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# Green and Sustainability Initiatives In Yishun Health Campus, Singapore

7 July 23

Donald Wai

**10** Keeping  
The  
People  
Healthy  
Years of



Caring for patients • community • environment • staff

# Agenda

1. Yishun Health (YH) and our Green Philosophy
2. YH's current green and sustainability initiatives
3. YH's future sustainability plans

# Yishun Health

Yishun Health is a network of medical institutions and health facilities of the National Healthcare Group in the north of Singapore. It comprises Admiralty Medical Centre, Khoo Teck Puat Hospital and Yishun Community Hospital. It also includes extensions such as Wellness Kampung.



## Admiralty Medical Centre (AdMC)

AdMC is a one-stop medical centre for specialist outpatient consultation, day surgery, rehabilitation and diagnostic services, as well as community health outreach activities.

## Khoo Teck Puat Hospital (KTPH)

KTPH is a general and acute care hospital serving more than 800,000 people living in the north of Singapore. It combines medical expertise with high standards of personalised care in a healing environment, to provide care good enough for our own loved ones.

## Yishun Community Hospital (YCH)

YCH provides intermediate care for recuperating patients who do not require the intensive services of an acute care hospital. Situated beside KTPH, the two hospitals provide an integrated care experience for patients.

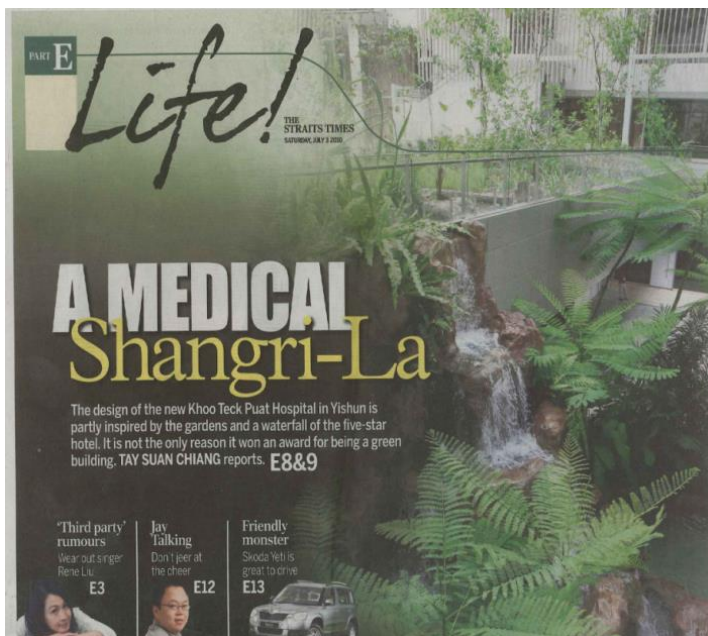
# Overview of Yishun Health Campus



# **Yishun Health and Our Green Philosophy**

# Healing and Tranquil Environment

- Hospital within a garden, garden within a hospital
- Provide sight, scent and sound of nature to patients and staff



# Energy Efficiency



- Tropical building with overhangs and high ceilings
- Natural ventilation of wards and corridors
- Use of renewable energy sources such as solar power
- Irrigation of plants and trees using Yishun Pond

# Indoor Environmental Comfort





The Singapore Green Plan 2030 is a national sustainability movement which seeks to rally bold and collective action to tackle climate change.

It is a living plan which will evolve as we work with Singaporeans and partners from all sectors to co-create solutions for sustainability. Let's work together to make Singapore a green and liveable home.

### City in Nature

**Green, Liveable and Sustainable Home for Singaporeans**

- Plant 1 million more trees, and have every household within a 10-minute walk from a park by 2030
- Develop over 130 ha of new parks, and enhance around 170 ha of existing parks with more lush vegetation and natural landscapes by end-2026
- Add 1000ha of green spaces by 2035

### Green Government

**Public sector will lead on sustainability**

- Be exemplary in taking sustainability action, including to peak public sector carbon emissions around 2025, ahead of national target
- Encourage and enable citizens and businesses to adopt sustainability practices, such as through green procurement

### Sustainable Living

**Strengthen Green Efforts in Schools**

- Introduce an Eco Stewardship Programme to enhance environmental education in all schools
- Work towards two-thirds reduction of net carbon emissions from schools sector by 2030
- At least 20% of schools to be carbon neutral by 2030

**Green Commutes**

- 75% of trips during peak periods to be on mass public transport by 2030
- Triple cycling path network to 1,320km by 2030, from 460km in 2020
- Expand rail network to 360km by early 2030s, from around 230km today

**Green Citizenry:**

**Reduce waste and consumption**

- Reduce amount of waste to landfill per capita per day by 20% by 2026, and 30% by 2030
- Reduce household water consumption to 130 litres per capita per day

### Energy Reset

**Cleaner-energy Vehicles**

- New diesel car and taxi registrations to cease from 2025, with all new car and taxi registrations to be of cleaner-energy models from 2030
- Further revise road tax structure to bring down road tax for mass-market electric cars
- Target 60,000 electric vehicle (EV) charging points by 2030, with 8 EV-Ready Towns by 2025

**Greener Infrastructure & Buildings**

- Green 80% of Singapore's buildings (by Gross Floor Area) by 2030
- 80% of new buildings (by Gross Floor Area) to be Super Low Energy buildings from 2030
- Best-in-class green buildings to see 80% improvement in energy efficiency (over 2005 levels) by 2030

**Sustainable Towns & Districts**

- Reduce energy consumption in HDB towns by 15% by 2030

**Green Energy**

- Quadruple solar energy deployment to 1.5 gigawatt-peak by 2025
- Tap on cleaner electricity imports, and increase R&D on renewable energy and emerging low-carbon technologies

### Green Economy

**Sustainability as New Engine of Jobs and Growth**

- New Enterprise Sustainability Programme to help local enterprises adopt sustainability practices
- Develop Singapore to be a carbon services hub, and a leading centre for green finance in Asia and globally
- Develop Jurong Island to be a sustainable energy and chemicals park
- Leverage opportunities in sustainable industries to create good jobs for Singaporeans

**New Investments to be Carbon and Energy Efficient**

- Seek new investments to be among the best-in-class in energy/carbon efficiency

### Resilient Future

**Safeguarding our Coastlines against Rising Sea Levels**

- \$5b dedicated to coastal and drainage flood protection measures
- Formulation of coastal protection plans for City-East Coast, North-West Coast (Lim Chu Kang and Sungei Kadut) and Jurong Island by 2030

**Safeguarding Food Security**

- Develop the capability and capacity of our local agri-food industry to produce 30% of our nutritional needs locally and sustainably by 2030

**Keeping Singapore Cool**

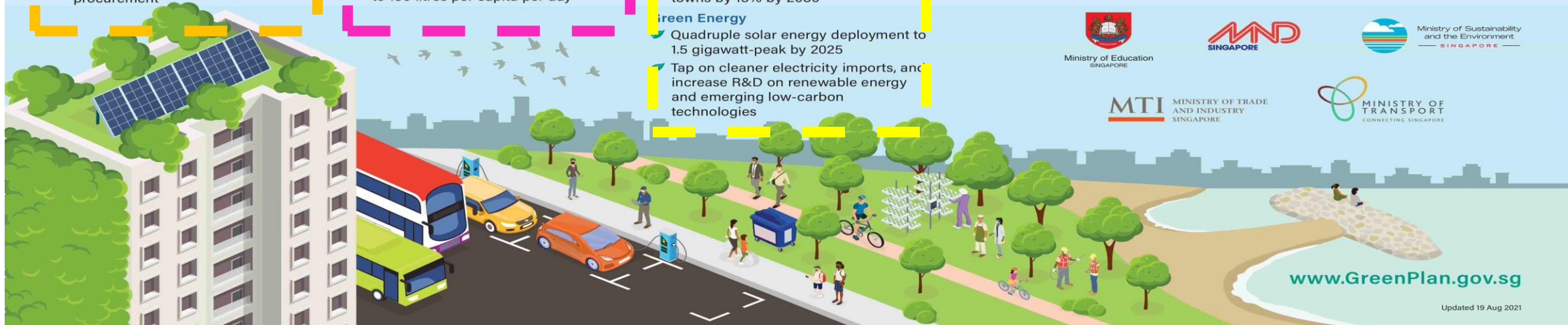
- Moderate the rise in urban heat, such as with cool paint and by increasing greenery

Jointly led by:

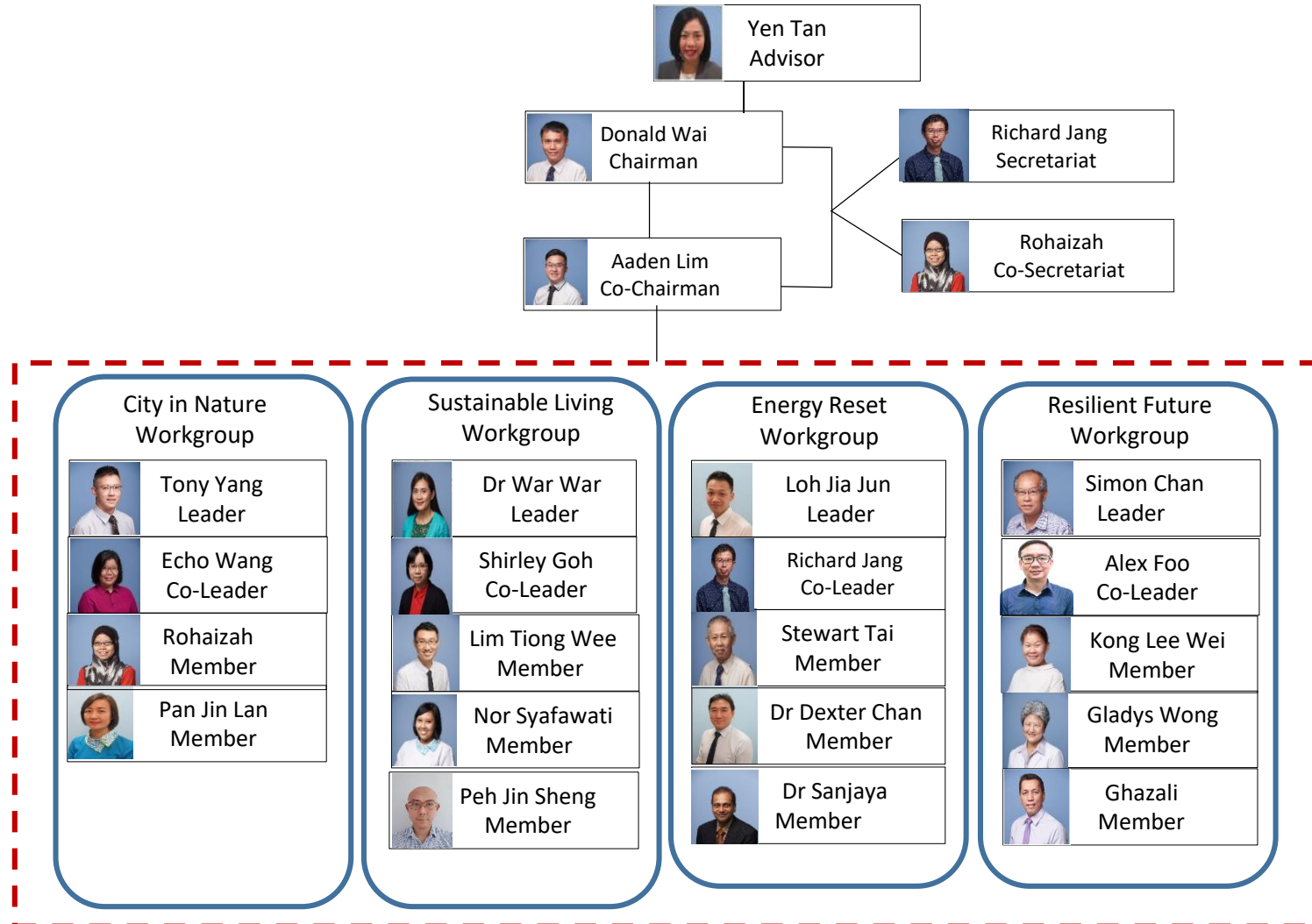


[www.GreenPlan.gov.sg](http://www.GreenPlan.gov.sg)

Updated 19 Aug 2021



# Yishun Health's Green And Sustainability Committee

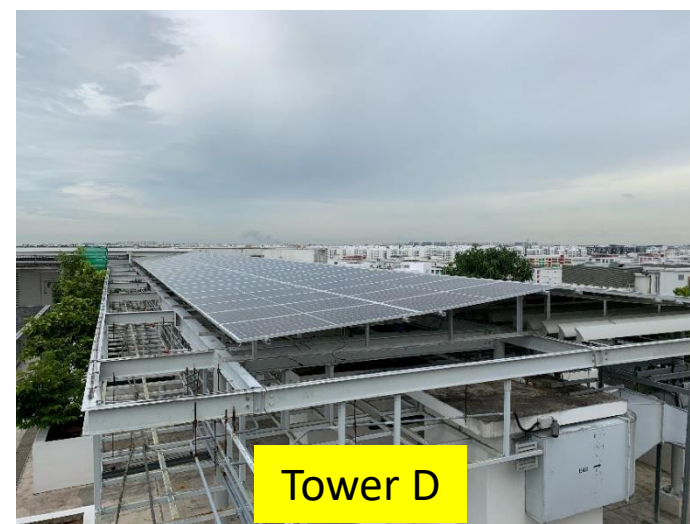
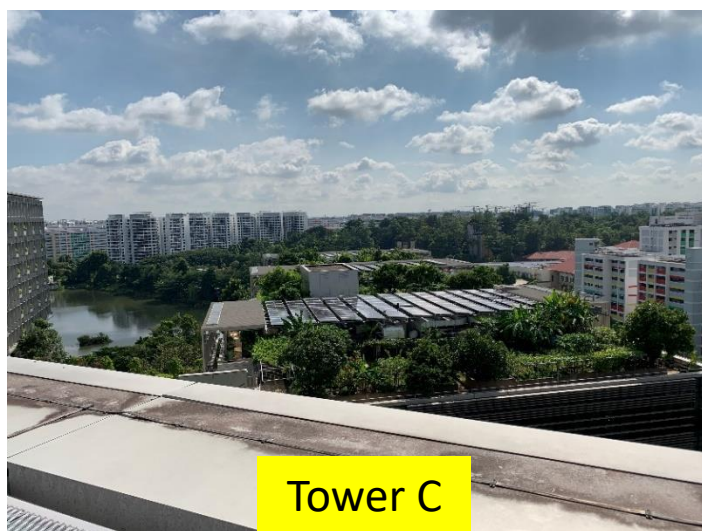
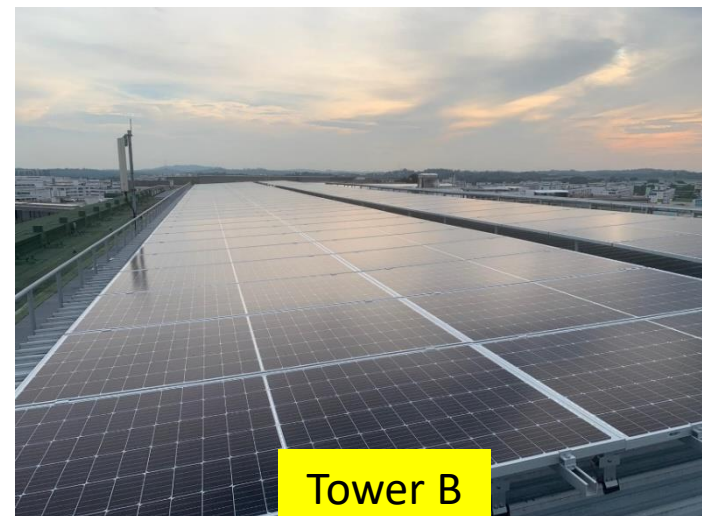


# YH's Current Green and Sustainability Initiatives

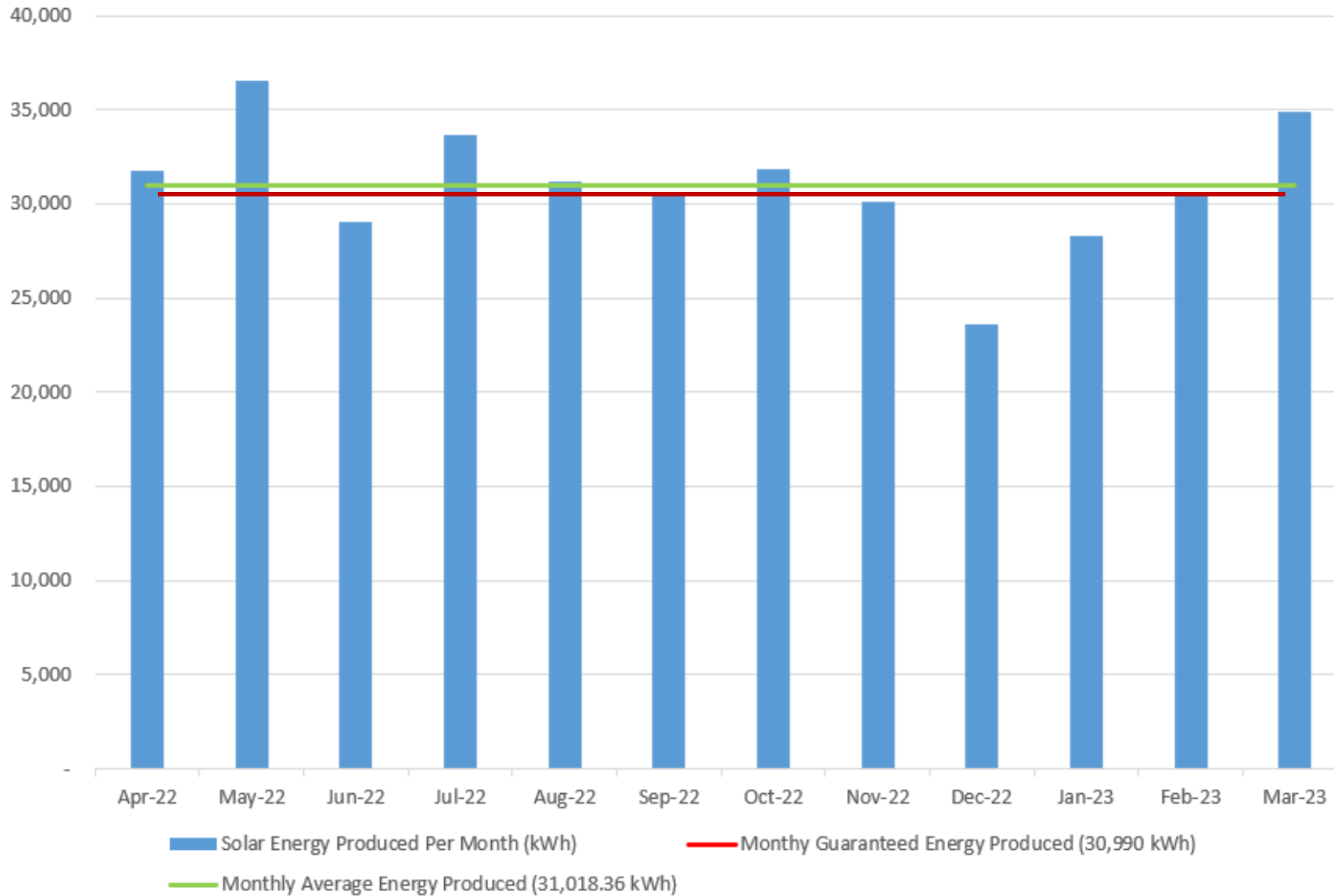


# Use of Solar Photovoltaic System as a renewable energy source

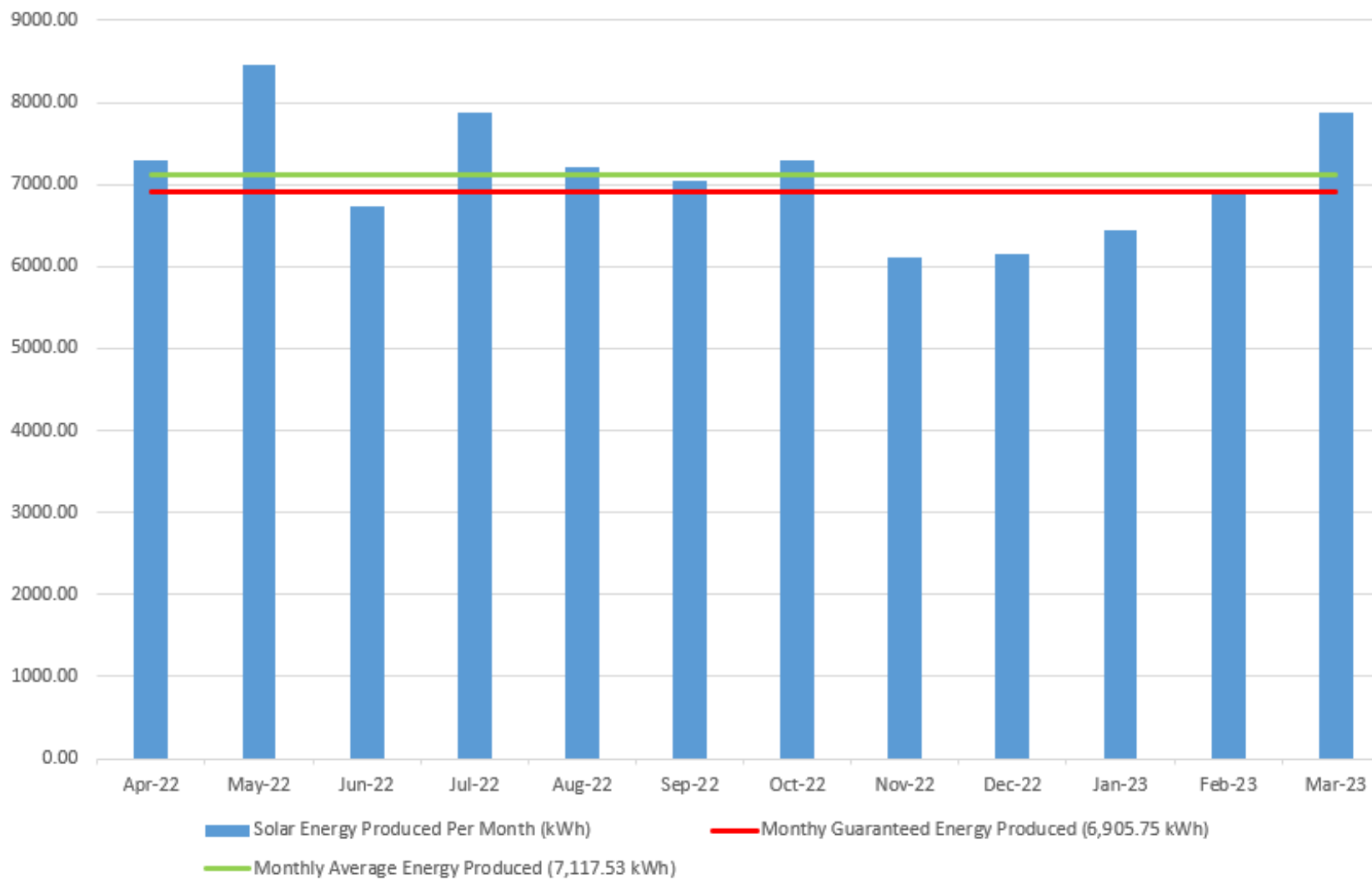
# Commissioning of New Solar Photovoltaic Systems in YH Campus in 2021



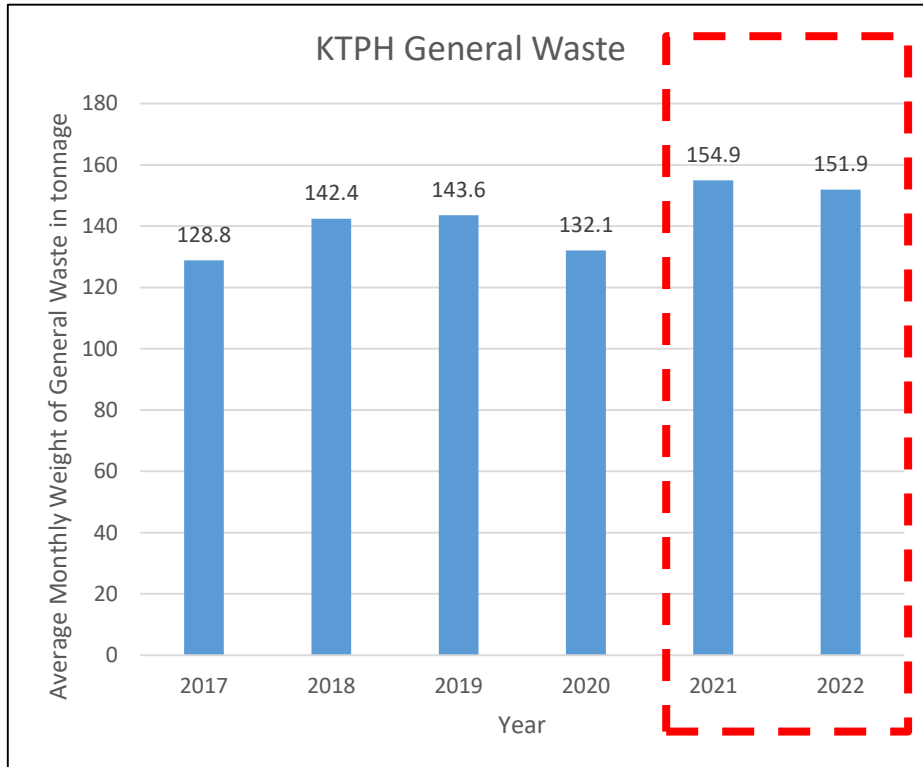
# Solar Energy Production in KTPH (2022-23)



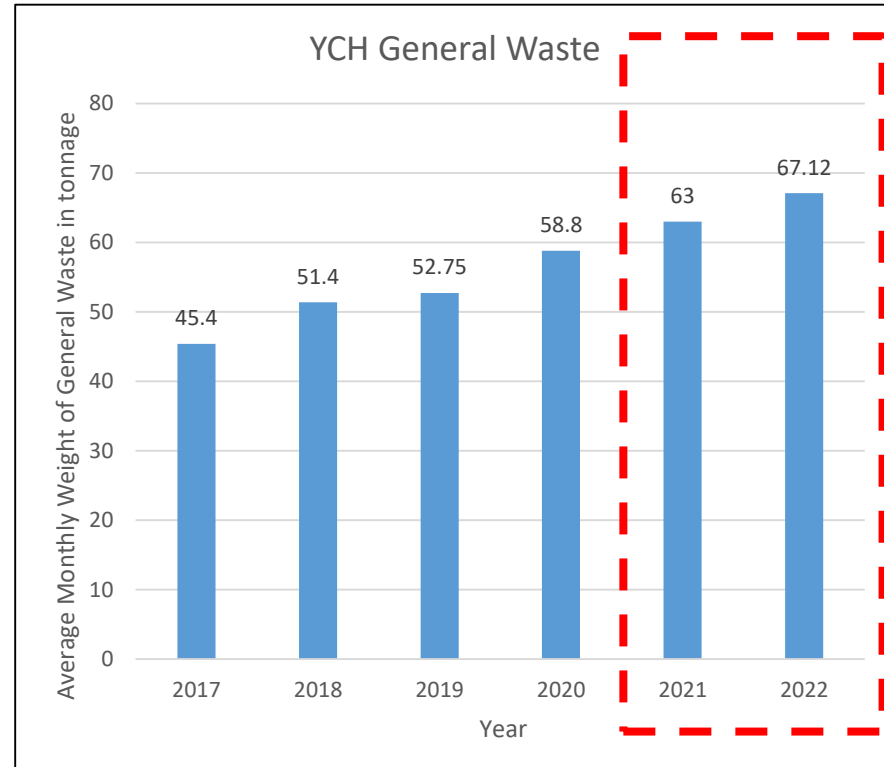
# Solar Energy Production in YCH (2022-23)



# General Waste



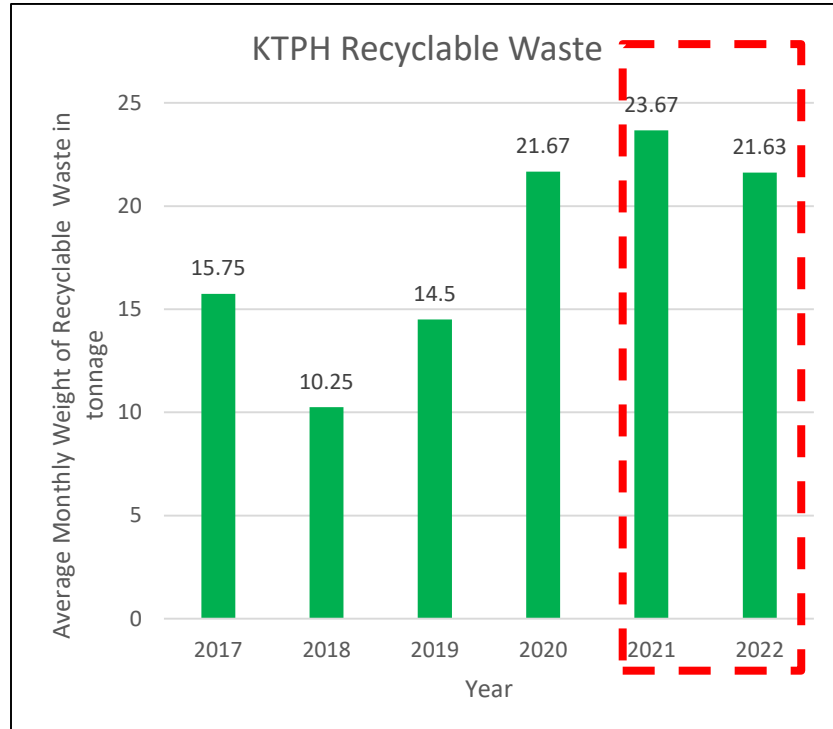
- For KTPH an average of 151.9 tonnes of general waste was collected monthly in 2022.
- There was a 0.0217% (-3 tonnes) decrease in 2022 as compared to 2021.
- There were minimal changes in 2022 and the Green Comm will continue to work with staff to reduce the amount of general waste generated.



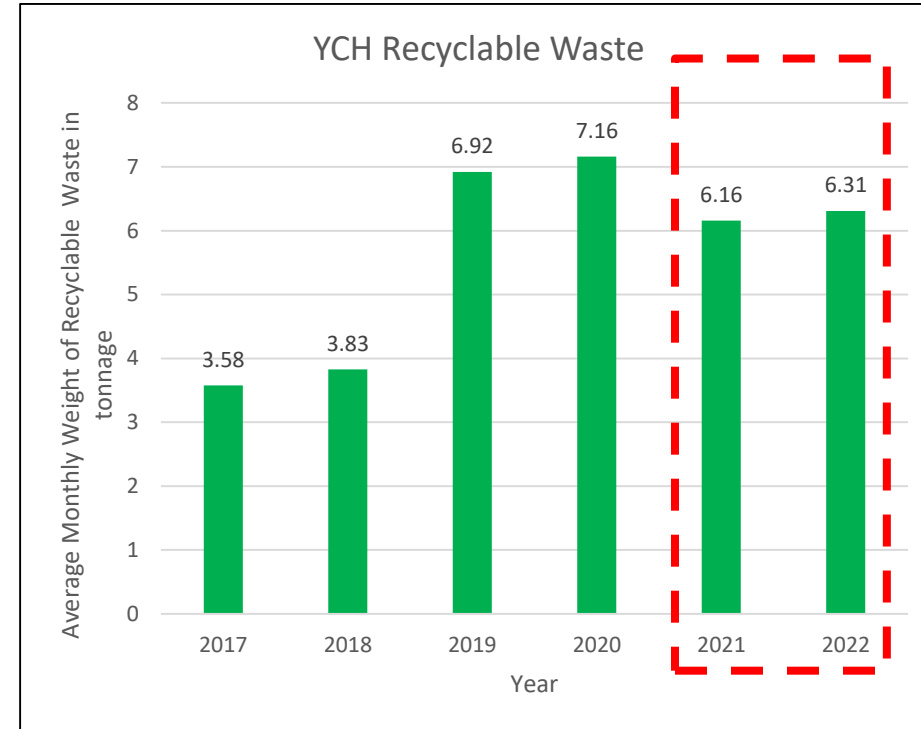
- For YCH an average of 67.1 tonnes of general waste was collected monthly in 2022.
- There was a 6.5% (+4.12 tonnes) increase in 2022 as compared to 2021.
- There were minimal changes in 2022 and the Green Comm will continue to work with staff to reduce the amount of general waste generated.



# Recyclable Waste

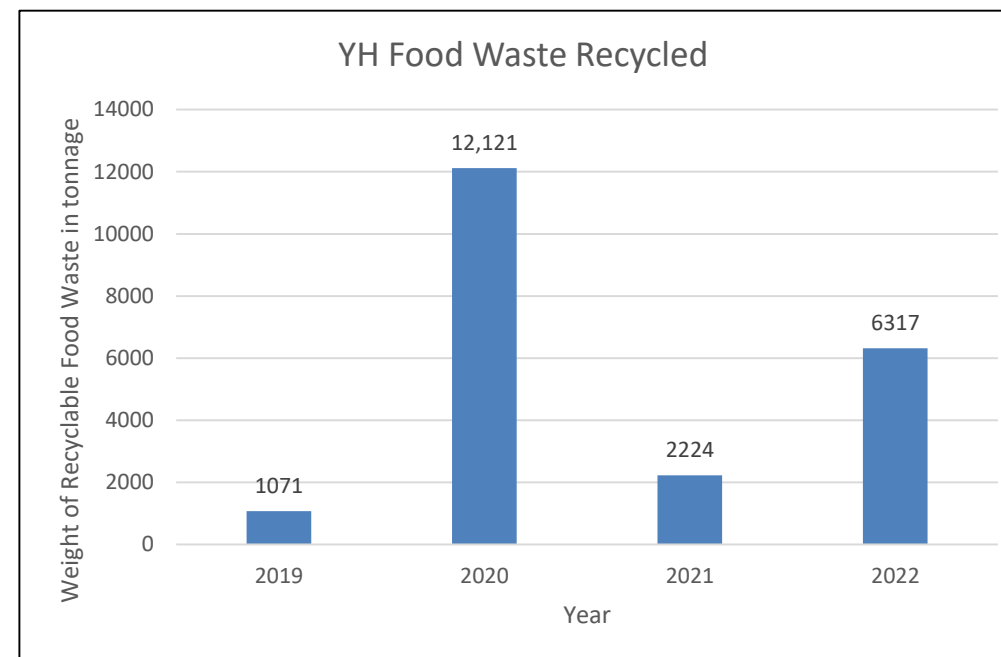


- For KTPH, the average monthly recyclable waste collected was 21.63 tonnes.
- There was a 8.62% (-2.04 tonnes) decrease in 2022 as compared to 2021.
- Lesser carton boxes were sent for recycling as the COVID-19 pandemic had stabilized and the equipping phase for NGEMR had ended in first half 2022.



- For YCH, the average monthly recyclable waste collected was 6.31 tonnes.
- There was a 2.4% (+0.15 tonnes) increase in 2022 as compared to 2021.
- The slight increase was likely due to staff coming back to work in the campus as the main contributor to the recyclable waste was used paper.

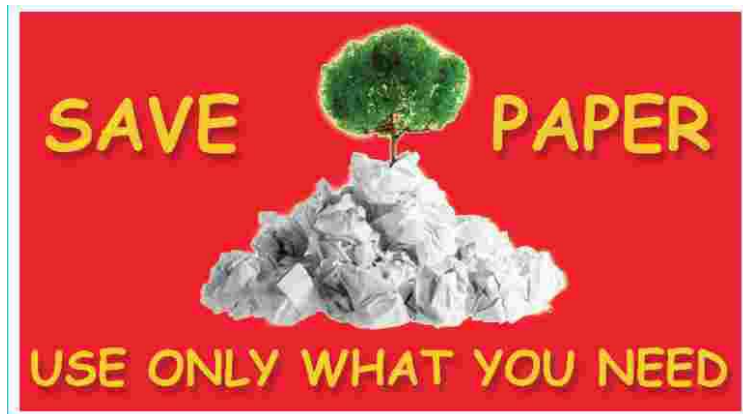
# Recycling of Food Waste



- 6,317 kg of food waste had been collected and recycled. There was a significant reduction in the food waste recycled as compared to 2020. This was because food services department had switched some un-cut vegetables to pre-cut vegetables to reduce wastages.
- In 2021, the machine had undergone major repairs and was not functioning for a period of time. Hence the comparison made was between 2020 and 2022 when the composting machine was working normally.

# Campaign On Reduction of Hand Towel Paper Usage

- Prominent messages on all paper towel dispensers were put up to remind staff and public not to waste paper by taking only what they need.
- Trials using hand dryers to replace hand towel paper dispensers will be implemented at non-patient areas. This is to assess the viability in the trade off in reducing hand towel paper usage against higher electricity consumption and maintenance costs.



Dispenser at staff pantries



Dispenser at toilets

# Green and Sustainability Events



## Activities From 2022-2023

Month	Activity	Involvement
March	<b>Earth Hour</b>	Staff and their families
April	<b>Earth Day</b>	Staff and their families
November	<b>Clean and Green Singapore 2022</b>	Staff and Visitors
March	<b>Singapore World Water Day 2023</b>	Staff and their families

# Gardening Day (April 2022)



# Clean and Green Singapore (November 2022)



## Aquaponics system at Roof Top of Tower D (YCH) (Clean and Green Singapore 2022)



## Launch of Butterfly Garden at Back of Tower B (KTPH) (Clean and Green Singapore 2022)



# Collection of Used Clothes and Work Shoes For Re-Usage (Clean and Green Singapore 2022)

**Yishun Health**  
National Healthcare Group

## CLEAN & GREEN SINGAPORE 2022

23 - 25 November 2022 | KTPH Main Lobby

**"Sustainable Living & Environment Protection" Exhibition**  
Visit various booths by Earth Society, FullSun (smart sanitary appliance supplier), National Environment Agency, ISS Facilities Services and our own YH Green & Sustainability Committee to learn more about how you can make a difference in protecting the environment and live sustainably

**Collection of pre-loved T-SHIRTS, PANTS & SHOES**  
23-25 Nov | 11am - 3pm  
\*Please ensure that the t-shirts, pants and shoes are clean and in good condition

**"Buy Green, Stay Healthy" Bazaar**  
23-25 Nov | 11am - 4pm  
Sale of healthy dried fruits & nuts, fresh fruits, handmade gifts and potted plants  
\*Bring your own bag (BYOB)

**Launch of Butterfly Garden**  
25 Nov | 1-3 pm  
\*By invite only

Brought to you by YH Green & Sustainability Committee



- Encouraged staff to donate their used clothes and work shoes for re-usage.
- Collected 3 bags of clothes and 1 box of shoes during the 3-day event.
- The used clothes were handed over to A&E Department to give to patients who were in need of clean clothes upon their discharge.

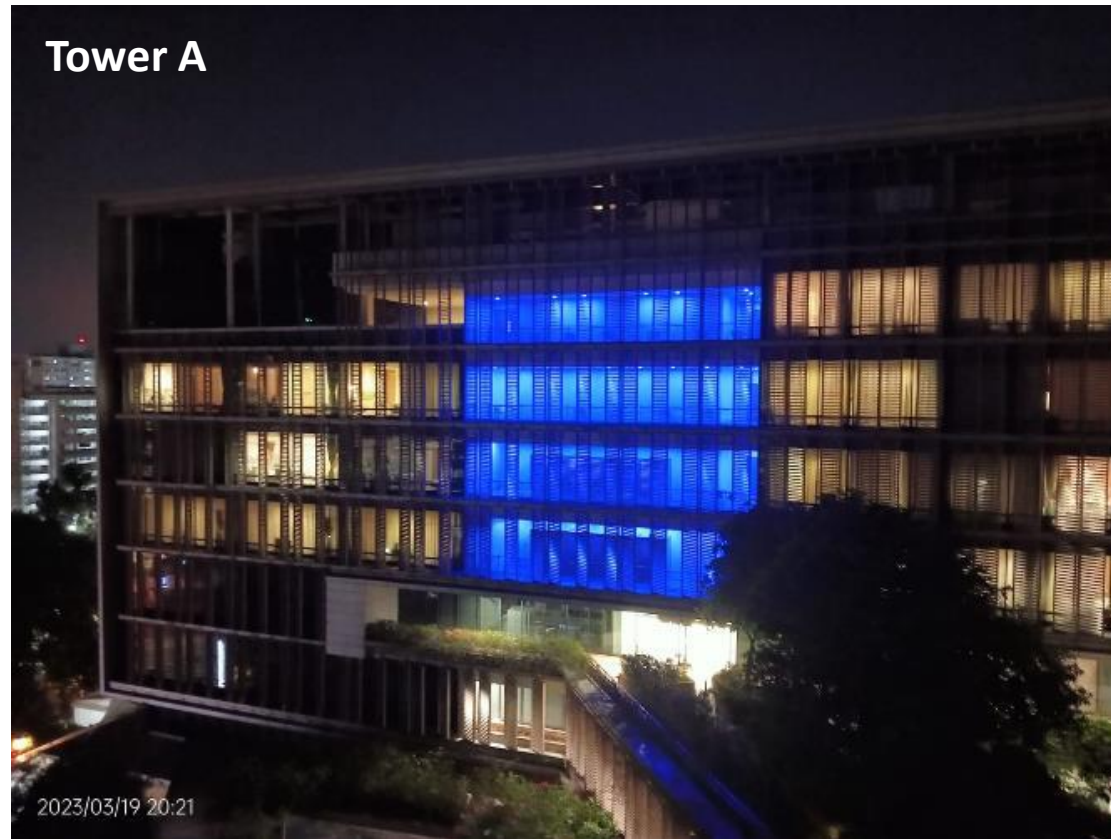


## YH's Participation in Singapore World Water Day (SWWD) 2023



A total of 45 staff and family members participated in Singapore World Water Day (SWWD) with a “Walk for Water” event at Marina Barrage on 18 March 2023 to pledge to save more water.

# YH's Participation in Singapore World Water Day (SWWD) 2023



KTPH (Tower A) and YCH (Tower D) were lighted up in blue to commemorate SWWD 2023 in Mar 23.

# YH's Participation in Earth Hour and Earth Day 2023

- On 25 March 2023, YH participated in Earth Hour 2023. Non-essential lights along YH corridors, balconies as well as garden lights were turned off for an hour to align with the objectives of the event to save energy.
  
- On 22 April 2023, YH staff commemorated Earth Day 2023 through these year-long initiatives:
  - a. Participated in Meatless Mondays
  - b. Air-conditioning – presetting office spaces to optimal temperatures and running hours
  - c. Reduce plastic usage
  - d. Switch off appliances in the pantries and offices when not in use to save energy



# 2022 Sustainability Award

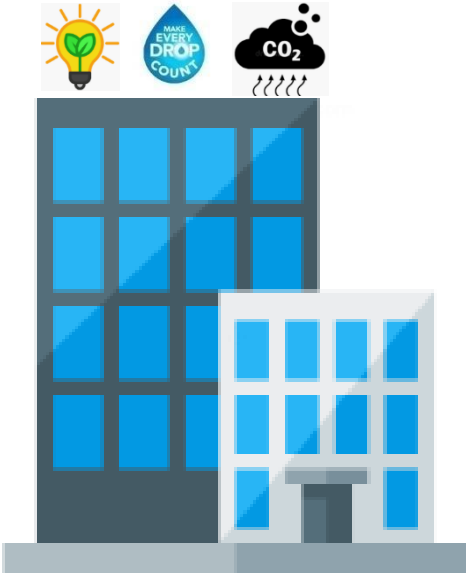
S/N	Awards
1	Green Mark Platinum Super Low Energy Award for Yishun Community Hospital (YCH)



# Yishun Health's Future Sustainability Plans



# 3 Primary Goals



**Goal 1:  
Building  
Sustainability**



**Goal 2:  
Towards  
Waste  
Reduction**



**Goal 3:  
Staff and  
Community  
Engagement**

# Goal 1: Building Sustainability



# Goal 1: Building Sustainability

## Objectives

- To integrate best practices for environmental sustainability into the building operations and facilities. This is to improve environmental performance without comprising patients' comfort.
- To adopt water conservation practices, promote vigilance and staff awareness to minimize water consumption.
- To reduce our energy use and carbon footprint through use of renewable energy sources, applications of new technologies and adoption of resource efficiency measures.



Sustainable  
Buildings



Water  
Efficiency



Energy Efficiency  
& Emissions



## Sustainability Initiatives In FY23

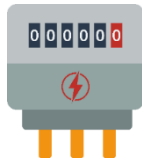
S/N	Month	Activity
1.	April-23	Electronically Commutated (EC) Fan Installation
2.	June-23	Replacement of Existing Non-Light Emitting Diode (LED) Lights With LED Types
3.	Aug-23	Smart Flushing System for more urinals In toilets
4.	Oct-23	Installation of wind turbines at cooling towers (which forms part of the central air conditioning system) to harvest wind energy
5.	Dec-23	Installation of more solar photovoltaic panels in rooftop areas

# Electricity Sustainability Measures

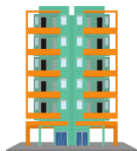
## Electronically Commutated (EC) Fan Installation



- An EC fan is an electronically commutated device that runs on low power
- Housed within air con units, it is an energy efficient fan that pushes treated cold air through primary and secondary filters that are used to remove contaminants
- 43 nos. of large air con units called Air Handling Units (AHUs) are planned to be fitted with such EC fans in YH Campus



- Savings for the 43 nos. of large air con units:
  - i) Estimated Total Monthly Energy Savings: 53,241 kWh
  - ii) Estimated Total Monthly Cost Savings: \$7,454



- Based on average energy usage of a 5-Room HDB Flats @ 430 kWh per month, the electricity savings are sufficient to power 124 units of 5-Room HDB Flats for a month

# Electricity Sustainability Measures

## Proposed Air-Conditioning Settings For All Offices



- General Offices for clinicians who work on shifts (GO1 to GO6)
  - i) 7 am to 6 pm (Mon to Fri)
  - ii) 7:30 am to 1 pm (Sat-Sun/Public Holidays)
- All Other Offices
  - i) 7:30 am to 6 pm (Mon to Fri)
  - ii) No air conditioning on Sat, Sun and Public Holidays unless there are mass staff events or emergency recalls.
  - iii) Departments that run day and night shifts such as Housekeeping, Security and Facilities will be provided with air conditioning based on their non-standard working hours.
- Recommended temperature at 24 deg Celsius to be set in all offices.

# Electricity Sustainability Measures



- The campus carparks will be installed with Electric Vehicle (EV) charging points to support Singapore's Green Plan 2030 to move towards the use of clean transportation energy. This is based on a revenue collection and zero capital cost outlay scheme. Vendor had been selected in May 2023, with installation to be completed by end 2023 or early 2024.



- The next phase of YH's solar photovoltaic (PV) system will involve installation of floating solar panels on Yishun Pond's surface and at Towers B and E rooftops.
- Electricity harnessed from these solar panels will be used to power external and street lightings.

# Water Sustainability Measures

## Rain Water Harvesting



- KTPH will continue to harvest more rain water for irrigation usage.
- This will lower the raw water consumption costs from an adjacent government managed storm water pond that has been supplying water to irrigate our landscaped areas.

## Smart Flushing System For Urinals







- A Smart flushing system for the urinals with accurate user detection had been put on trial in Dec 22 in Khoo Teck Puat Hospital's Outdoor toilet (next to our foodcourt) and at Admiralty Medical Centre. It will only flush the urinals if sodium is detected in the waste water to avoid repeated flushing from nuisance motion detection.

# Goal 2: Towards Waste Reduction



## Goal 2: Towards Waste Reduction Objectives

 Refuse	 Reduce	 Reuse	 Recycle
<ul style="list-style-type: none"><li>• Refuse the use of things that we don't really need, especially non-biodegradable consumable</li></ul>	<ul style="list-style-type: none"><li>• Refuse the waste generated through prudent consumption</li></ul>	<ul style="list-style-type: none"><li>• Reuse item to its maximum lifespan or re-purpose it for other usages</li></ul>	<ul style="list-style-type: none"><li>• Recycle instead of disposing into general waste streams whenever possible</li></ul>

## Goal 2: Towards Waste Reduction – People and Processes



**Provide more recycling bins**



**Bring Your own (BYO)**



**Reduce Food Wastage**



**Green Procurement**

### Influencing People And Culture

- Raise awareness of the 4Rs through email blast, green events and virtual road shows
- Provide more recycling bins and nudge staff to use them more often
- Conduct campaigns and messaging for staff to bring their own food containers / shopping bags when purchasing items from the pharmacy, Able Studio and tenanted spaces

### Improving Work Process

- Work closely with food services department to reduce food wastage
- Work with users to reduce single-use plastic materials
- Work with Materials Management Dept (MMD) on implementing green procurement policies and drawing up of procurement specifications



## Goal 2: Towards Waste Reduction - Education

- Arrange educational talks and sharing session by Singapore's National Environment Agency (NEA) and other green organizations to promote and collaborate on green and sustainability initiatives.



## Goal 2: Towards Waste Reduction – Reusage

- Work with vendor on ‘Give your pen a 2<sup>nd</sup> life’ initiative by collecting used ballpoint pens to refill and reuse them.
- Place a small transparent collection container at each clinic, ward or department and even public areas such as the main lobby to encourage the disposal of used ballpoint pens into the container for collection.
- Place a bigger main collection transparent container at KTPH Main Lobby. All the ballpoint pens collected from each area will then be deposited into this big container to create awareness for staff and visitors to support this initiative.
- These ballpoint pens will then be accumulated and collected back by a vendor to refill the ink for needy students to reuse these recycled pens.



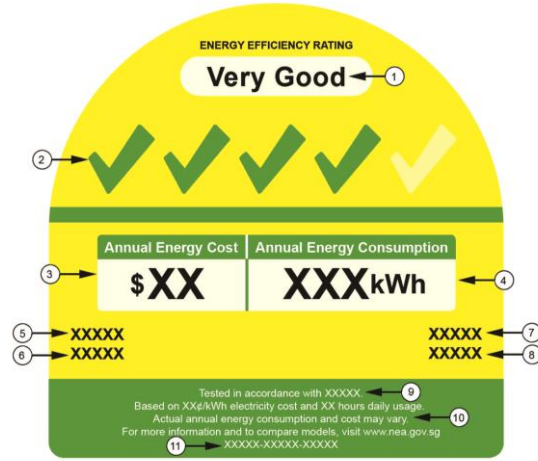
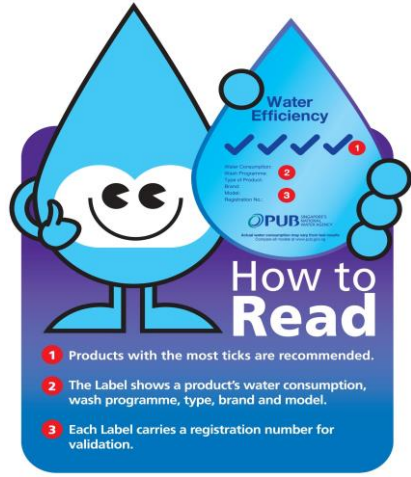
## Goal 2: Towards Waste Reduction – Recycling Of Less Common Products

- In addition to the usual collection bins for plastics, metals and papers, other collection bins for battery and glass bottles have been provided at the back of Tower B of Khoo Teck Puat Hospital.
- Smaller amount of batteries and glass bottles are first collected in designated recycling areas within the wards and non-patient areas. These are transferred to these bins by our Environmental Services Department (ESD) staff for eventual collection and recycling by our vendor.



# Goal 2: Towards Waste Reduction – Green Procurement

- To include green and sustainability criteria in the evaluation and quality scoring for Request for Proposal (RFP) or Request for Quotation (RFQ) process. Vendors who propose using products and equipment approved under the Singapore Green Building Product scheme, Public Utilities Board (PUB)’s Water Efficiency Label (WEL) listing and the National Environment Agency (NEA)’s Mandatory Energy Labelling Scheme (MELS) will be given higher quality scores.



- To gradually switch to environmentally friendly materials and biodegradable products.
- To promote environmentally friendly packaging as specified in Singapore’s Technical Reference (TR) 109 standards on Sustainable Packaging Guiding Framework and Practices.

# Goal 3: Staff and Community Engagement



# Goal 3: Staff and Community Engagement

## Objectives

- To engage, educate and empower staff and community to achieve health and environmental sustainability outcomes.
- To continue to collaborate with government agencies and non-government organisations (NGOs) on adopting and implementing green and sustainability practices. These include Ministry of Sustainability and the Environment (MSE), National Environment Agency (NEA), Public Utilities Board (PUB), National Parks Board (NParks), Global Green and Healthy Hospital (GGHH), Tzu Chi Humanistic Centre, Nee Soon grassroots committees, etc. Previous events included litter picking day around the community with some of these agencies.
- “Meatless Monday” – Launched during YH’s Pre-Covid days to educate staff on alternative healthy food sources that reduce our carbon footprint significantly. Nutrition and Dietetics (N&D) department will also be launching a plant based diet program for the benefit of patients and staff and to reduce our carbon footprint.



# Meatless Mondays

Dietitian's Day roadshow - 340 pledges



Cooking demos by chefs at Foodworks as part of the "CookSmart" & "GadgetSmart" series



Public Nutrition Forum



Mandarin public nutrition talks



General Practitioner's Symposium



Foodfare stores advertise <500cal meatless dish on Mondays



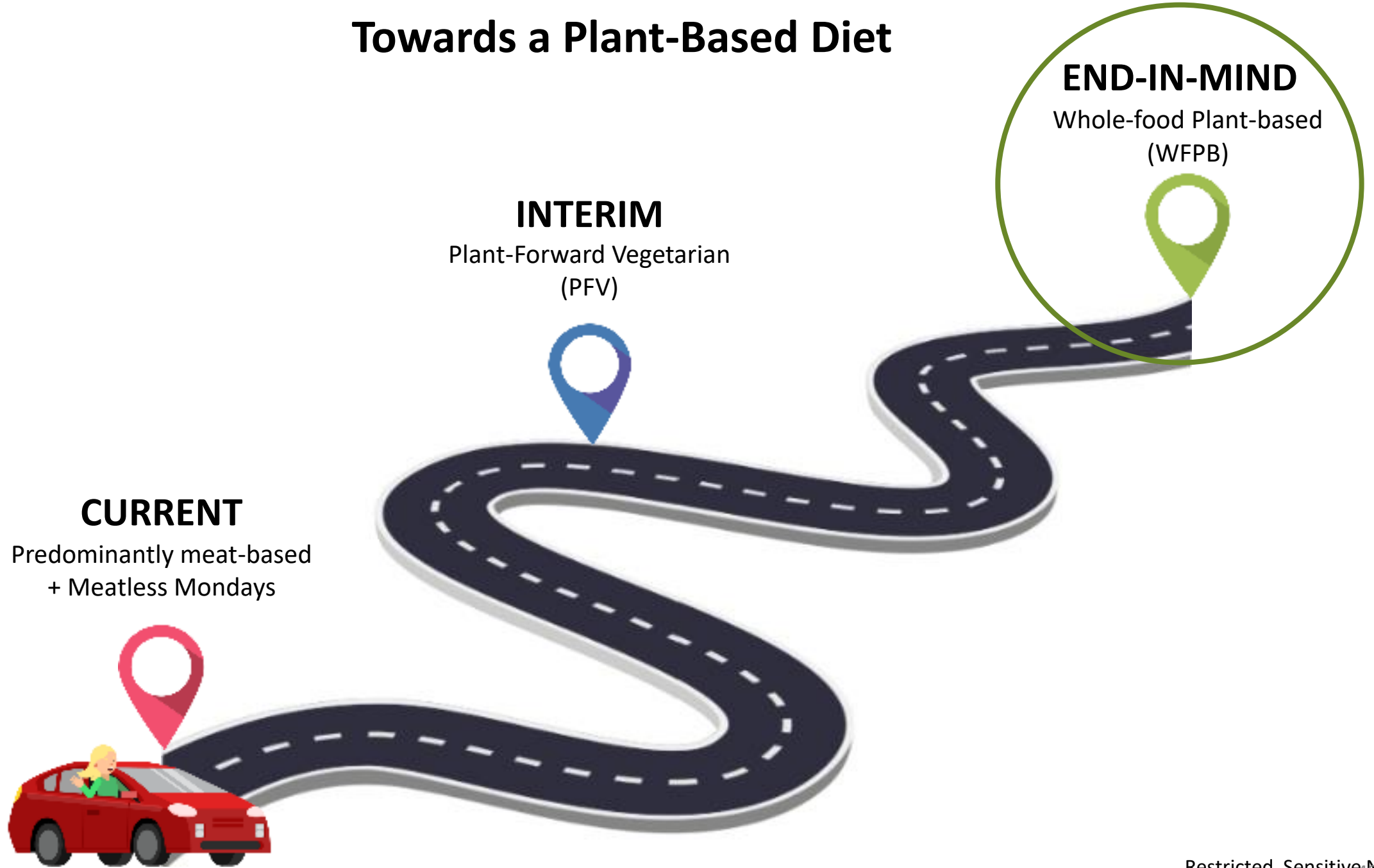
Student projects – Operating Theatre's staff meatless catering menu



Sharing during Nurses Journal Club 2018



# Towards a Plant-Based Diet



## CURRENT

Predominantly meat-based  
+ Meatless Mondays

## INTERIM

Plant-Forward Vegetarian  
(PFV)

## END-IN-MIND

Whole-food Plant-based  
(WFPB)



## Goal 3: Staff and Community Engagement – Upcoming Events

- Continual participation in community and national events including:
  - Clean and Green Singapore campaign (End 2023)
  - Upcoming Community Litter Picking/Clean-up events with grassroots committees
- World Water Day (Mar 2024) - Collaborate with the Public Utilities Board (PUB) to spread awareness on the impact of climate change on Singapore's environment by putting up posters in our lifts to save energy and practise sustainability.
- Earth Day (Apr 2024) - Collaborate with the National Environment Agency (NEA) to design and put up electronic direct mail (EDM) posters with various tips and initiatives. This is to encourage our staff to save more energy and reduce waste generation.



Think  
**BIG**



 Khoo Teck Puat Hospital  
Alexandra Health



Dig  
Deep

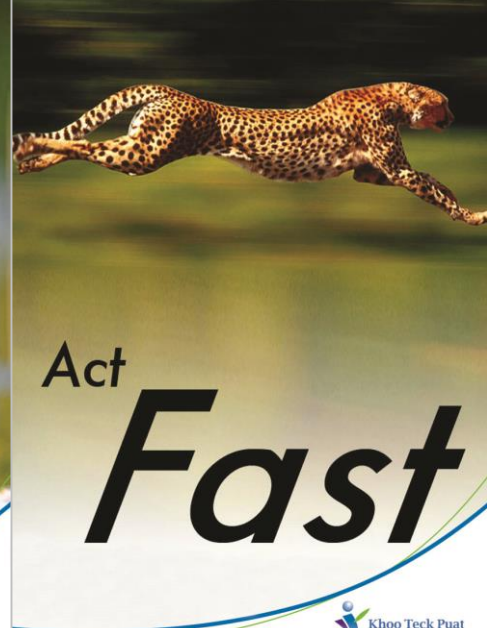
 Khoo Teck Puat Hospital  
Alexandra Health


Start  
Small



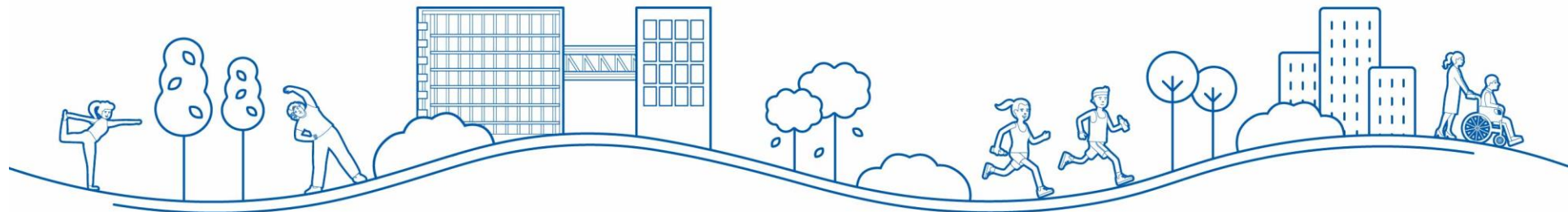
 Khoo Teck Puat Hospital  
Alexandra Health

Act  
**Fast**



 Khoo Teck Puat Hospital  
Alexandra Health

# Thank You



Caring for patients • community • environment • staff