

SUSTAINABLE WATER MANAGEMENT IN TROPICAL REGION CAMPUS

*Study Case at
Institut Teknologi Sepuluh Nopember, Indonesia*

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OUTLINE

- Campus Profile
- Water Demand
- Stormwater Management
- Wastewater Management
- Water Reuse and Recycle

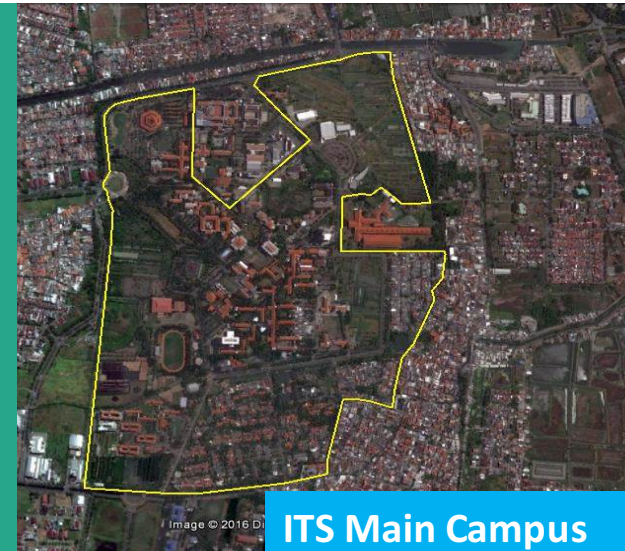


INTRODUCTION

ITS Campus Profile



- 8 Faculties
- 31 Departments
- 970 Lecturers & Professors
- 1135 Academic Supporting Class
- Student body : +/- 20,000 students (Vocation, Undergraduate, Master and Doctoral)



ITS Main Campus



Leading Science and Technological University in Indonesia

Ranked 6th in Indonesia



2nd rank UI Green Metric World University Ranking



Main Campus

187 Ha at the North East of Surabaya, capital of East Java Province.





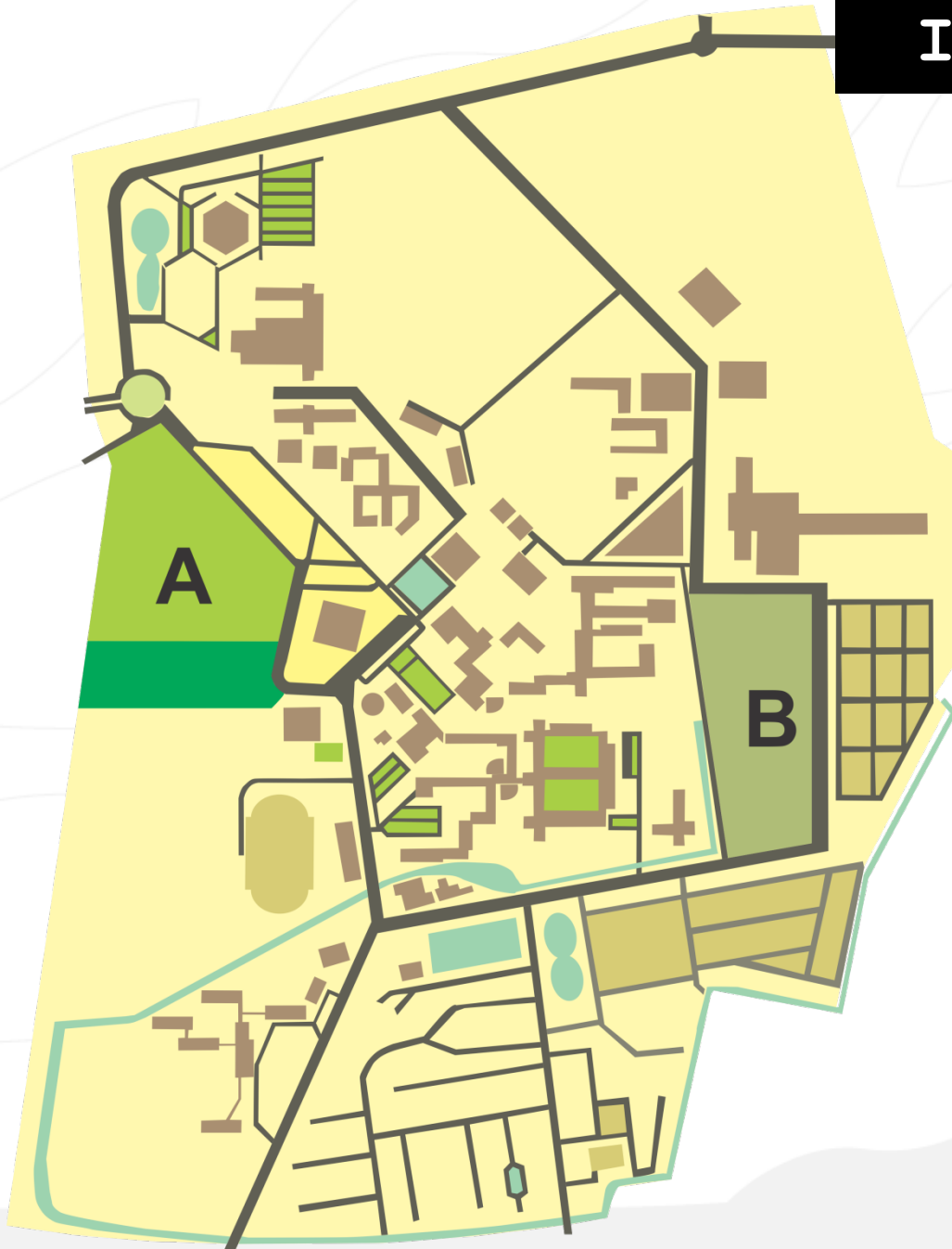
ITS
Institut
Teknologi
Sepuluh Nopember

Since 2011, ITS declared ITS
Eco-Campus to develop
livelihood campus that cares
to manage its environment
more systematic and
sustainable



ITS EcoTechno Park

Zonation Plan



A Conservation Zone

Main Zone

Buffer Zone;
arboretum with
jogging track

B Technological Park



ITS EcoTechno Park

CONSERVATION ZONE;
MAIN ZONE

Habitat for more than **60 bird species** and **6 species of mammals**; some are endemic species that are protected by national law of conservation.

Existing condition:

- Wetlands that are cultivated by surrounding community for livings
- Biodiversity reserves of flora and fauna at ITS Campus



ITS EcoTechno Park

URBAN FARMING of ITS

We produce various organic vegetable products that have been utilised by campus community in regular basis at our cooperative shops.

fresh – hygienic
No pesticides



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ITS EcoTechno Park

ORGANIC HYDROPHONIC GARDEN



INTRODUCTION

4 Aspects of ITS Smart Eco Campus

01

Operational and maintenance concerned with sustainable development & environmental friendly approaches, *i.e.* energy saving, water saving and solid waste recycle

02

Development of academic faculty behavior which concerns towards environment in all academic activities

03

Development of researches and the implementation of science and technology that supports ITS Smart Eco-campus

04

Faculty and community empowerment to participate in harmonizing ITS Smart Eco-campus, empowering communities that live surrounding ITS campus to make improvement impacts.



Established since 2011



Contribute to global programs related to environmental sustainability, also stated in SDGs

ITS Smart Eco Campus



Water
Manage-
ment



Energy
Efficiency
Improve-
ment



Integrated
Waste
Manage-
ment



Eco
Transporta-
tion



Biodiversity

Socio Engineering



Water Demand



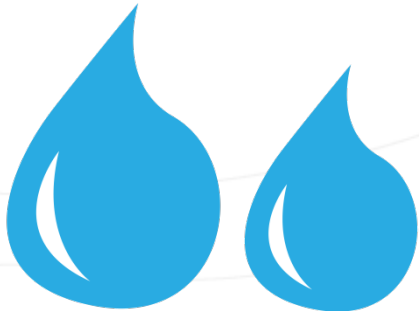
Use

Faculty Member, Laboratory Purpose, Facilities, Campus Operation & Maintenance.



Average Water Consumption

32,627 m³/ month or 1,087 m³/ d



2015
33.927 m³

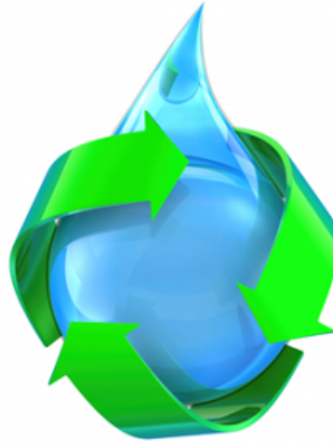
2016
30.893 m³



Water Management

- Uses non-drinkable tap water from Surabaya's municipal water supply company
- Also constructed Drinkable Tap Water Stations

Water Management System



Water Reuse
and Recycle



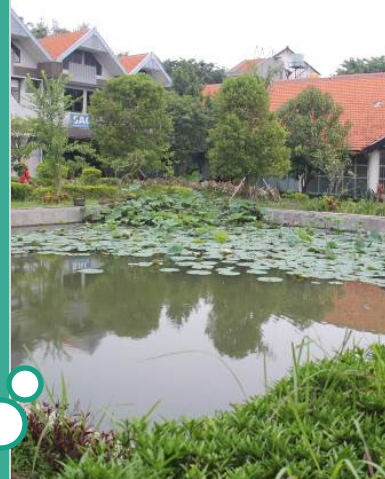
**WASTEWATER
MANAGEMENT**





*Lotus pond :
for wetland
& flood
control*

*Pond for
Garden
watering,
Biodiversity
Emergent
Plants*



*Fishery
pond*

Stormwater Management

Retention Ponds



*Rain water
Harvesting*



*8 shaped
Retention
Pond :
flood
controls,
sport
activities &
Tournamen*



*For flood
control &
Recreation*

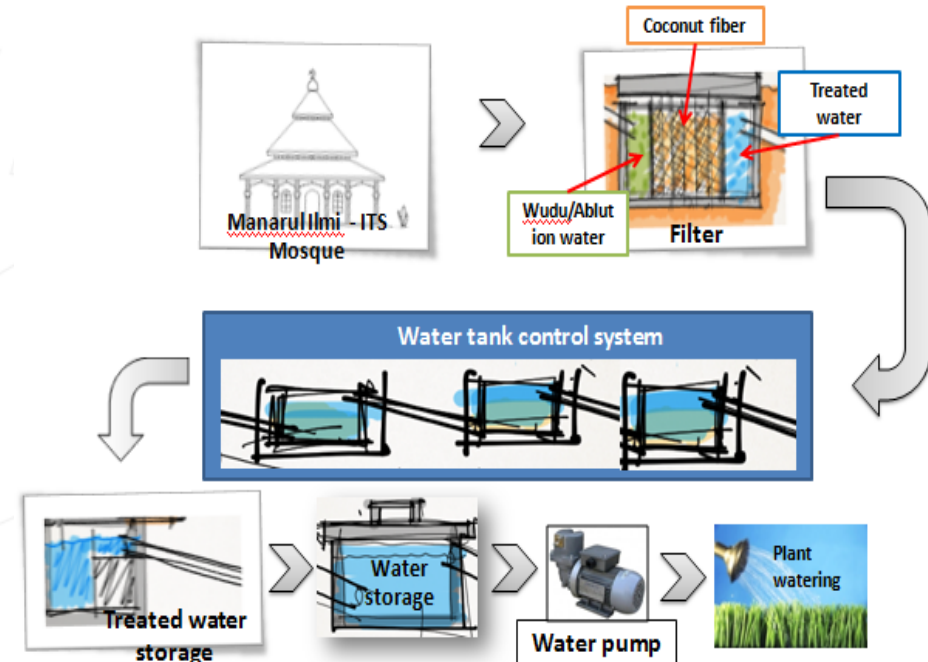


Water Reuse and Recycle



Mosque Water Recycle Reservoirs

Ablution water circulation



Wastewater Management

Domestic water, produced from academic buildings, canteens, student dormitory & other buildings

Mainly flows by septic tank.

Others: treated by Wastewater Treatment Plants (ABR, AF, Constructed Wetlands)

Anaerobic
Baffle
Reactor for
Waste
Water
Treatment



Pond
Covered
by HDPE
Membrane



Mathematics
and Science
Faculty
laboratories
Wastewater
Treatment





Thank You