THE GLOBAL GOALS
For Sustainable Development

ISTANBUL GELISIM UNIVERSITY

CLEAN WATER AND SANITATION REPORT

IGU for **"Ecological, Social and Economic Sustainablity"**

www.gelisim.edu.tr

Contents

Preface

Water is a right and a gift of nature that all species on earth should have access to indiscriminately. However, the profound effects of global warming on the world make the water demand irreversible by transforming it from being a natural resource to a scarce and economic good. Every day, more and more people are deprived of clean water resources due to the depletion of freshwater resources, pollution of clean water resources, and uncontrolled energy generation.

The quest for a water-secure world is a joint responsibility and can only be achieved through water cooperation at the global level and through partnerships with a multitude of local stakeholders. Curbing water scarcity would only be possible if policies are consistent and coherent, carrying out efforts to repair our relationship with nature, in a sense, being able to make a fresh start, and all stakeholders are engaged in all the phases of policymaking at the different levels.

Improving the awareness of sustainable production and reducing overconsumption, synthesizing traditional and innovative perspectives, contributing development policies required at different levels from local to the international arena are the common responsibility of states, international organizations, non-governmental organizations, both profit-making, and non-profit organizations, as well as universities that are the center of science.

As Istanbul Gelisim University, we devotedly carry out studies on clean water and sanitation for a sustainable future, in line with the United Nations Sustainable Development Goals, both within the policies implemented on-campus areas and in cooperation with stakeholders.

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1. INTRODUCTION

Water, an indispensable natural resource of life, became an ever-increasing strategic resource in the world. Since the beginning of the 21st century, increasing environmental problems led to the problem of a decrease in utilizable water resources. Rapid population growth has also increased the demand for water and caused the problem to grow. The awareness of the water problem has increased each day in a national and global manner due to the demand of water of the world population for more than needed with every passing day, despite the declining utilizable water potential. Therefore, water management and transboundary waters issues are at the top of the agenda of all countries. (Evsahibioglu 2008a, Evsahibioglu 2008b).

One of the aims in the "Millennium Goals" adopted at the UN 1998 Millennium Summit is to ensure environmental sustainability. In this context, the 9th goal is "to integrate the principles of sustainable development with the policies and programs of the country and to reverse the extinction of environmental resources", whereas the 10th goal is to "halve the proportion of the population having no access to Safe Drinking Water and basic waste system by 2015".

Approximately 300 million hectares of land are irrigated in the world today. Accurate irrigation techniques have increased agricultural production, balanced the production and prices of food. However, the uncontrolled continuous increase in population and income increased the demand for irrigation water in order to meet the food production requirement. Although developments in irrigation have been continuing incandescently, inaccurate irrigation management practices in many parts of the world have significantly reduced groundwater levels, destroyed soils, and reduced water quality. Indeed, in many countries where irrigation has an important place, it is stated that 65-80% of the total water is currently used in irrigation. Today, agriculture and animal husbandry activities are among the activities that mostly consume water. The agriculture and animal husbandry industries are not only the active contributors in water consumption, but they are also one of the largest pollutants due to the plant nutrients and drugs used. In addition to the limited utilizable water resources, contamination of surface and groundwater also threatens the life of species. Both above and underground water pollution affects each other as well as soils irrigated by these waters. The movement of polluted surface water deep into the soil can affect the quality of groundwater, and contaminated groundwater can also contaminate surface water by moving towards streams and lakes. Especially, where domestic wastewater is used for irrigation without treatment, pollutants can reach the soil and groundwater and ultimately affect human and animal health. (Cakmak et all, 2008).

It has been determined that the amount of surface and groundwater that can be consumed technically and economically in our country for various purposes is 112 billion m^3. For a country to be considered water-rich, it must have an average water potential of 10000 m^3 per person per year. Countries with a water potential of fewer than 1000 m^3 are considered "water-poor". When the population in Turkey is considered to be 80 million, the amount of usable water per capita is 1400 m^3/year. Although this value is not water-poor, it shows that Turkey is among the countries with water restrictions.

Water is Life,
Don't let it run down

Let's not forget that **water** is the **future** of humans,
the resources we have belong to **all of us.**

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ISTANBUL GELISIM UNIVERSITY

IGU for **"Ecological, Social and Economic Sustainablity"**

1.1. Scope of the Plan

Istanbul Gelisim University has created awareness by announcing the quality management policy throughout the institution with adopting and supporting by all stakeholders whose responsibilities and positions are determined in the relevant regulations within the scope of quality management. "Istanbul Gelisim University Quality Commission" which was established to implement the Quality Management System, performs an internal evaluation to achieve the institutional performance targets determined in line with the institutional strategies of the university, determines the necessary improvements, and adopts a participatory and transparent approach.

There are 8 building/building blocks belonging to Istanbul Gelisim University. Istanbul Gelisim University Water Management Plan is based on the recorded data between 01.01.2019-31.12.2019. This plan includes the improvement works for all buildings in 2020 based on the data of 2019. The information about buildings is given in Table 1.

Campus Name	Building Name	Indoor Area (m2)
BLOCK A	RECTORATE	39114
BLOCK B	SBYO	11755
BLOCK C	SHMYO	10445
BLOCK D	MMF	12353
BLOCK E	GSF	9836
BLOCK F	YD	8285
BLOCK G	MYO	29536
TOWER		91054

Table 1: Information about buildings

2. ASSESSMENT OF WATER USAGE

2.1 Water Consumption

In the preparation phase of 2020 water consumption plan of Istanbul Gelisim University, the obtained water consumption data were grounded on the data of January 2019-December 2019. This period shows water consumption data for the year 2019. By evaluating these data, some decisions have been taken on water consumption and conservation for 2020. The goal set for 2020 is to reduce overconsumption and stay proportionally below 2019 ratios' which was derived from the total water consumption/total number of users.

Data on water consumption within the above campus areas between the dates 01.01.2019 - 31.12.2019 is presented in Table 2.

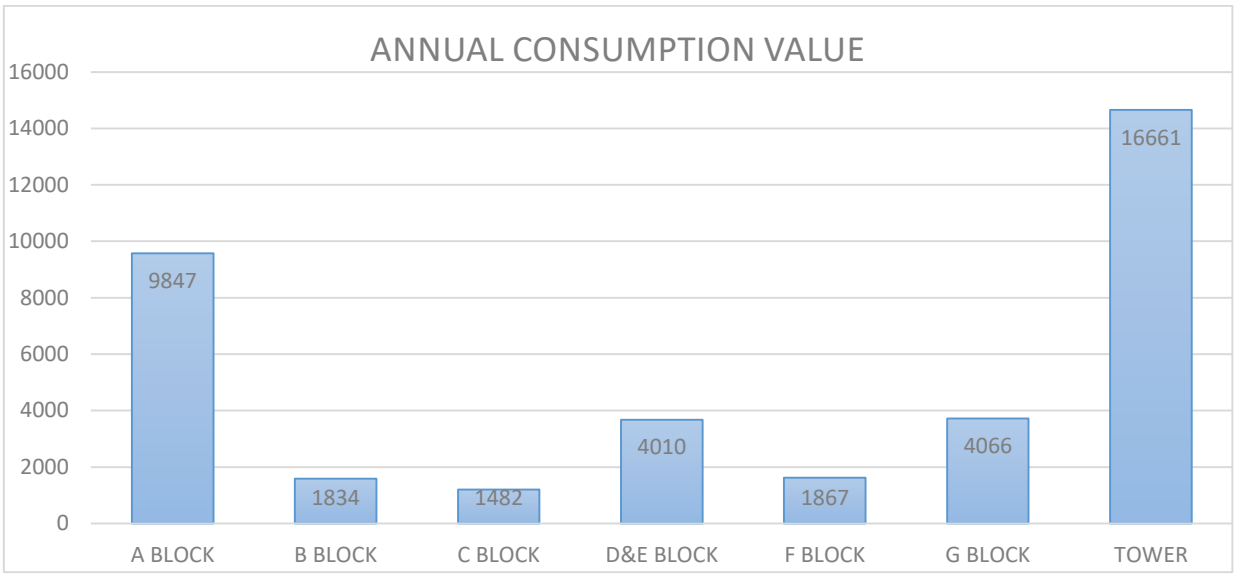

Table 2: Consumption Data for 2019

The water consumption amount of our university, which consists of 8 building/building blocks on 297.381 m^2, is 36.045 m^3 in 2018.

Total clean water consumption for 2019 is 39.767 m^3. 4,000 m^3 of this water consumption was provided from the well in the Tower building and used for landscaping and cleaning needs.

However, the water consumption of students and staff is 216.6 m^3 from 75 free water dispensers in common areas and offices. This consumption is shown in Table 3 for each building separately.

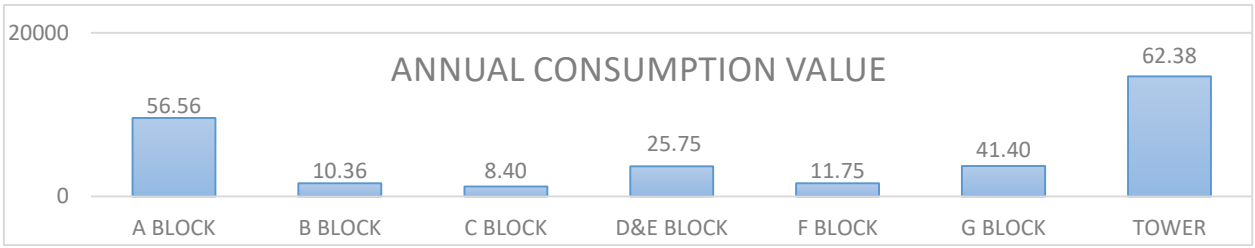

Table 3: Consumption Data for 2019

In conclusion, the total consumption value of water in 2019 increased compared to 2018. However, to achieve an accurate result, the water consumption rate (total water consumption/total number of users) should be considered. According to our analysis, in 2018, there were 18,123 students and 1,500 administrative and academic staff; when in 2019 the numbers are 23,739 students and 2,000 administrative and academic staff. In the light of the analysis made on these numbers, while the water consumption rate (total water consumption/total number of users) was 1,836 m^3 per person in 2018; it was provided as 1,545 m^3 in 2019. On the other hand, the Tower building was activated only for the last three months in 2018 while the activation continued on during the entire year of 2019. Despite the consumption in newly activated places, significant savings in water consumption have been achieved.

2.2. Importance of Water Consumption Analysis

To achieve accurate results, consumption values should be examined on the basis of building and person. For example, as shown in Table 2, the consumption of our Tower campus is more than Block A. However, in the examination of the consumption value per m^2, we see a greater value of consumption in Block A (Table 4). These consumption values are examined as high due to the fact that, Block A is used as administrative unit, most of our offices located here and human circulation is the most in this block.

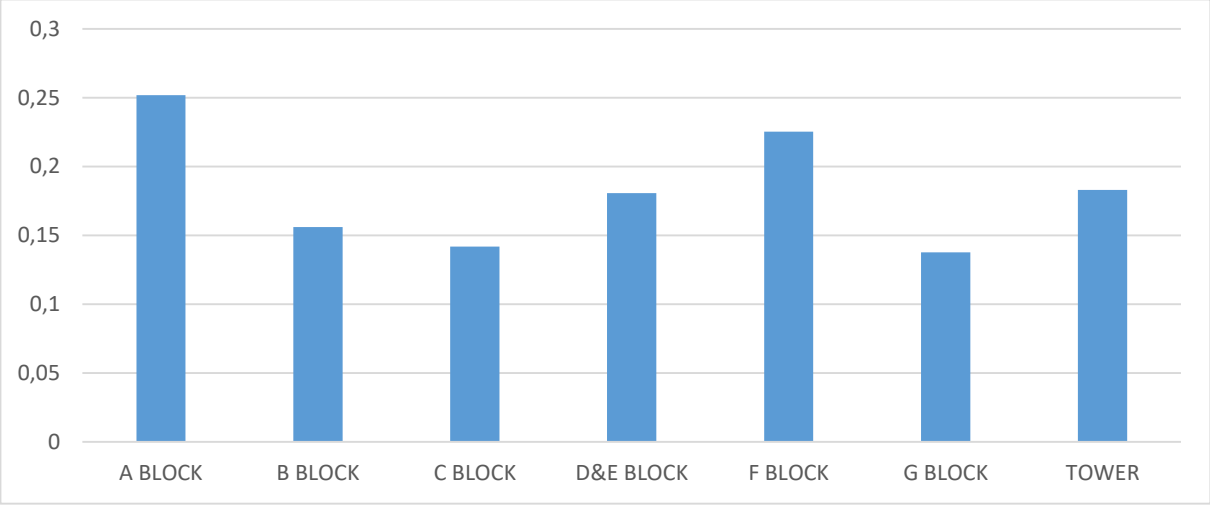

Table 4. Consumption Values for 1m^2.

3. CONSUMPTION DATA

The consumed clean water calculation of the University was made based on the paid water bills and well water bills.

In 2019, the water consumption was 39.767 m^3 in the University. 4,000 m^3 of this consumption was obtained from the water stored in the wells. The well water used for the green areas in the Tower was supplied by intermediary firms.

In 2019, the University keeps 483 faucets that meet the daily water consumption requirement. 220 of these are sensor faucets. Data for 2018 shows that there is a total of 450 faucets and 110 of them have sensors. On other faucets, 263 faucet aerators are used to avoid overconsumption because of water flow.

In addition to this, in accordance with the decisions taken in 2018, automatic sensor urinal flushers have added in the entire Block K and a revision plan were made to use them in other blocks.

Water is Life,
Don't let it run down

A **dishwasher** consumes an average of **15 liters of water** per wash.
A **family of 4** can save an average of **111 liters of water**
per load compared to handwashing.

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For Sustainable Development

ISTANBUL GELISIM UNIVERSITY

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In the same way, dual-flush flushing systems were planned to be implemented within the year 2018 and this was brought into action in most of the structures. In this way, it is expected that the flush valves, which cause a large amount of water consumption, will contribute to water saving.

Water usage for green areas at our university:

- Campus Tower has 2350 m^2 of green space. Irrigation is done with well water and water meters are separate. Annual well water consumption was 4000 m^3 in this area. There is a different counter system that tracks the irrigation system carried out by the use of well water.
- The 4th-floor green area within the Tower building is 62 m^2. The water used in the irrigation operations of the relevant green area is supplied from the central network and there is no separate meter system for tracking the green field irrigation.
- Block A has 3200 m^2 of green space. The water used in the irrigation operations of the relevant green area is supplied from the central network and there is no separate meter system for tracking the green field irrigation.
- Block B has 30 m^2 of green space. The water used in the irrigation operations of the relevant green area is supplied from the central network and there is no separate meter system for tracking the green field irrigation.
- Block C has 80 m^2 of green space. The water used in the irrigation operations of the relevant green area is supplied from the central network and there is no separate meter system for tracking the green field irrigation.

- Block D has 70 m^2 of green space. The water used in the irrigation operations of the relevant green area is supplied from the central network and there is no separate meter system for tracking the green field irrigation.
- Block E has 120 m^2 of green space. The water used in the irrigation operations of the relevant green area is supplied from the central network and there is no separate meter system for tracking the green field irrigation.
- Block F has 20 m^2 of green space. The water used in the irrigation operations of the relevant green area is supplied from the central network and there is no separate meter system for tracking the green field irrigation.
- Block G has 1200 m^2 of green space. The water used in the irrigation operations of the relevant green area is supplied from the central network and there is no separate meter system for tracking the green field irrigation.

4. PRACTICES FOR THE IMPROVEMENT OF WATER EFFICIENCY

With the use of new technologies, water efficiency is also the ability to do the same amount of work by using less water without reducing the living standard, production quality, and quantity. In other words, water efficiency is to reduce water consumption in the amount of a unit of service or product

Istanbul Gelisim University performs various projects to build a perception of a conscious and efficient use of water in the areas of campuses. "Introduction to Sustainability" course which is included in the curriculum is the first and most effective one among these projects. In addition to the course named as “Introduction to Sustainability”, sustainability topic has been included in courses such as Sustainable Environmental Management, Sustainability and Green Logistics, Sustainable Media, Environmental Economics and Sustainability, Public Relations and Sustainability in most of the programs. In these courses, projects ensuring the sustainability of the environment are included. Conscious water consumption is one of these practices. Detailed information about the courses can be accessed via the links below;

- https://gbs.gelisim.edu.tr/ders-detay-9-99-8278-1
- https://gbs.gelisim.edu.tr/ders-genel-bilgiler-9-99-8940-1
- https://gbs.gelisim.edu.tr/ders-genel-bilgiler-2-79-8339-1
- https://gbs.gelisim.edu.tr/ders-detay-9-185-9122-1
- https://gbs.gelisim.edu.tr/haftalik-ders-konulari-9-99-8998-1
- https://gbs.gelisim.edu.tr/amac-ve-icerik-2-81-8427-1

In addition to sustainability trainings, various designs on campus encouraging conscious water consumption in water usage areas are included.

IGU provides various free trainings to inform the community about climate change and conscious consumption.

In the website of IGU, informative content for the entire community is shared as a part of the practices carried out to increase water efficiency and support awareness regarding the conscious water consumption. The relevant content can be viewed via the link below;

- https://edk.gelisim.edu.tr/sayfa/gelecegin-suyu

5. PLANS TO IMPROVE WATER EFFICIENCY

Two important points that will contribute to the efficient and sustainable use of water resources are:

- Waste water
- Clean water

For this purpose, some precautions are taken to use the water resources more efficient and to make them sustainable.

Steps planned to improve water efficiency;

Increasing the number of dual flush systems and low flush toilets,

Replacing showerheads with the ones having high water efficiency,

Replacing valves in showers and faucets with thermostat mixing valves,

Increasing the usage of flow and photocell faucet to avoid redundancy and overconsumption,

Changing and carrying out the maintenance of filters and aerators of taps, faucets etc.,

Using the rest of the rainwater, remaining from irrigation and being stored under a single tank, for plumbing inside the building.

Replacing the existing urinals with odorless and waterless urinals, providing savings in case of high replacement costs, installing reservoirs having start/stop and spring-loaded system in order to take necessary measures.

Designing and implementing drip system for landscape irrigation,

Designing and implementing projects for efficient usage and storage of rainwater.

6. STANDARDS TO BE APPLIED IN THE EXISTING AND NEW CAMPUSES OF THE UNIVERSITY

The aim of this study with data belonging to our university is to increase water efficiency in the university's existing and new campuses. In view of the fact that the vast majority of the concepts used in this study are concepts that have recently begun to be used for water efficiency and these concepts have not fully matured due to the fact that awareness is a field that has just begun to form. Strict sanctions and audits are needed to be applied to ensure that this awareness is resolved jointly by all stakeholders. Solutions are needed to facilitate and enable the implementation of the issues specified during the construction and transformation of the buildings. It is worth remembering that this planet we live on and the resources we have are not a legacy to us, but a legacy that we should transmit to future generations. Therefore using designs that support green buildings and sustainable environmental issues in the construction of new campuses and structures to be established within the university for the subjects mentioned above that are becoming a part of our life and taking more steps that ensures the protection and sustainability of water resources which are particularly depletable resources is accepted as a fundamental duty by our university. With this understanding, the University aims to apply the following standards in all its structures;

Ensuring the reuse of even a drop of water,

Making investigations on the implementations related to saving measures in the planning process,

Saving by making wastewater lines in two separate lines as black and gray water lines,

Choosing thermostatic faucets, valves suitable for automation instead of manual products in installation materials,

Preferring environmentally friendly green products,

Preferring dry production technologies, systems, and processes that will consume less water or operate completely without water in plants,

Water is Life,
Don't let it run down

“Let's **appreciate** what we have and use the **clean water** we have, which is a great value, **efficiently.”**

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Paying attention to the forestation of the campus area,

Using technologies for the aim of preventing the pollution in the sources and reducing resource consumption (Process optimization, waste recovery, renewable energy, etc.),

Using environmentally friendly products that pollute less and consume resources (Bioplastics, water-based paints),

Managing the pollution - taking measures for the end of the pipe (Purification, dust holder filter, waste storage, etc.),

Paying attention to use closed-loop systems and cooling towers, minimize tower blowdown and recycle them in cooling,

Paying attention to improve steam systems, steam recovery, preference of heat exchangers and minimization of boiler blowdown in heating,

Increasing the rate of automation in water systems and lines,

Being aware of the right of all employees, students and guests for having free drinking water in university campuses, providing all stakeholders with clean, healthy, and reliable drinking water.

Creating public awareness for the effective use of water resources,

Ensuring that the selection of materials compatible with nature and the environment is applied with environmental approaches,

Ensuring that close-range materials obtained from sources that are not in danger of depletion and are preferred,

Performing studies to research the effects of climate changes on ecological life and natural resources and promoting these studies,

Preparing water management guidelines for different climate scenarios together with relevant institutions and organizations working on issues related to the use of water resources and announcing these studies.

Ensuring the participation of all stakeholders and all segments of society in water management processes, the establishment of a mutual balance between the protection of ecological resources and the environment and those that benefit from these resources.

7. CONCLUSION

Universities are organizations that rise in the light of science and work for the benefit of society. Universities have the priority and principle of producing impartial, original, autonomous, and constructive solutions and cooperate with all segments of society in all works that will benefit society and the planet we live in beyond being materialistic. In this regard, IGU is taking steps to contribute both in terms of idea and application, particularly in internal processes and in the process of

including other parts of the society and in the scope of combating depleted resources and climate change, one of the biggest problems of our age. From this point of view, IGU has aimed to create an internal audit mechanism for the completion of the specified processes by creating responsible people and units for managing these processes within its own structure, as well as prioritizing of establishment of a continuous, stable, and proactive attitude for other stakeholders. IGU grounds all steps taken as part of the water efficiency policy with employees, students, guests, and the entire society on the principle of achieving healthy and free drinking water and carrying out studies in this direction. IGU contributes to the creation of public opinion at the point of raising public awareness for a more habitable and sustainable environment and creating public policies on this issue.

8. REFERENCES

Anonymous 2007. Water for Food Water for Life. A Comprehensive Assessment of Water Management in Agriculture.

Türkiye ulusal enerji verimliliği eylem planı, 2020,T.C. ENERJİ VE TABİİ KAYNAKLAR BAKANLIĞI

David Molden, International Water Management Institute.645p., Earthscan, USA.

Anonymous 2009. DSİ'ce İşletilen ve Devredilen Sulama Tesisleri 2008 Yılı Değerlendirme Raporu. DSİ Gn. Md., İşletme ve Bakım Dairesi Başkanlığı, Ankara.

İçme Suyu Temin ve Dağıtım Sistemlerindeki Su Kayıplarının Kontrolü El Kitabı; https://www.tarimorman.gov.tr/SYGM/Link/13/Su-Verimliligi

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