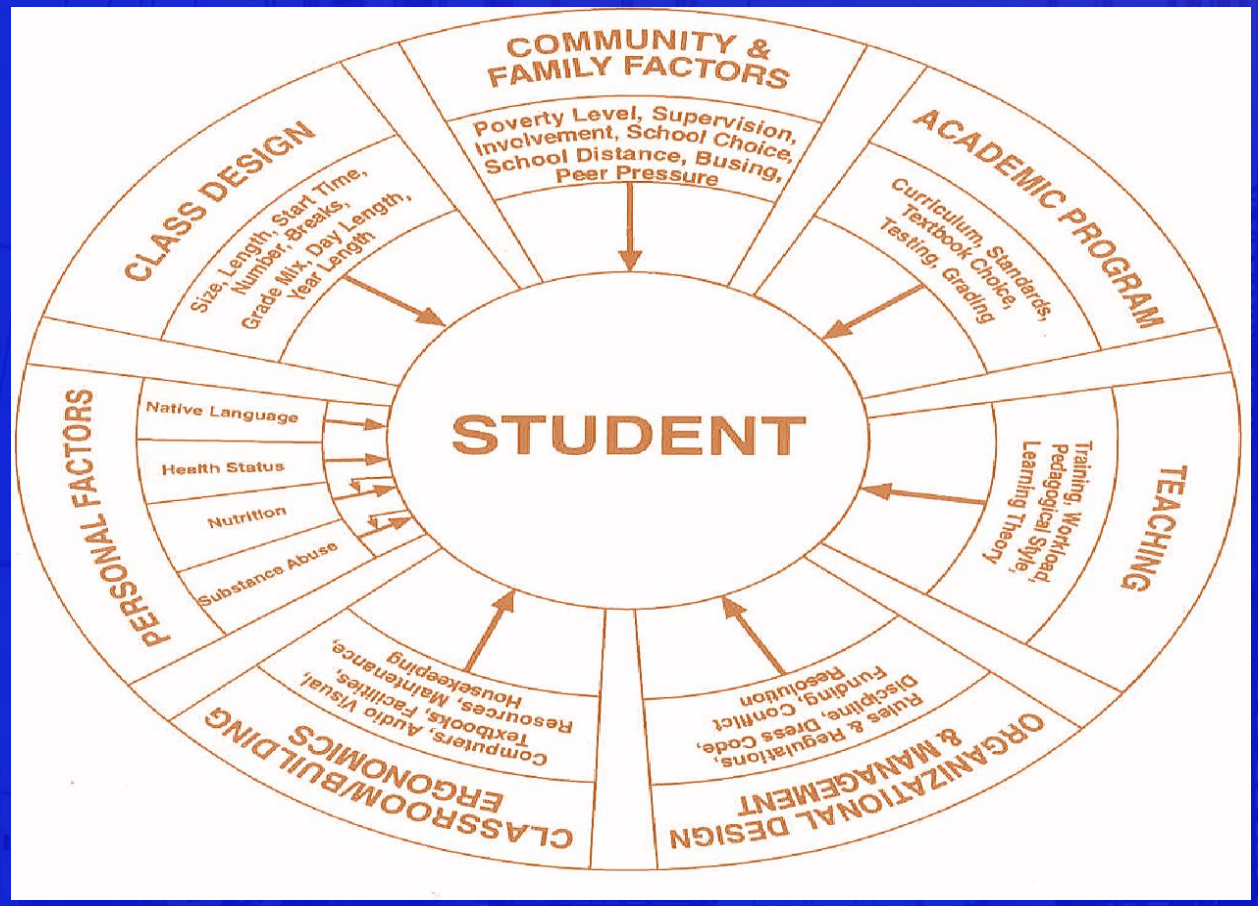
Balancing new organizational and occupant needs with environmental considerations to accomplish basic Triple Bottom Line criteria:

- Ensures comfort and productivity of occupants.
- Treats space as an asset.
- Increasing Flexible Use of Space (Design space with churn in mind - Design a flexible IT structure - Use modular furniture)
- Supporting Virtual Workplaces & online Education (Software's – Wireless networks – laptops and & docking stations – Isolated meeting space supported by video conference systems)

Indoor Environmental Quality:



EDUCATIONAL ERGONOMICAL ENVIRONMENT:



Part Three: Smart Campuses

As today's learners tackle complex subjects and topics, so too does your school. Creating a safe, secure, and comfortable learning environment means enabling students to do their best learning—and then apply what they learn to create a better world.

Comfortable

FSS – ACS – BMS – CAFM – Power Optimization

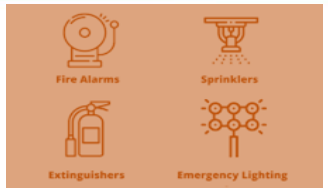
Sustainable

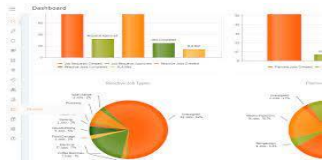
Smart IAQ – Solar Energy – Water & Waste Management – IBS – Hybrid Campus (cloud database – Virtual labs)

Smart

IOT & AI– UBS – Assets MS – Smart Parking

Comfortable Campus:





Safe:
- Fire Alarm system, Fire Fighting system, Evacuation system.

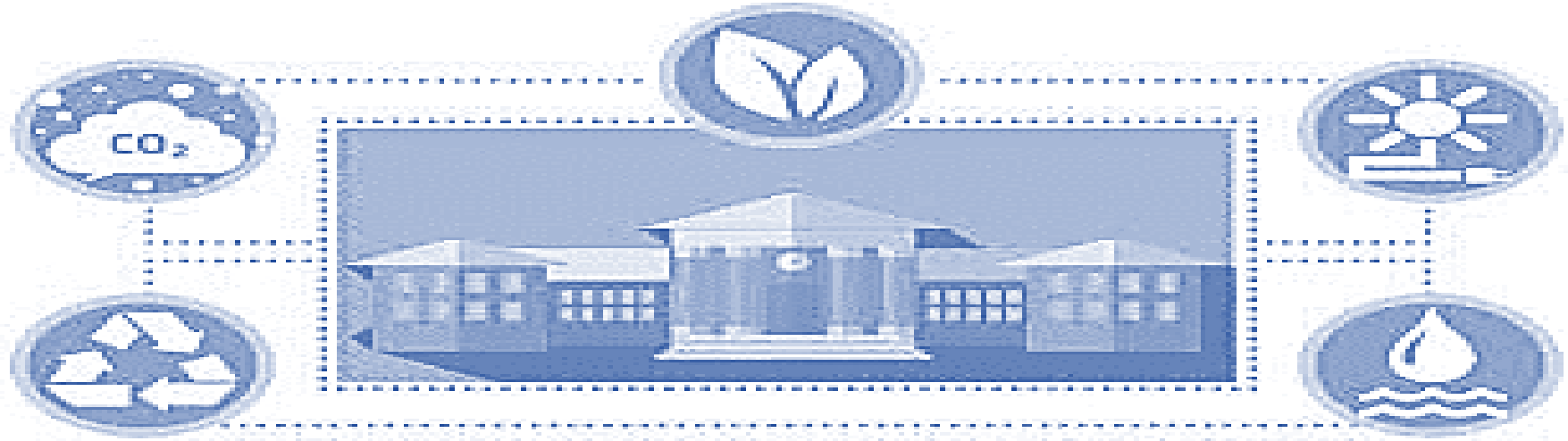
Secure:
- Access Control system, CCTV, Gate Pass & PTW.

Healthy:
- Ergonomic Design, Hazard Control, Catering HACCP.

O&M:
Enhance service quality & Users Experience using CAFM/CMMS system

Power Optimization:
LED lights, Sensors, water pressure regulators & leak detectors, Building Envelop & Thermal Isolation.

Sustainable Campus:



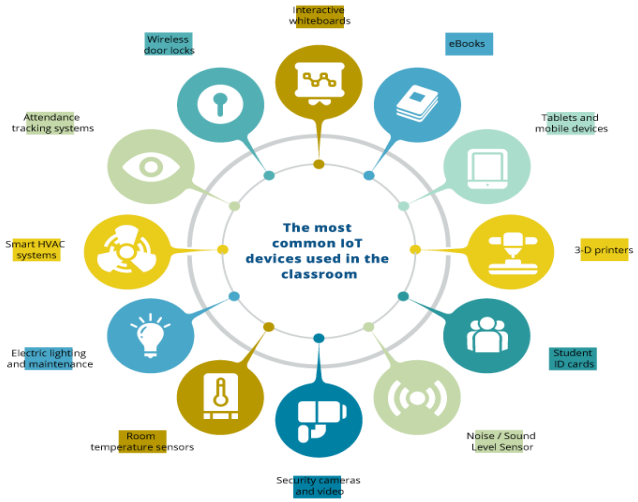
Environmental
Zero Waste Policy
Recycling & Compost program

Economical
Solar System
Water Filtration System
Zero Papers Policy

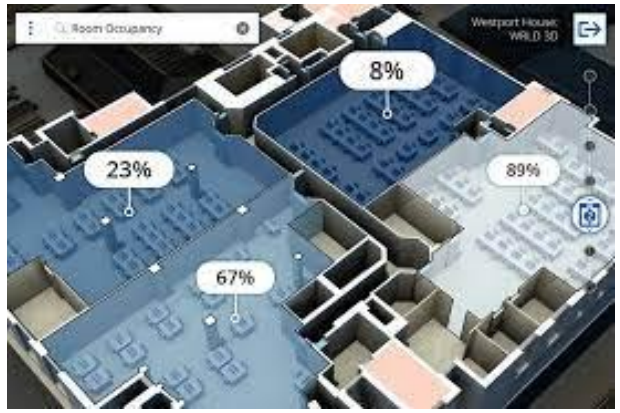
Social
Local community Engagement Program
Implement Green Building

Smart Campus:

Occupant Engagement
user experience app
Indoor control (IAQ-lighting)
Rooms & Desks (find-locate & book)
Services (Request-monitor-evaluate)



IOT Digital Enabled APP's
Smart Sensors (IP enabled)
Smart devices (IP enabled)
Cloud processing
AI Analyze platform
Users mobile interface



Assets-Space-Users efficient facility
Space Utilization
Real-Time occupant & Assets Location

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THANK YOU!

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