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Environmental infrastructure

Investing in a sustainable, united Cyprus

FOREWORD

Modern environmental infrastructure is essential. From water supply to waste disposal, from air quality to nature protection and solar power – these systems must operate efficiently to serve citizens, safeguard public health and protect the natural environment. These systems are particularly important in Cyprus – an island known for its natural beauty, but with limited space and water resources.

The EU's Aid Programme for the Turkish Cypriot community has a specific objective to develop and strengthen environmental infrastructure. I am encouraged to see so many achievements, including:

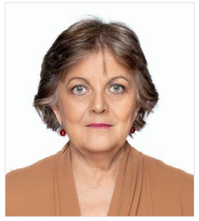
- Replacement of old asbestos water pipes. Leaks in the areas concerned have gone from up to 60 % to near zero. More importantly, through this intervention potential health hazards have been removed.
- Old, leaky septic tanks – a source of environmental contamination and smell – have been replaced by an up-to-date sewerage system. This includes three new wastewater treatment plants.
- The first hospital waste treatment centre with a safe and dedicated process for handling medical waste, including infectious waste: the system involves triage, collection and disinfection with a state-of-the-art steam autoclave.
- A new air quality monitoring network. Key pollutants have been identified, and actions or action plans put in place to tackle them.
- A new solar power plant – the first megawatt-sized plant on the island. This is important not just in its own terms, but as inspiration and demonstration – Cyprus has a very high potential for solar energy.

I am encouraged to see young people involved in so many ways – learning about water conservation, waste recycling and the importance of environmental protection.

I am encouraged too to see that many of these actions have inspired cooperation between both communities: working together, for example, on irrigation, beach clean-ups and tackling marine pollution. In the longer term, European support to environmental infrastructure promotes the systems and standards needed to prepare Cyprus for a reunified future as part of the EU. With new projects and further investments in the pipeline, Cyprus will have the infrastructure it needs for a sustainable, prosperous future.

Concrete environmental actions which improve everyday life for everyone, inspire the young, bring communities together and prepare for the future. There can be no better example of the spirit of the European Green Deal.

I encourage you to read this booklet for further examples. On behalf of the European Commission, may I say that we are proud to provide this help to the people of Cyprus.



Elisa Ferreira

Commissioner for Cohesion and Reforms

INTRODUCTION

Cyprus joined the European Union in 2004. Ever since, the EU has been helping the island's Greek Cypriot and Turkish Cypriot communities work towards a final settlement and end decades of division.

The EU uses the Aid Programme for the Turkish Cypriot community to minimise socio-economic differences and bring the two communities closer together, in order to pave the way for the reunification of the island.

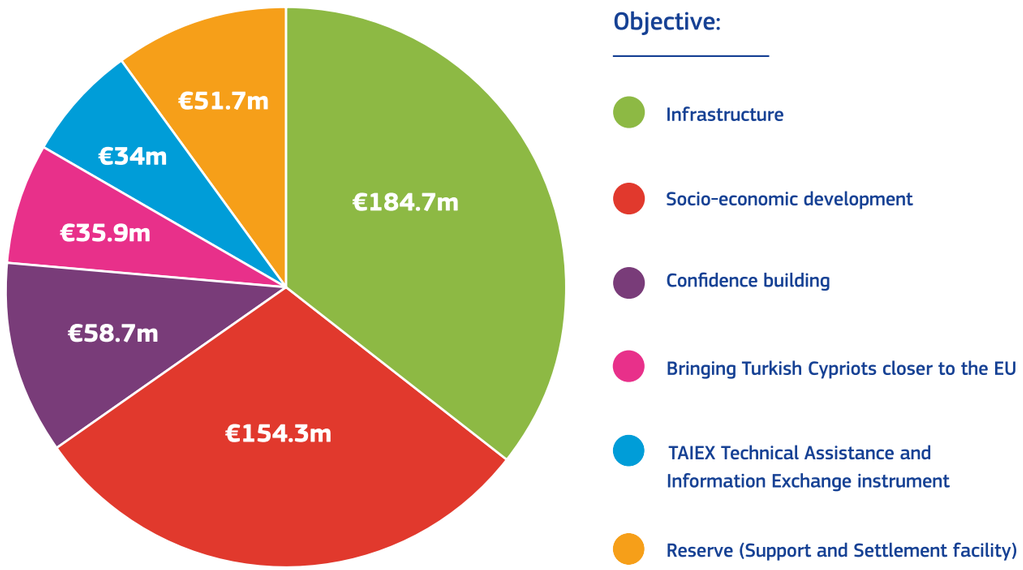
The EU Aid Programme supports projects in areas such as agriculture, civil society, community development, cultural heritage, telecommunications and education, as well as private sector development, labour market, crossings, environment, infrastructure, traffic safety, energy, providing information about EU policy and encouraging alignment with the EU.

Since its introduction in 2006, the programme has provided over half a billion euros in financial support. Between 2006 and 2018, €184.7 million was directed towards infrastructure and environmental protection – an important investment area for the community, particularly in the context of current EU initiatives.

This booklet presents a selection of projects that demonstrate how the EU's Aid Programme is supporting the development of infrastructure and protection of the environment and thereby making a difference in the Turkish Cypriot community and across the island. Its achievements include the establishment of wastewater treatment plants, modern sewerage and drinking water networks, a new sanitary landfill and a sterilisation facility for the treatment of hazardous medical waste, as well as improvements in the areas of air quality, nature protection and energy.

Further efforts must nevertheless continue to be made and the booklet also includes a short outlook with a summary of the most important future priorities in this area.

Overview of funding 2006-2018 (Total allocated: €519.3 million)



KEY SUCCESSES (2006-2018)

Developing and restructuring infrastructure:

263 km of water supply distribution networks renewed

3 wastewater treatment plants constructed

99 km of sewage networks constructed

7 refuse collection trucks supplied

2 incinerators for animal by-products supplied

Promoting social and economic development:

271 rural development and local community development projects supported

138 projects for schools, lifelong learning organisations and the labour market supported

More than **150** grants to SMEs / start-ups

Consultancy services and training provided for **more than 1 000** businesses and entrepreneurs

Training provided for **almost 200** farmers to improve water use efficiency and farm hygiene

Over 800 farmers informed about disease-related risks, disease prevention and the long-term benefits of disease elimination among livestock

Encouraging reconciliation, building confidence, supporting civil society and bringing the Turkish Cypriot community closer to the EU:

1 EU Infopoint established to proactively inform the Turkish Cypriot community about EU policies and the Aid Programme, via events, social media and web-based information activities

60 projects for civil society organisations supported

More than 80 training sessions carried out to strengthen the work of civil society organisations

885 missing persons identified and their remains returned to their families

More than **1 400** Turkish Cypriots given educational opportunities in EU Member States through EU scholarships

75 cultural heritage sites supported island-wide

5 new Green Line crossing points opened

WATER & WASTEWATER

Water is essential to life and the economy, which means it requires sustainable management. This is vital in Cyprus, a relatively small island with limited water resources.

Under the Aid Programme, **€122.5 million** has been allocated to improve the community's water and wastewater infrastructure. This support has helped protect water resources and enabled water to be used more efficiently, thereby reducing environmental and health risks.

EU funding has so far been used for the construction of **over 250 km of water distribution networks, almost 100 km of sewerage networks and three new wastewater treatment plants** serving over 315 000 Cypriots in both communities.

Water supplies are also a unifying factor. Having major wastewater system interconnections between the Greek Cypriot and Turkish Cypriot communities leads to more sustainable water management throughout the island and is essential to the prosperity of Cyprus as a whole.

The support has also brought standards closer to those in the Greek Cypriot community and the rest of the EU. In doing so, the infrastructures in the Turkish Cypriot and Greek Cypriot communities are more compatible, helping to prepare Cyprus for reunification.

Clean water and less leakage through new pipes

Before being upgraded, some water distribution pipes in the Turkish Cypriot community were made of asbestos cement or galvanised iron. Many dated back to the 1950s and were no longer in optimum condition. This resulted in up to 60 % of the water being lost through leaks, further depleting the already scarce water resources in the community.

Meanwhile, intrusions into the pipes through cracks, as well as rusting of iron pipes, affected water quality. Repair works were frequent and could last for days, interrupting the water supply and posing health risks for workers due to the asbestos pipes.

EU funding through the Aid Programme has been used to replace old water pipes and to construct new water distribution networks, with the installation of approximately 263 km of water pipes in the towns of Morphou/Güzelyurt, Famagusta, Nicosia, Kioneli/Gönyeli, Kyrenia and Lefka/Lefke. In Nicosia, nearly 4 000 consumer water meters were also installed to improve monitoring of water use.

Collectively, these measures have cut water leakages. 'Resources are used in a more sustainable way now,' says Erhan Yengin, a representative of the Morphou/Güzelyurt local community responsible for the waterworks. 'In the past, leakages represented a financial loss and a waste of resources for the community.'

'The replacement of old water pipes and the construction of new ones has improved water quality significantly,' says Ali Hacıoğulları, a resident of Kioneli/Gönyeli. 'In the past we had to buy bottled water for brushing our teeth and bathing our children. Now, we can use tap water to wash vegetables, and even to cook.'

> *"The replacement of old water pipes and the construction of new ones has improved water quality significantly."*
>
> **Ali Hacıoğulları**

The old water main that ran from Morphou/Güzelyurt to Nicosia and Famagusta

High-density polyethylene (HDPE) water distribution pipes of the kind shown above have now replaced the old pipes

The new pipes were also a welcome development for repair workers who had previously been concerned about the health effects of asbestos. 'We used to wear a mask when we were repairing asbestos pipes; we always had this worry,' explains Ulus Arpalıklı, who has been working for the Nicosia Turkish Cypriot local community for 27 years. 'We rarely need to repair the new pipes,' he says. 'We rarely have problems. They have been a great relief for all the workers here.'

The New Nicosia Trunk Sewer will increase the capacity of the sewerage network

New sewerage networks protect the environment and public health

Together with its water distribution pipes, the Turkish Cypriot community needed to upgrade its sewerage infrastructure.

In most of the community, sewage was collected in septic tanks. These frequently leaked or overflowed, contaminating the underground water resources. Wastewater collected from septic tanks would be discharged into dumpsites or the sea, polluting the environment and causing serious risks for human health.

The lack of a sewerage system in the town of Morphou/Güzelyurt was of wider concern to the Turkish Cypriot community as a whole. The area is home to Cyprus's largest aquifer (groundwater reserve), serving the majority of the Cypriot population. And yet, untreated sewage was seeping into the groundwater due to inadequate infrastructure.

To address these issues, the EU funded the construction of a 52-km sewerage network in the town, as well as a 47-km sewerage network in Famagusta, significantly reducing groundwater contamination and helping to protect shared water resources for the whole island.

The new sewerage system 'has saved our aquifer and ensured that there is no more contamination,' says Erhan.

'We used septic tanks in the past,' explains Servet Çoban, a local resident. 'The leaks from the tanks killed our trees. Now, with the new sewerage system, we don't have to worry about septic tanks.'

Although Nicosia already had a sewerage network, the main trunk sewer carrying sewage to the bi-communal wastewater treatment plant in Mia Milia/Haspolat is running at full capacity. The New Nicosia Trunk Sewer, funded by the EU and due to be completed in 2021, will increase the capacity with the installation of a 13-km sewerage network.

This will 'make it easier to connect more areas to the sewerage system,' says Faik Özkaynak, a representative of the Nicosia Turkish Cypriot local community. 'We will get rid of the unpleasant odour caused by the full sewer, while the damage to the environment will be significantly reduced.'

The support in the area of sewerage has brought sewerage networks to two important towns in the Turkish Cypriot community for the first time, as well as increased capacity for Nicosia's bi-communal sewerage network.

Three new plants to treat wastewater

With the construction of new sewerage networks, facilities to treat the wastewater were needed. Using €10.9 million of EU funding, two new wastewater treatment plants were built in Morphou/Güzelyurt and Famagusta. These plants are able to treat a total of 5 447 m^3 of wastewater per day – equivalent to a population of 42 200 people.

The Mia Milia/Haspolat wastewater treatment plant in Nicosia is one of the earliest examples of bi-communal cooperation, dating back to the 1970s. Managed and operated jointly by the Greek Cypriot and Turkish Cypriot communities, the plant treats wastewater from both sides of the capital of Nicosia. However, until 2010, it was outdated and overstretched, causing environmental problems. The plant served as a breeding ground for mosquitoes and gave out a strong odour that affected Nicosia as a whole.

In 2010, with joint funding from the Sewerage Board of Nicosia and the EU and implementation by the United Nations Development Programme (UNDP), work began on a new state-of-the-art wastewater treatment plant to better serve both communities. The plant began operating in 2013 and is able to treat an average of 30 000 m^3 wastewater per day, equivalent to a population of 270 000 people. The Greek Cypriot and Turkish Cypriot communities are now working together towards re-using the high-quality treated water from the bi-communal treatment plant for irrigation purposes.

All three wastewater treatment plants were designed and constructed in line with EU legislation. The new treatment plants have significantly improved the collection and treatment of wastewater, in turn having positive impacts on the environment and human health.

As illustrated in the following diagram, the new plant in Mia Milia/Haspolat uses a biological treatment process aligned with EU standards for wastewater processing. The process not only enables the treated water to be safely discharged or re-used for irrigation, but also ensures that any excess solids can be used as fertiliser or safely disposed of after being treated. The biogas produced in the treatment of these solids can also be used to generate heat and electricity.

> *"These projects were long overdue; for the citizens, but also to reach EU standards and to align both communities in terms of infrastructure."*
>
> **Doğuç Veysioğlu**

'These projects were long overdue,' thinks Doğuç Veysioğlu from the Famagusta local community. 'For the citizens, but also to reach EU standards and to align both communities in terms of infrastructure.'

New rules on the discharge of wastewater

Alongside direct EU funding, the Technical Assistance and Information Exchange (TAIEX) instrument of the European Commission has been supporting the Turkish Cypriot community to apply rules and standards in line with EU requirements.

Through workshops, trainings and expert missions, it helps to build capacity and provides advice and guidance on the necessary changes to ensure that the EU acquis will be immediately applicable upon a comprehensive settlement of the Cyprus problem.

Within the framework of this TAIEX support, Turkish Cypriots prepared and introduced a set of new rules on the discharge of wastewater in small enterprises, dairy farms, industrial plants, marinas, and resorts.

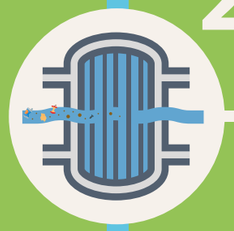
'We now have rules on how they will discharge wastewater into the sewage; on the treatment measures they have to take if they will discharge it into a receiving water body; and on how they should store and transport the wastewater if they have neither a sewage system nor treatment facilities,' says Turkish Cypriot environment expert İbrahim Alkan.

The instrument also supported the preparation of guidelines and standard operation procedures for inspections and provided training for the individuals conducting inspections. 'The trainings will continue,' says İbrahim. 'Our aim was to increase the quality of inspections and TAIEX support helped us a lot.'

EU-funded wastewater treatment plants in Morphou/Güzelyurt (top left), Mia Milia/Haspolat (top right) and Famagusta (bottom). Images courtesy of WTE Wassertechnik GmbH

The Mia Milia / Haspolat Wastewater Treatment Process

1 Wastewater from homes and businesses is discharged through sewers to the treatment plant.



2 It first passes through a bar screen to remove large objects.

3 The flow is slowed down so that heavy solids sink to the bottom and oil and grease float to the surface. Solids are removed and transferred for treatment*.

4 The water is passed through a fine screen to remove remaining solids.

5 Using biological treatment, micro-organisms feed on the remaining solids which grow in size and sink to the bottom to be removed*.

6 Special membranes are used to filter the water and remove very fine particles.

7 The water is disinfected with chlorine to kill any remaining bacteria.

8 The clean water is discharged into rivers or reservoirs.

*Removed solids receive further treatment and can be used as fertiliser.

Learning about water conservation

To raise young people's awareness about the importance of water conservation and environmental protection, the EU Infopoint for the Turkish Cypriot community arranged school visits to the new wastewater treatment plants. More than 200 students have taken part, learning how wastewater is treated and why this is important.

'At first, the students didn't understand how the plant worked,' recalls Erhan Yengin. 'So we explained it to them in very simple terms. By the end of the visits, we could see that they were talking to each other about the importance of having such plants.'

Aside from learning about how water is treated and the importance of water conservation, the student tours increased awareness of EU support to the Turkish Cypriot community.

High school students learn about wastewater treatment during a visit organised by the EU Infopoint for the Turkish Cypriot community

Re-using treated water

Treated wastewater from the three wastewater treatment plants can be re-used as an alternative source of water, especially for agricultural irrigation, to help protect the island's water resources.

In Morphou/Güzelyurt, water used for irrigation is traditionally taken from local wells, which puts pressure on the local aquifer. Over-exploitation of the aquifer, together with low annual rainfall, has led to the depletion of this vital reserve. At the same time, seawater intrusion has been increasing its salt content. This salinity has made the water unsuitable for irrigation, leading to damage in citrus trees and worsening soil conditions, which in turn reduce crop productivity.

Now, following an EU-funded project, the mineral-rich treated water from the local plant will be re-used. A water reservoir and an irrigation water distribution system have been constructed to enable the safe re-use of 500 000 m^3 per year of high-quality water to irrigate local crops and orchards.

'Many trees have died because of a lack of water or due to the salt content in the irrigation water,' explains Erhan. 'The use of the treated water will benefit farmers and protect our aquifer.'

Another EU-funded project, currently being designed, will allow treated water from the Mia Milia/Haspolat wastewater treatment plant in Nicosia to be used for irrigation by both Turkish Cypriots and Greek Cypriots, further enhancing cooperation between the communities. The plant can produce 10 million m^3 of treated water a year – enough to irrigate approximately 500 hectares of land in both communities.

'We have no heavy industry in Cyprus,' Faik points out. 'So in fact, our treated water is of a very high quality and very suitable for irrigation.'

The Turkish Cypriot community has run several pilot projects to test the use of treated water. 'Since 2016, we have used treated water in trials, with very positive results,' says Süleyman Bey, an engineer working for local community farms. 'It helps us overcome times of drought and the irregularity of the rainfall. If we used all the treated wastewater for irrigation, we could increase production twofold or threefold.'

'Thanks to using treated water, we were able to produce barley in 2018, which was a very dry year,' adds Tarkan Çeki, a water expert who has been involved in the efforts to reuse treated water.

These projects have helped to preserve and re-use Cyprus's scarce water resources by using treated wastewater for irrigation, a technique that carries a double benefit as the treated wastewater's high mineral content benefits agriculture in the community.

> *"It [using treated water] helps us overcome times of drought and the irregularity of the rainfall. If we used all the treated wastewater for irrigation, we could increase production twofold or threefold."*
>
> **Süleyman Bey**

The new reservoir in Morphou/Güzelyurt

Sludge

The EU has provided technical assistance for field trials that involve re-using the treated sludge, a by-product of the wastewater treatment process. This treated sludge is considered a valuable resource in its use as a bio fertiliser. Re-using this sludge also reduces local waste in the environment.

'The results of the first tests we carried out are very good,' confirms local representative İbrahim Alkan. 'Cypriot soil is poor in organic content. The use of sewage sludge increases the quality of the soil.'

Through these new projects, the EU aims to increase awareness of the importance of re-using resources, and of the benefits that using treated water and sludge would bring to both communities.

Mineral-rich treated wastewater can now be used to irrigate crops and orchards, helping to grow local produce such as citrus fruit

Waste and wastewater management information system

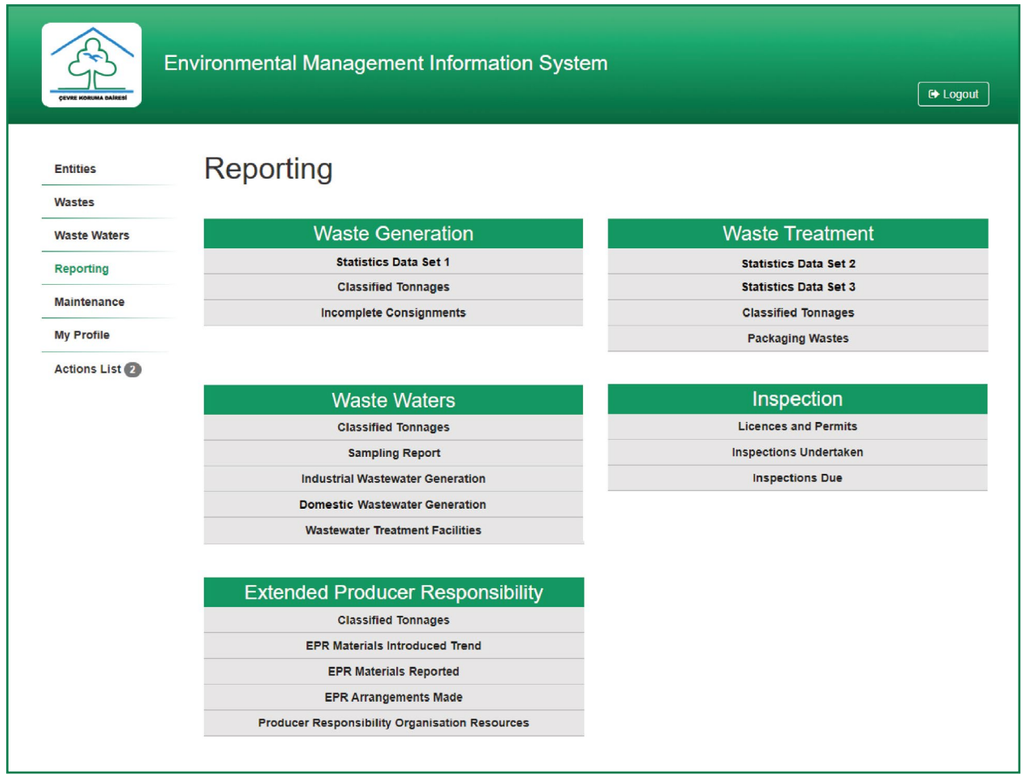
The EU has funded a waste and wastewater management information system in the Turkish Cypriot community. This supports the involvement of the local community in wastewater management and enables periodic reporting to the EU.

Reliable data collection is an essential part of a sustainable waste management system. It strengthens monitoring, enforcement and detailed planning of waste management. It also makes it easier to compare the community's waste management methods with those in other EU countries.

The EU-backed system enables the systematic gathering of information on waste types and amounts, together with laboratory analyses that will be vital when choosing future waste management options.

'We're now uploading the existing related documents, permits, reports, results and inspections of each environmental facility to the online database,' explains İbrahim Alkan, who is responsible for the system. 'This helps the environmental inspectors to the see the facilities' history.'

By introducing this system, the Turkish Cypriot community is building a basis for future systematic reporting on compliance with EU environmental standards, something that will be essential in a reunited Cyprus.



The EU has funded a waste and wastewater management information system to improve environmental monitoring and reporting in the Turkish Cypriot community

SOLID WASTE

Just like wastewater, solid waste has to be managed sustainably. With EU assistance, the Turkish Cypriot community has been continually improving its solid waste management operations, ensuring the sustainable use of natural resources and protection of public health and the environment.

The EU's support has been used to construct the **first sanitary landfill in the Turkish Cypriot community,** install a **sterilisation facility for the treatment of hazardous medical waste,** and build a **waste transfer station.** The EU has also provided **equipment** for the collection, transport and disposal of **animal by-products,** as well as seven **refuse collection** trucks, a **construction waste** crusher and a **green waste** shredder.

In this section, we explore the specific areas where EU support to solid waste management is making a difference.

SANITARY LANDFILLS

In some areas of the Turkish Cypriot community, all solid waste, including hazardous medical waste, was being dumped illegally, posing a major threat to public health and the environment.

With EU funding, the first safely managed sanitary landfill was constructed for the Turkish Cypriot community, and new equipment and facilities were provided to improve waste management processes.

Establishing a new sanitary landfill site

The first phase of the Koutsoventis/Güngör new sanitary landfill began operations in 2012, following an investment of approximately €3.5 million.

However, for various reasons, this first phase reached capacity several years before its designed 10-year lifespan, resulting in a request for urgent additional EU assistance. This support came through the financing of a second phase project to increase the landfill's storage capacity and undertake additional technical installations, with an approximate budget of €4 million. Now complete, with a total storage capacity of approximately 3.3 million m^3 and being used by approximately half of the community, the extended sanitary landfill facility should provide adequate waste storage until the year 2030.

A landfill degassing plant has also been added to eliminate the methane gas generated by the waste. This is important from an environmental perspective, as methane is a greenhouse gas with a high global warming potential. Until early 2020, the plant managed methane emissions by environmentally controlled combustion. With additional EU funding, this valuable resource will be used to generate electricity to power a new facility to treat leachate – liquid that collects in a landfill and contains environmentally harmful substances.

Work on the EU-funded electricity generation and leachate treatment facilities is to be completed in early 2020. 'With these facilities, damage to the environment will be minimised,' summarises Onur Cömert, a local representative tasked with monitoring the operation of the new sanitary landfill.

EU support has helped to create a new sanitary landfill in the Turkish Cypriot community

Equipment and facilities for better waste management

The EU has also supplied the Turkish Cypriot community with equipment to improve solid waste management. This includes the necessary mobile equipment for the operation of the new sanitary landfill, four refuse-compaction vehicles, mobile pre-treatment equipment for construction and demolition waste, and a green waste composting unit.

The refuse-compaction trucks are currently being used by the Nicosia, Galatia/Mehmetçik, Ayios Anvrosios/Esentepe and Lefkoniko/Geçitkale local communities to transport waste to the Koutsoventis/Güngör new sanitary landfill. 'The EU provided us with a huge truck with a very big capacity during very troubled times,' recalls Serkan Önet from Nicosia. 'At the time, we weren't even able to collect the waste. The picture was very bleak because there were 20-year-old vehicles that were creating more costs than they were doing any good.' Serkan says the new truck 'was almost a godsend'. 'It has helped a lot,' he says.

The pre-treatment equipment for construction and demolition waste breaks the leftover materials down into small pieces so that they can be re-used to build roads. The green waste shredder unit breaks down and sieves agricultural, park and garden waste (e.g. branches and leaves), enabling these to then be composted to form a valuable natural fertiliser. In both cases, using the equipment enables the materials to be exploited beneficially, rather than simply disposed of as waste.

'We have a lot of orchards and therefore a lot of green waste,' explains Mahmut Özçınar, who heads the Morphou/Güzelyurt local community.

'Before we had this unit, there would constantly be branches along the sides of the roads. People would cut off branches and just leave them at the roadside. We had to pick them up, take them somewhere and get rid of them somehow because leaving them there is dangerous. They could easily lead to fires, especially in the hot weather. It was very costly to pick these branches up and transfer them somewhere. With this unit, we can deal with them right there and then,' Mahmut says.

The community is also considering using the EU's support to develop a database to enable other public and private stakeholders to rent the equipment at fair and transparent rates. This system will also help to fund the equipment's maintenance and upkeep.

Other EU-backed waste management measures include the construction of a waste transfer station in Famagusta, where local collection vehicles can discharge their loads into larger vehicles. This offers a more economical way to transport the waste to landfill, minimising the time and distance that local collection vehicles have to travel, as well as reducing uncontrolled dumping.

> *"The EU provided us with a huge truck with a very big capacity during very troubled times. It has helped a lot."*
>
> **Serkan Önet**

The EU has provided the community with new, modern refuse-compaction trucks

HAZARDOUS WASTE

There are relatively few industrial plants in the Turkish Cypriot community, so the quantities of hazardous waste are quite small. Nevertheless, it requires careful handling. EU assistance has helped to improve waste disposal processes and reduce environmental and health risks. Through the TAIEX instrument, for example, experts from EU Member States have been providing guidance to the Turkish Cypriot community on the separation, environmentally sound collection, treatment and disposal of waste electrical and electronic equipment and batteries. Hazardous animal waste and medical waste are also key areas where the EU has been supporting the community.

Animal waste disposal

The Turkish Cypriot community is developing a system to safely manage animal by-products – materials of animal origin that people do not consume – which can include waste from slaughterhouses, dairy farms and tanneries. Proper management of animal by-products reduces the risk that animal diseases and contaminants such as veterinary drug residues may be passed on to people, animals or the environment.

Currently, animal by-products are buried under soil in a designated area in Mia Milia/Haspolat. 'It's very hard to bury the animal by-products under soil, and even when you do, they are very open to danger,' says local representative Onur Cömert. 'The smallest mistake could very easily cause contamination. Birds may access the waste. Rodents may enter the area. It's not easy to handle the burial safely.'

An EU-financed central plant at the Koutsoventis/Güngör new sanitary landfill, where animal by-products will be collected, stored and incinerated, is now due for completion by mid-2020. There will also be six satellite collection and transfer centres across the Turkish Cypriot community for the collection and transport of animal by-products to the main incineration site. Three of these are already in place. Both the collection centres and the incineration plant are due to enter into full operation in 2020.

Medical waste

For the first time, the Turkish Cypriot community now has a safe, hygienic procedure for handling medical waste, which can include needles and bandages. Infectious medical waste makes up about 15-20 % of all waste from hospitals and requires special treatment before final disposal. In the past, however, all medical waste was disposed of directly in the Koutsoventis/Güngör new sanitary landfill or at uncontrolled dumpsites.

The EU assisted the community to implement a local system for the separate collection, transport and treatment of infectious medical waste. Now, medical waste from the three main public hospitals in the Turkish Cypriot community is sterilised using steam autoclaving at a unit at the central Nicosia hospital, which started operating in August 2018. Following treatment, the medical waste can be sent to the new sanitary landfill, as it is no longer hazardous. This support has aligned practices in the community more closely with European standards, as steam autoclaving is one of the most widespread medical waste treatment technologies.

EU funding has supplied equipment for the treatment of medical waste, including specially labelled orange containers

'Elimination of medical waste is very important for infection control,' says Fatma Savaşkan, head nurse at the hospital. 'So these types of waste have to be collected separately and treated before being dumped.'

The same EU project also provided training to nurses on the identification and handling of infectious medical waste, as well as training for the autoclave operators and drivers who collect and transport the waste. The EU has also supplied collection and transportation vehicles and orange-coloured containers labelled with the international symbols for infectious medical waste.

The ultimate aim is to extend the collection and treatment of medical waste to all hospitals and healthcare centres in the Turkish Cypriot community, as Fatma explains. 'When this is achieved, the project will be a true success story.'

AWARENESS-RAISING

Educating the public and other stakeholders is an essential part of the solid waste management strategy. Littering has long been a problem in the Turkish Cypriot community. The EU has therefore also supported projects aimed at increasing awareness about waste management, EU waste and recycling management policies, and good practices.

Educating schoolchildren

EU experts, together with the EU Infopoint for the Turkish Cypriot community, visited schools to talk to children about environmental issues. These sessions reached over 2 000 primary and elementary school students in the community. The children received a specially designed information brochure, as well as promotional baseball caps and T-shirts. A Green Schools Campaign and an Inter-school Art Competition on the theme of 'Protecting our Island from Waste' encouraged the students to think about waste and the environment. The 12 best drawings from the competition were featured in a calendar. The outreach was a clear success, reports trainer Vijdan Şengör. 'After the sessions, some of the students would go and find plastic bags and start collecting the litter around their schools.'

Used Clothes Donation and Cans For Kids

Other EU-backed awareness-raising campaigns included the Used Clothes Donation project, run by a Turkish Cypriot association that supports cancer patients, and the Cans For Kids project, organised by a Turkish Cypriot environmental action group. These encouraged second-hand clothes donation, with the proceeds going to assistance services for cancer patients, and the collection and recycling of tin cans, in aid of public hospitals' paediatric departments.

> *"After the sessions, some of the students would go and find plastic bags and start collecting the litter around their schools."*
>
> **Vijdan Şengör**

Beach clean-ups

Marine litter and its effects on marine life have been very much in the news worldwide in recent years. In the EU, the European Strategy for Plastics in a Circular Economy, adopted on January 2018, will transform the way plastic products – some of the most harmful forms of marine litter – are designed, produced, used and recycled.

More than 100 people took part in bi-communal clean-ups of the Famagusta and Agios Sergios/Yeniboğaziçi beaches, organised in partnership with the EU Infopoint.

Through the clean-ups, the EU supported practical action to tackle marine pollution, as well as raising awareness of the problem. It also brought the two communities closer together through direct, hands-on cooperation.

Attitudes are changing, as evidenced by how quickly the Turkish Cypriot community took to the mandatory charge placed on supermarket plastic bags. With the support of the TAIEX instrument, the community introduced new rules on waste packaging in December 2018. The new rules include a mandatory charge on plastic supermarket bags, which aims to minimise plastic waste and in doing so prevent its harmful impact on the environment. The consumption of supermarket bags dropped by 85 % within six weeks of the imposition of the mandatory charge.

The new rules introduced with TAIEX support also include a system for separate collection, reuse, recycling and recovery of waste packaging and disposal of waste packaging that cannot be recycled or recovered in an environmentally sound manner. They will also support the enforcement of producer responsibility. Producers and importers of packaged goods are also aiming to set up a not-for-profit company to organise the selective collection and recycling of packaging materials.

More than 100 young people took part in bi-communal beach clean-ups organised by the EU Infopoint

AIR QUALITY & NATURE PROTECTION

Air quality and nature protection have also been two key focuses of the EU Aid Programme's support in the areas of infrastructure and environmental protection. The EU's support has helped to develop a **new air quality monitoring network**, increasing the number of stations in the Turkish Cypriot community from one to nine. To ensure the community has the tools to effectively manage this network in the future, **TAIEX training** has helped to share knowledge and experience with experts in the community and establish standard operating procedures.

The Aid Programme has also focused on protecting biodiversity in the Turkish Cypriot community by designating several **environmentally protected areas.** Alongside this initiative, a **network of nature trails** has been set up to enable people to enjoy the most outstanding areas of the community's natural landscape.

AIR QUALITY

Poor air quality can cause health issues and generally make day-to-day life unpleasant for those who breathe it in. Pollutants emitted by vehicles and industrial plants, including carbon monoxide, sulphur dioxide, nitrogen oxides, particulate matter (dust) and volatile organic compounds, are of particular concern as they can cause serious health problems.

The harmful long-term impacts of pollutants such as greenhouse gases on the natural environment are also well documented, and initiatives to reduce emission levels are a key part of the global push to address the impacts of global warming.

EU regulations set maximum levels for a number of atmospheric pollutants, which need to be continuously monitored. In order to improve air quality in line with EU standards, the Aid Programme has focused on improving monitoring processes in the Turkish Cypriot community.

New air quality monitoring network

Previously, the Turkish Cypriot community had only one air quality monitoring station, in Nicosia, which was not sufficient to assess air quality across the whole community. With support from the EU, the community is now operating a network of nine stations.

The monitoring stations are connected to a data acquisition and management centre in Nicosia, forming an integrated air quality monitoring network. Data from this network is compared with the EU limit values to pinpoint areas with air quality problems, making it possible to take effective action. This also helps to improve transparency, as the data can be used to provide accurate information to the public about the levels of pollutants in the atmosphere.

'The biggest pollutant turned out to be dust,' says civil engineer Tolga Baki, who is responsible for the network. 'We only realised how high the dust levels were thanks to the stations.'

This presented a problem, as fine particulate matter has been linked to health issues, particularly for people with asthma and other respiratory problems. An action plan, developed by the local community, brought in practical measures to reduce dust levels, such as introducing street sweeping and watering, enclosing construction sites and covering potential dust sources.

'Now when I drive past construction sites, I see they're enclosed, and that makes me very happy,' Tolga says. '[The level of] dust is still higher than it should be, but we have seen an improvement.'

Monitoring also showed that sulphur levels were high near two oil-fired power plants. As a result of these measurements, the use of fuel containing high levels of sulphur was banned in 2016. These measures have significantly reduced sulphur dioxide levels and as of 2019 all hourly recordings were below the EU limit values.

'In the past we used to receive a lot of complaints from people living around the power plants,' Tolga recalls. 'They would call us to complain. Sulphur has this yellow tint, and it burns your throat. We no longer receive as many complaints.'

> *"We have been monitoring air quality continuously and informing the public."*
>
> **Tolga Baki**

The TAIEX instrument also provided training by experts from EU Member States for those responsible for air quality monitoring in the Turkish Cypriot community. The training helped to share experience, improve the Turkish Cypriot participants' knowledge and increase their capacity to effectively manage and assess the air quality network. The experts also helped the participants to establish guidelines and standard operating procedures for the monitoring.

'We have been preparing an annual report on air quality based on the monitoring data from the nine monitoring stations for the last 10 years,' says Tolga. 'We have been monitoring air quality continuously and informing the public.'

TAIEX support also helped the Turkish Cypriot community to draft new rules aimed at preventing emissions of volatile organic compounds (VOC) such as petrol during storage and distribution. Several information workshops and training sessions were organised, focusing on the environmental problems created by petrol vapour being emitted into the air and the EU rules on VOC emissions. The support also assisted the Turkish Cypriot community with monitoring fuel quality and VOC emissions in petrol stations and terminals.

The new network and TAIEX support have helped the Turkish Cypriot community bring its air quality monitoring closer to European standards, in preparation for the reunification of the island.

The EU is now providing funding for the Turkish Cypriot community to renovate the air quality monitoring network. Some equipment will be replaced due to wear and tear, and large information panels will be placed in major towns and cities, providing the public with real-time information about air quality.

New air quality monitoring stations are helping to measure harmful pollutants across the community

NATURE PROTECTION

Cyprus is home to important habitats and species, including Mediterranean coastal and mountain forests, fragile coastal sand dunes, the critically endangered monk seal and endangered sea turtles. It is also an important migratory corridor for thousands of birds each spring and autumn.

Protection of biodiversity, including the natural legacy of landscapes, agriculture and natural spaces, is a priority for the EU. Its Natura 2000 network is a cornerstone of nature conservation. Over the past 25 years, over 26 000 areas have been protected, covering an estimated 20 % of the total EU territory.

Specially Protected Areas – potential Natura 2000 sites

Certain areas in the Turkish Cypriot community have unique habitats for rare flora and fauna and a number of scenic natural landscapes that need to be preserved for the future of the whole island. However, due to the lack of adequate systems for their protection, most of these areas were vulnerable to damage.

A TAIEX project assisted Turkish Cypriots to identify the most important and fragile areas through habitat mapping and surveying. It organised a number of training sessions and seminars where experts from EU Member States outlined the EU requirements and shared their experience in the areas of nature protection and biodiversity. It also provided the community with management plans in line with the requirements of the Natura 2000 directives to ensure their effective protection.

As a priority, seven areas in the Turkish Cypriot community have been declared Specially Protected Areas, because of their fragility and the pressures they are currently under.

Both green and loggerhead turtles nest in large numbers on various beaches in the **Karpasia/Karpaz peninsula** in north-eastern Cyprus. Thanks to the protection of this area and the efforts of the local community, the numbers of turtles nesting on the beaches has been gradually increasing.

The peninsula also has a nesting colony of Audouin's gulls, and its wetlands provide an important stopover and breeding ground for migratory birds passing between mainland Europe and Africa. During most summers, parts of the wetlands retain water throughout the season, providing an important and valuable resource in an otherwise dry landscape. Similarly, the **Famagusta Wetlands** are visited by wintering and migrating birds, including greater flamingos, while the summer months see birds such as the little egret and the spur-winged plover. TAIEX's support has also helped the community to introduce new rules on wetlands to further protect these essential natural areas.

The **Agias Eirini/Akdeniz Region** in north-western Cyprus is home to the endangered monk seal and its beach is an important nesting area for both green and loggerhead turtles and a migration point for birds. Similarly, nesting sea turtles are found in the **South Karpasia/Karpaz Coastal Area, Alakati/Alagadi Area** and **Akanthou/Tatlisu Coastal Area.** The **Kyrenia mountains** have also been declared as a Specially Protected Area.

By identifying these Specially Protected Areas, the Turkish Cypriot community is helping to preserve its natural environment for the future and maintain biodiversity by protecting unique and ecologically important species of flora and fauna.

Importantly, the designation of these sites also paves the way for their incorporation into the EU's Natura 2000 network upon the reunification of Cyprus.

The project has marked out a network of trails for the public, with signposts, markers and information boards

Nature trails

The Specially Protected Areas project in the Turkish Cypriot community has also created a network of trails suitable for hiking and biking. These enable the public to access the multitude of habitats within the protected areas.

The trails extend from the westernmost tip of the Agias Eirini/Akdeniz peninsula, along the Kyrenia mountain range, to the easternmost tip of the Karpasia/Karpaz peninsula. In total there are 580 km of trails, 490 km of which are wider dirt tracks suitable for both hiking and biking.

The network of trails has been marked out with signposts, trail markers and information boards. Thanks to this network, the public is able to access these important natural habitats and outstanding scenery more easily, allowing them to appreciate and enjoy the island's biodiversity.

ENERGY

Between 2008 and 2013, an **€11.44 million** programme funded by the EU upgraded the infrastructure and management of the energy sector in the Turkish Cypriot community.

These measures have contributed to the achievement of a **more reliable electricity supply system** to meet the demands of the growing economy in the community.

This modernisation took particular account of the need to **synchronise the island's two electricity grids** as part of its future reunification. All the projects were designed to facilitate this. The EU also financed the construction of a **new solar power plant** in the community to make use of a high-potential renewable energy resource.

Upgrading the energy sector

With EU assistance, approximately 21 000 digital electricity meters were installed in commercial and industrial premises, as well as in some private homes. Together with an automated meter reading system, this enabled more accurate and reliable metering of electricity consumed. After installation, the local electricity company experienced an increase in energy consumption and an increase in revenue compared to the previous year. This revealed that many of the old meters measured far below the real energy consumed and end-users were not paying for significant amounts of energy. According to figures, approximately 30 % of the electricity consumed was not invoiced for.

'After seeing the benefits of this project, we further developed our system,' recalls Bahar Denner, from the local electricity company. 'We replaced all the meters with digital ones so we could use automated meter reading at full capacity. The system we were using before was a very old one. The workers had to go to each physical location to read the meters, one by one, house by house. Now they can read all the electronic meters in one central room.'

Although electricity production, as well as peak power, had been increasing steadily before the EU assistance package, power shortages remained frequent. As there was no real-time monitoring system for the network, minor disruptions often led to long interruptions. This issue was addressed by the installation of a Supervisory Control And Data Acquisition (SCADA) system as part of another EU-supported project. This system facilitates remote, real-time monitoring and control of the Turkish Cypriot electricity network and enables full automation of the transmission of generated electricity to consumers.

'There are personnel here 24/7, continuously monitoring the whole system,' Bahar explains. 'If there is a fault somewhere in the system they can see it immediately, and they can intervene from here. In the past, a worker had to physically go there to find out what the fault was. The relevant technicians would then be dispatched to go and fix it. The smallest fault would result in a 12-hour power cut.'

'Now, the personnel here can immediately see what and where the fault is,' she continues. 'They switch transmission to the parallel system and fix the problem. Most of the time, customers don't even notice that there's a problem. The SCADA system has provided us with the ability to control the transmission side of the whole system remotely. We can see the whole network, its quality, its stability.'

Most importantly, new metering devices were provided at high voltage interconnection points between the electricity systems of the Greek Cypriot and Turkish Cypriot communities. Together with the implementation of a compatible SCADA system, this allows for synchronisation of both electricity systems, which will be important for the island's future upon reunification.

As one of the sunniest countries in Europe, Cyprus has great potential to generate solar energy

Solar power plant

Cyprus is among the regions with the highest solar energy potential within the EU. It is one of the sunniest countries in Europe, meaning solar-generated electricity could become a major energy resource for the island.

The Turkish Cypriot community needed to make use of this potential. The EU therefore financed the construction of a solar photovoltaic power plant in the community, at a cost of around €4 million. This was the first megawatt (MW)-size photovoltaic plant on the island of Cyprus and gave a unique opportunity for the operating utility to gain theoretical and practical knowledge of this high-potential renewable energy resource.

The plant, which opened in 2011, has 1.23 MWp of power output capacity, producing approximately 2 million kWh of electricity to feed into the electricity network each year. This greatly eases the pressure on the power grid during peak consumption hours.

'The plant demonstrated the possibility of using solar energy to provide electricity to the grid,' says Bahar. 'This was a very good example for the Turkish Cypriot community, because people could see that it actually works and how efficient it is.'

'Electricity costs are very high,' she continues. 'That's why customers now increasingly prefer to produce electricity from solar energy. They use what they produce. So people have seen that they can actually use solar energy and it is zero cost. The aim was to show this, and it was a very successful project in that sense.'

Bahar points out that the project inspired at least 20 companies to invest in solar energy, thereby encouraging local economic development in the sector. Furthermore, the project made it easier for third parties to access the electricity network so that customers who have started using solar power can feed their surplus electricity back into the grid.

The EU has also been providing grants to agricultural enterprises and SMEs. The grants are designed to upgrade the beneficiaries' businesses while protecting the environment and ensuring the sustainable use of natural resources. A number of agricultural enterprises and SMEs have received financing from the EU to purchase and install renewable energy production devices, such as wind and solar generators connected directly to their existing facilities.

> *"The plant demonstrated the possibility of using solar energy to provide electricity to the grid. This was a very good example for the Turkish Cypriot community, because people could see that it actually works and how efficient it is."*
>
> **Bahar Denner**

THE FUTURE

In this booklet, we have explored a number of important initiatives that are helping to develop and upgrade infrastructure and improve the environment in the Turkish Cypriot community.

Despite spanning diverse focus areas, these initiatives share two key things in common.

Firstly, they have each introduced or modernised much-needed facilities or systems that might otherwise have been unaffordable, and improved the environment in which Cypriots live, particularly in the Turkish Cypriot community.

Secondly – and significantly – these projects are bringing infrastructure and environmental protection in the Turkish Cypriot community closer to European standards. This process is essential for the reunification the island, as it aligns practices more closely with those in the Greek Cypriot community and elsewhere in the EU.

Bi-communal cooperation, particularly in the areas of wastewater and electricity, is also helping to build trust between the two communities, which will be equally important for the future of a reunified Cyprus.

Many of the projects featured in this booklet have directly contributed to upgrading important infrastructure in the community, such as water supply and sewerage networks, wastewater treatment plants, sanitary landfills, a new air quality monitoring network and an automated meter reading system for electricity.

Accompanying campaigns to educate the population are also helping to raise awareness of the importance of good infrastructure and environmental protection and, by the same token, the importance of alignment to EU standards. This awareness-raising will support and encourage members of the community to continue this positive work and play their part in building a sustainable future for a reunified Cyprus.

The EU Aid Programme's support has already made a great impact, but there is still work to be done. As this booklet has shown, infrastructure is a broad area and one in which regular monitoring and renewal is essential.

With this in mind, the EU is continuing to support projects in the area of infrastructure and the environment. In this final section, we look to the future by exploring some of the latest initiatives set to make a positive impact and bring Cyprus's Greek Cypriot and Turkish Cypriot communities even closer to reunification.

EkoPark and Pedieos river rehabilitation

In the area of solid waste, the EU recently began supporting a project to develop an EkoPark, a new area where several different types of waste recycling and recovery facilities will be located together – a first for the Turkish Cypriot community.

Meanwhile, a project to rehabilitate the Pedieos river will help to protect both water resources and the natural environment. Bi-communal foot and cycle paths will provide environmentally sustainable ways for both the Greek Cypriot and the Turkish Cypriot communities to travel to work, exercise and relax in peaceful, green surroundings. The project is expected to improve the general quality of life, enhance biodiversity and reduce road traffic, as well as bring the two communities together through recreational activities in shared spaces.

New air and fuel quality laboratory

In the area of air quality, a new laboratory will be used to assess the concentrations of potentially hazardous heavy metals, such as arsenic, cadmium and mercury, in the air. The laboratory, currently under tender, will also be used to monitor the quality and sulphur content of fuels, including fossil fuels coal, oil and gas.

'With the establishment of this laboratory, all imported fuel including coal and gas oil will be checked before it is allowed to enter the country,' says Tolga Baki.

'It [the start of the EU's support with air quality monitoring] was the first time we started monitoring air quality in the Turkish Cypriot community,' Tolga says. 'It was the beginning and it was a very important development. Now we have to improve it further.'

The new laboratory will continue to build on this progress by not only improving the environment, but also helping the community to achieve compliance with EU directives.

Investments in local infrastructure

Investments in local infrastructure have been a cornerstone of the EU Aid Programme for the Turkish Cypriot community since its conception, with more than a third of total resources going towards this objective since 2006. These investments not only make a direct impact in specific local areas, but also allow the beneficiaries at local level to retain ownership of their projects and play a key role in their success.

The EU has now established a cross-cutting initiative in the area of local infrastructure. The Local Infrastructure Facility (LIF) will provide support for identifying, screening, developing, procuring and implementing local infrastructure investments in the Turkish Cypriot community. The EU signed an agreement with the United Nations Development Programme in December 2018, amounting to €17.7 million for investments in priority infrastructure.

Projects to be covered under the LIF include the expansion of the Morphou/Güzelyurt and Famagusta wastewater treatment plants.

Energy efficiency and sustainable economic growth

Energy efficiency and renewable energy are subjects that are gradually gaining more attention in the Turkish Cypriot community.

The 'Energy Efficient Schools' flagship project, already underway, is assessing the energy efficiency of a number of pilot schools in the Turkish Cypriot community. The project will draw up an action plan of energy efficiency measures for the pilot schools, which will then be implemented using EU funding.

The focus of the Aid Programme will be to continue raising awareness, improving standards, increasing job creation and the competitiveness of local businesses, and contributing to the transition to a greener economy.

The Energy Efficient Schools project will not only aim to demonstrate energy efficiency improvements in buildings, but also prepare the community to achieve greater energy efficiency through a multitude of actions. These actions will contribute to economic and social development by upskilling the labour force, creating jobs, and improving local businesses' ability to deliver labour-intensive, innovative and sustainable solutions. Hence, the scheme is meant to provide short-term economic impact combined with longer-term green economic benefits for the entire island.

Other planned projects are likely to include further grants for agricultural enterprises and SMEs to install renewable energy devices, as well as a follow-on SCADA project. Meanwhile, the upgrading and modification of the Mia Milia/Haspolat wastewater treatment plant in Nicosia, which is used by both the Greek Cypriot and Turkish Cypriot communities, will continue to increase bi-communal management of water resources, building greater trust between the two communities in the process.

This is yet another example of an initiative that illustrates that the EU's role goes beyond funding. The Aid Programme is setting a course for a sustainable future – one in which the Greek Cypriot and Turkish Cypriot communities are moving forward together.

'The direction that the EU is giving us, the planning, the know-how is very important,' says Serkan Önet, from the Nicosia Turkish Cypriot local community. 'The EU is actually providing a sustainable policy.'

By building strong fundamental infrastructure and aligning environmental practices more closely with EU standards, this support is bringing the Turkish Cypriot community closer to the Greek Cypriot community and building for the future of a reunified Cyprus.

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