SUSTAINABILITY IN PRISONS –

TACKLING CLIMATE CHANGE AND ENHANCING ENVIRONMENTAL OUTCOMES: LEAFLETS AND INSIGHTS

PRODUCED BY:

REAL ESTATE AND LOGISTICS EXPERT GROUP: Tony McDonnell, Northern Ireland; Alessandro Pastina, Italy; Carlos Fernandez, Spain; Dirk Becker, Germany (Lower Saxony); Eric Besson, France; Enes Sedic, Croatia; Jesper Dyreborg, Denmark; Lee Edney/Patrick Kennedy, England & Wales; Mark McGoldrick, Ireland; Miguel Ardiaca, Catalonia.

OCTOBER 2025

Co-funded by the European Union

ABOUT EUROPRIS

The European Organisation of Prison and Correctional Services (EuroPris) is a membership association founded in 2011. The initiative to establish EuroPris was taken during the Swedish EU Presidency in 2009 and was brought forward by the European countries of the International Roundtable for Correctional Excellence.

Membership is open to those European national Prison and Correctional Administrations who are able and willing to support the agreed aims and objectives of EuroPris. Public institutions or organisations in the Council of Europe region, which provide prison or correctional services on a legal or statutory basis can become members of EuroPris.

EuroPris brings together practitioners in the prisons' arena with the specific intention of promoting ethical and rights-based imprisonment, exchanging information and providing expert assistance to support this agenda. The organisation exists to improve cooperation among European Prison and Correctional Services, to improve the lives of prisoners and their families, enhancing public safety and security; reducing re-offending; and advancing professionalism in the prisons' field.

EuroPris
Bezuidenhoutseweg 20
2594 AV, The Hague
Netherlands
www.europris.org
secretariat@europris.org

The opinions expressed by the expert group have been prepared in good faith and do not necessarily represent the views of the European Commission.

Co-funded by the European Union

TABLE OF CONTENT

Click on the page numbers to navigate directly to a specific page.

FOREWORD

I am delighted to launch EuroPris' first Climate Change and Sustainability paper to support our collective climate and sustainability ambitions. It offers real-world examples from 10 different countries to illustrate how the prison community can reduce their environmental footprint, improve energy efficiency, lower greenhouse gas emissions and support nature recovery.

To actively advance the sustainability agenda not only brings environmental benefits, but it can also go hand-in-hand with supporting broader transformative benefits for rehabilitation. By acting now, we can create more humane, cost-effective and environmentally responsible prison systems that benefit both individual prisoners and society as a whole.

By reading this report, I have been really encouraged by the positive work that we see happening in Europe, where those prison services that have been focused on Climate and Sustainability initiatives are now seen as leaders across government.

The report presents an excellent opportunity for all prison organisations to strengthen this area of delivery and make significant contributions to reduce climate emissions, promote resource efficiency and protect and enhance nature.

Lastly, behavioural change is essential for achieving climate and environment goals in the European prison arena, and for delivering wider benefits. We recognise that in order to achieve our goal, each one of us, whether in the workplace or in our day-to-day lives, can, through changing our behaviours, support a more climate-friendly environment and sustainable future.

Gustav Tallving
Executive Director, EuroPris

ACKNOWLEDGEMENTS

This paper is published by EuroPris – the European Organisation of Prison and Correctional Services. It was written by EuroPris' Real Estate and Logistics Expert Group: Tony McDonnell (Northern Ireland), Alessandro Pastina (Italy), Carlos Fernandez (Spain), Dirk Becker (Germany, Lower Saxony), Eric Besson (France), Enes Sedic (Croatia), Jesper Dyreborg (Denmark), Lee Edney and Patrick Kennedy (England & Wales), Mark McGoldrick (Ireland), and Miguel Ardiaca (Catalonia). This Expert Group is also coordinated by EuroPris' Deputy Director, Justina Dzienko.

1. INTRODUCTION

This report with case studies has been compiled by the EuroPris Real Estate Expert Group to offer guidance and encouragement to the European prison community to help advance the respective journeys to reduce climate emissions and achieve broader sustainability ambitions.

The climate crisis requires us to think and act differently about how to manage prison operations and look after land and buildings. The aim, through this paper, is to offer insight – in an easy-to-read format – into how EuroPris members can go about realising their sustainable ambitions.

2. BACKGROUND

Taking action to tackle climate change, the careful stewardship of resources and addressing biodiversity loss are all interconnected sustainability challenges that must be jointly addressed. There is no single solution.

This guidance paper aims to encourage and support the journey being taken by the prison community to implement a broad range of sustainable practices. It is purposefully written with a focus on real-world examples that can be considered, adapted and applied by individual prisons to support the progression of their green credentials. EuroPris members differ widely in terms of how green their prisons are; nevertheless, even small actions as described in these topical leaflets can support members to implement and progress their sustainable objectives.

This report offers an insight into how prisons can successfully advance not only their ecological ambitions but also introduce measures to support the transition towards a Net Zero future, as well as use the land in their possession to contribute to wider biodiversity gains.

Importantly, there is now increased understanding of the transformative effects of green spaces and biophilic design - creating connections to the natural world - to provide therapeutic and supportive environments that aid rehabilitation.

In the 2019 EuroPris report **'Designing for Rehabilitation'**, we first outlined how the environment has a profound effect on us. The report outlined the choices that can be made to create healthy spaces that lower levels of stress and positively support the emotional and mental wellbeing of both prisoners and staff.

Actively advancing the sustainability agenda can bring not only environmental benefits, but it can also go hand-in-hand with supporting broader transformative benefits for rehabilitation. By acting now, we can create more humane, cost-effective and environmentally responsible correctional systems that benefit both individual prisoners and society as a whole.

Those prison services that have already made progress in these areas are increasingly seen as 'leaders' in government on climate and sustainability action. These good news stories have the potential to reap lasting political, financial and societal benefits. The Real Estate Expert Group therefore encourage the prison community to take note and actively accelerate their ambitions in this area.

3. THE CASE FOR CHANGE

Climate change is the defining challenge facing current and future generations across the globe. As a result of human activities, global temperatures are rising and driving the increased frequency and severity of extreme weather events. Large parts of Europe experienced their two hottest years on record in 2022 and 2023, with heatwaves, droughts, wildfires and floods that affected significant parts of the population.

PARIS AGREEMENT

In December 2015, the United Nations Framework Convention on Climate Change (UNFCCC) approved the Paris Agreement, committing all member states to give their best efforts to keep global temperature rise below 2 degrees above pre-industrial levels, pledging support for measures to limit warming to 1.5 degrees or less.

INTER-GOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)

In 2018, the IPCC published a report on the impacts of a 1.5 °C rise in global temperatures above pre-industrial levels. This found that whilst limiting warming to 1.5 degrees is possible, doing so requires unprecedented transitions in all aspects of society, especially as human activity has already increased temperatures by an estimated 1 degree. Aligned with this change in global policies, there is also a growing public call for immediate action on the climate crisis.

UN GLOBAL GOALS FOR SUSTAINABILITY

Sustainability has been described by the United Nations as 'Meeting our own needs in ways that are not at the expense of future generations, yet more inclusively'. The UN have produced 17 Sustainable Development Goals, which are a universal call to action to end poverty, protect the planet and improve the lives and prospects of everyone, everywhere. These were adopted by the UN member states in 2015. Climate change is at the core of how many of the goals can be delivered.

On the global stage we recently saw nations come together at COP29 to take action towards the worlds collective global climate goals set within the Paris Agreement. The United Nations 2022 Biodiversity conference also reached a landmark biodiversity agreement, aiming to halt and reverse nature loss.

4. DELIVERING CLIMATE & SUSTAINABLE OBJECTIVES

To support the drive to green our prisons, tackle climate change, and address biodiversity loss a range of interconnected challenges must be jointly addressed. There is no single solution. To provide a focused approach to the actions needed on Climate Change and Sustainability in Prisons we have grouped the broad range of actions under three key themes:

- Tackling Climate Change
- Promoting Resource Efficiency
- Promoting and Enhancing Nature

TACKLING CLIMATE CHANGE (THEME 1)

There is now collective recognition across the globe that, in order to mitigate the adverse impact of a warming planet, urgent action is needed to achieve net-zero emissions by 2050. This means that by 2050, we must remove at least as many emissions from our atmosphere as we produce each year. This can be achieved either by eliminating all emissions completely or supplementing any imbalance through carbon sequestration, which involves removing carbon dioxide (CO^2) from the atmosphere and locking it away (one example of this is through the planting of additional trees – although it takes several years of growth for the carbon reduction benefits to take effect). Whatever options are deployed, urgent action is required.

To achieve this objective, organisations need to identify and deploy sustainable solutions to reduce energy demand, remove the reliance on the use of fossil fuels to heat buildings and power vehicles and use their land and buildings to generate low-carbon and renewable energy.

The EuroPris Real Estate Expert Group have offered a number of case studies to illustrate a range of work occurring within prisons to tackle Climate Change:

Effective Energy Management

1. Case Study 1 – Energy and Water Management Systems (Managed by Prisons) - Northern Ireland
2. Case Study 2 – Energy Management Information System (Managed across Government) – Croatia
3. Case Study 3 – Boiler Optimisation Programme – England/Wales

Transport

4. Case Study 4 – Use of Electrical Vehicles amongst the Prison Fleet – France
5. Case Study 5 – Greening Prison Escort Fleet and Use of HVO fuel– Northern Ireland

Renewable Energy - Reducing emissions of GHG (greenhouse gases)

6. Case Study 6 – Solar Farm (Prison) – Northern Ireland

7. Case Study 7 – Solar Power (Community-based) – Lower Saxony (Germany)

Irrigation and Flood Alleviation

8. Case Study 8 – Creation of Water Reservoirs – Italy

Adapting Buildings for a Warming Climate

9. Case Study 9 – Adaptation Measures – Spain

PROMOTING RESOURCE EFFICIENCY (THEME 2)

This involves supporting initiatives to improve each prison's individual energy and environmental performance and by encouraging staff and inmates to change behaviours.

Promoting resource efficiency involves using fewer resources, minimising waste, and optimising resource consumption to achieve more with less. This includes strategies like reducing, reusing, and recycling materials, improving energy efficiency, and adopting sustainable procurement practices.

Often this is best illustrated by having effective energy management practices in place, which control energy demand (setting the timing of when heating is turned on and off and the temperatures that are to be achieved), identifying areas of excessive consumption, which can be promptly investigated to support local prisons to improve their individual energy performance and reduce unnecessary waste.

Waste Management

10. Case Study 10 - Recycling – Northern Ireland

11. Case Study 11 - Reducing Organic Waste – Ireland

12. Case Study 12 – Recycling – Lower Saxony (Germany)

13. Case Study 13 – Biowaste - Croatia

Water Management

14. Case Study 14 – Smart Water Meters – England/Wales

15. Case Study 15 – Rainwater Harvesting – Italy

PROMOTING AND ENHANCING NATURE (THEME 3)

Biodiversity is the term given to the web of life that we all depend on for so many things – food, water, medicine, a stable climate, economic growth, among others. The decline of biodiversity is now a major concern. Society has been depleting natural resources to fuel economic growth. The preservation and recovery of Nature is seen as one of the critical factors to achieving climate stability.

Healthy functioning habitats provide an important defence against further climate change. For example, wetlands attenuate water, trees moderate temperature, and green spaces absorb excessive surface water.

Furthermore, engagement with nature and wildlife has proven exceptionally valuable to improving an individual's mental and physical wellbeing, providing calming spaces. These benefits are particularly valuable within a prison environment, for prisoners, but also for staff.

As prison estates are amongst some of the largest central government landowners so the way we manage our estates can positively contribute to improving biosecurity and wider nature recovery objectives.

his offers great opportunities to use the land allocated to prisons to promote the creation and preservation of suitable habitats which support the diversity of species and contribute towards wider biodiversity gains. Traditionally, this is an area where many prison services have already made good progress. A number of case studies are included:

Biodiversity

16. Case Study 16 – Biodiversity and Nature – France
17. Case Study 17 – Nature Recovery Plan – England/Wales
18. Case Study 18 – Biodiversity-related Considerations for New Prisons – Denmark
19. Case Study 19 – Protection of Endangered Species – Northern Ireland
20. Case Study 20 – Native Tree Nursery – Northern Ireland
21. Case Study 21 – Seed Keepers Project – Spain

4.1 THEME 1: TACKLING CLIMATE CHANGE

EFFECTIVE ENERGY MANAGEMENT

CASE STUDY 1: ENERGY AND WATER MANAGEMENT SYSTEMS (NORTHERN IRELAND)

Over the past decade, the Northern Ireland (NI) Prison Service has played a significant role in supporting the government's climate change and Sustainability ambitions. This work is led and co-ordinated by a small team of specialist staff operating within Estate Management. They are supported by operational staff within each local prison who collectively work together to deliver on a number of fronts to progress our sustainable ambitions.

As well as having Building Management Systems (BMS) at all our sites to improve the control of heating and reduce energy consumption, we took the decision to invest in an energy Monitoring & Targeting system (M&T). This enables us to accurately track our energy use (electricity, gas, oil, water) at 30-minute intervals throughout every hour of the day (48 pulsed readings at each meter every day) on individual buildings across all our sites. This provides unprecedented levels of visibility to see what is going on and allows us to quickly identify areas where unnecessary waste may be occurring, allowing us to target resources to investigate and action energy efficiency measures.

On large sites like prisons, M&T can be configured to identify consumption within individual buildings/zones. M&T reporting software can quickly generate visualised reports to show occupants and stakeholders current consumption levels and forecast the level of savings if changes were made. Being able to measure energy consumption and see how energy is consumed 24/7 is the first step to identifying potential waste.

M&T allows users to:

- Identify and explain excessive energy use;
- Detect instances when consumption is unexpectedly higher than usual;
- Diagnose where energy waste is occurring;
- Forecast what energy savings could be achieved if changes were introduced;
- Improve energy management performance.

The four main benefits of M&T:

Visibility: Above all else, M&T provides excellent visibility as to what is happening. Helping to identify where waste may be occurring and, as a consequence, helping you prioritise where improvements need to be made.

Business Planning: The data generated by M&T helps to both accurately predict the savings that can be achieved if changes were made (business case justification). This helps to reliably forecast the level of savings that could be achieved. Once complete, the actual savings achieved can be accurately calculated. This offers greater stakeholder confidence and strengthens investment decisions.

Bill Validation: Checking the amount being charged against the meter reading is nothing new, but not all commercial energy contracts charge a flat unit rate. Often, a supplier's energy agreement will be structured to charge different energy tariffs during different periods of time throughout the course of each day.

M&T fulfils this dual role. It allows you to remotely check the basic meter reading, but also allows you to check consumption against different tariffs.

Generally, this provides M&T users with a far more accurate assessment of the level of consumption against individual tariffs than the utility provider is able to produce.

It pays to check your bills – it can often allow you to access added savings (by giving you the tools to check and where necessary challenge your utility providers bill calculation).

Automated alerts - Limiting the impact of Water Leaks

Prisons are often criss-crossed with several kilometres of underground pipes and cables. Water leaks can occur at any time, and often, there will be nothing visible on the surface to indicate there is a problem. So, the leak continues to waste water (leaks in main arterial pipes can cost several hundred euros a day in lost water) until the leak is detected, located, and action is taken to make the repair. How long that will take depends on how often and how rigorously you check the water meter.

M&T has the capability to send automated text alerts (once consumption raises above a pre-determined daily amount). This allows you to quickly identify unusual activity. This can be particularly useful in identifying that you may have an unseen water leak.

How does it work?

An M&T system is installed at each of our prison sites with data fed back to a central monitoring station within our Estates Department. All of the larger buildings at each location are individually sub-metered to offer us a real-time picture of what is happening across each of our prisons.

Pulsed readings are sent from each of our meters at 30-minute intervals throughout the course of the day. The data is collected and can be analysed to identify where energy is being wasted, to target resources to investigate, to recommend changes and then to monitor the effectiveness of any improvements that are made. The system records and retains several years of data, so it offers us a powerful tool to improve our overall energy performance.

Who manages the system?

The system is overseen by our in-house Energy & Sustainability Manager. We also employ an energy specialist operating under the direction of our in-house team to operate our M&T system 3 days a week (we believe the operation of the system is best suited to an energy specialist). The specialist uses the system to monitor and track energy use and generate reports.

- Analysing energy consumed in each of our buildings over the previous week;
- Identifies where waste may be occurring;
- Prioritise where improvements can be made;
- Targets resources to maximise energy efficiency
- Fast action to identify issues and repair/ rectify

What do you find most useful?

If consumption, in any of our buildings rises above normal then we are immediately alerted, and enquiries can be made to quickly identify what is occurring. This has been a big factor in allowing us to reduce any pockets of energy waste or water leaks.

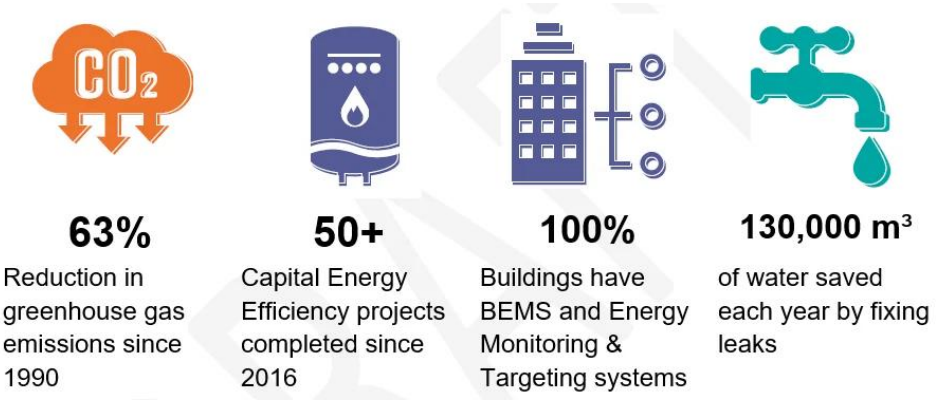
What are the benefits?

The system annually saves us several times more than it costs us to operate. It is used to generate graphical reports for governors and senior management, allowing them to visualise how each prison is performing. The system also provides confidence for our stakeholders and has helped us secure investment to progress further energy improvements.

"We have found M&T to be the single most effective tool in helping us manage our energy consumption and support our push to reduce our GHG (greenhouse gases) emissions. "

Energy & Sustainability Manager, NI Prison Service

Alongside the installation of an energy monitoring and targeting system the NI Prison Service have pursed an annual energy efficiency programme which has seen both major capital investments (new district heating systems, new fire and water mains, new high voltage power lines etc.) in conjunction with an annual programme of minor capital works which has resulted in 75% of all boiler-houses and plantrooms across the estate being completely refurbished with modern energy efficient equipment. These co-ordinated measures have enabled the prison service to reduce energy consumption and energy costs, as well as fast-tracking the reduction in their greenhouse gas emissions. A summary of the progress made on energy efficiency across the prison estate in 2025 is summarised below:



CASE STUDY 2: ENERGY MANAGEMENT INFORMATION SYSTEM (ACROSS GOVERNMENT) (CROATIA)

How does it work?

The Croatian Prison System employs EMIS (Energy Management Information System), an online application for monitoring and analysing energy and water consumption in public sector buildings. EMIS is a vital tool that enables systematic energy management, encompassing strategic planning for energy and sustainable utilisation of energy resources. This management approach extends to buildings owned or utilised by cities, counties, the Government of the Republic of Croatia, and other budgetary and non-budgetary entities, including public authorities: https://www.isge.hr/login.xhtml

EMIS gathers consumption data based on monthly bills and readings. Readings can be gathered by manual daily/weekly/monthly, or hourly input via remote metering systems. Information on the building's general, construction or technical data is also enabled.

BASIC FUNCTIONS OF EMIS:

- Module for entering energy audits, certificates, and other energy efficiency measures on the facility.
- Easy access to information on the total amount of energy and water consumed, the ways and places where energy is spent and used.
- Calculations and analyses to detect unwanted, excessive, and irrational consumption and identify potential for energy and money savings.
- Monitoring and verification of realised savings.
- Automated warning of critical events and malfunctions in operation.
- User interfaces are adjusted to individual roles in the system.
- Advanced filtering and sorting of the database.
- Reports and different graphical views can be displayed in Excel and PDF format, by object, object group or label.
- Individual editing account groups of individual distributors.
- Individual editing of account items within certain account groups.
- Tabular hourly display of consumption (smart measuring devices).
- Graphical analysis through absolute and relative consumption, E-T curves and CUSUM curves.
- Daily statistical database processing.
- Internal communication, document storage and alarm systems.
- Developed smartphone application - mISGE.
- Possibility of application to various workshops and training.
- Various guides and instructions for entering and monitoring data within the home page of system and at https://www.isge.hr/upute/
- Enabled direct account entry into the database by distributors and suppliers, and analytical tracking of the submitted data by the same.
- Monitoring sessions of each individual user as well as user groups.

Who manages the system?

The APN (Agency for Legal Transactions and Real Estate Mediation) oversees the central operation of the EMIS application. Furthermore, every prison has trained administrators responsible for data entry and local system management.

What do you find most Useful?

By utilising the EMIS, the Croatian Prison System was spared the challenges and cost of developing specialised tools or applications for systematic energy management and could efficiently monitor and manage energy consumption within the prison service.

EMIS provided a comprehensive framework for gathering, analysing, and utilising energy data, enabling us to make informed decisions and implement effective energy-saving measures.

What are the benefits?

The main benefit of using EMIS is making informed decisions and preparing documentation for bidding/procurement to invest in the energy efficiency of the existing building stock of our prison service.

The prison system was better poised to embark on renovation projects focusing on reducing energy consumption by at least 50% annually after introducing energy efficiency measures and integrating renewable energy sources.

CASE STUDY 3: BOILER OPTIMISATION PROGRAMME (ENGLAND/WALES)

How does it work?

The boiler load optimisation unit is a device that can be retrofitted to commercial boilers (e.g. Sabien M2G). It constantly monitors and analyses the boiler temperature and can identify if the boiler is firing due to a genuine need for building heat or for "dry cycling" (firing to replace the boiler's standing losses). On identification of a genuine demand for heat, the unit enables the boiler to fire, ensuring that all building thermostat setpoints are maintained. If the boiler is "dry cycling", the unit immediately inhibits the boiler, saving energy and cost.

Who manages the system?

The boiler optimisation units are funded by the Ministry of Justice (MoJ) Net Zero Carbon team. The installation and monitoring of the units is managed by the MoJ's Facility Management providers.

What do you find most Useful?

The most useful thing about the boiler optimisation unit is that it can help to reduce gas consumption and carbon emissions. The MoJ's emissions are mainly sourced from direct emissions from heating our buildings; therefore, coiler optimisation is a key intervention to drive initial efficiencies and reduce fuel usage. To date, nearly 1,100 units have been installed across the estate to improve fuel efficiency of boiler assets.

What are the benefits?

The boiler optimisation unit is a valuable investment for the MoJ. The units have a typical payback period of less than 2 years, and although fossil fuel savings (and associated cost savings) depend on the individual unit and the site, the units deliver an average gas reduction of 10-13%. The latest installation programme is predicted to save 1,583 tCO2e annually. Overall, the M2G boiler optimisation unit is a valuable tool for the MoJ in its efforts to reduce gas consumption and carbon emissions. The units are easy to install and maintain and have a proven track record of delivering results.

"Actively reducing MoJ's carbon emissions across our estate is key to reducing environmental impacts from our buildings and operations. The boiler optimiser unit installation programme is a key part of reducing gas consumption, resulting in both cost and carbon savings."

MoJ Net Zero Carbon Team

CASE STUDY 4: USE OF ELECTRIC VEHICLES AMONGST THE PRISON FLEET (FRANCE)

The environmental and climate emergency calls for the development of durable mobility in order to reduce greenhouse gas emissions. In many countries, the car is used for daily commutes, even if distances are short. Beyond actions such as teleworking, the use of public transport, soft mobility, car sharing, sober cars and especially electrical vehicles (EV), are part of priority actions, notably in administrations and firms' transportation plans.

How does it work?

In France the mobility orientation law (LOM) is seeking carbon neutrality for all ground transport by 2050. This promotes the deployment of electric vehicles and the installation of electric charging stations. By 1 January 2026, 37.4% of all new vehicles sales must be either electric or hydrogen vehicles. Furthermore, a recent law, which aims to speed the utilisation of renewable energies, imposes the installation of photovoltaic panels over car parks, function of their surface, which of course have a direct and positive consequence on the charging of electrical vehicles.

The sustainable mobility strategy of the French Ministry of Justice has several actions (resort to teleworking, use of public transport, cyclists and soft traffic, installation of safe parking spaces for bicycles, proposals of car sharing for daily commutes) and includes the purchase of electric vehicles and the deployment of electric charging stations.

Who manages the system?

Within the energy transition unit of the French Ministry of Justice, the French prison administration has structured its sustainability development strategy, creating a special department, called the LAB (research and innovation laboratory), notably in charge of mobility. It relies on a network of sustainability development referents, in the regional directions.

What are the benefits?

Following recent acquisitions French penitentiary's vehicle fleet now contains 246 electric vehicles, representing 14% of its global fleet (246 on 1821 vehicles). In 2020, this rate amounted to 10%. At the same time, 170 electric charging stations have been installed in the existing prisons as in the integration and probation services buildings. For the moment, the deployment of electric charging stations is reserved for administrative service cars. In view of the uncertainty on electric battery failure, operational vehicles such as for transfer of detained persons, are not yet concerned by this action.

All prisons of the current real estate program are equipped with electrical circuit to recharge electric or hybrid vehicles (motor vehicles and motorised two-wheelers), for 20% of their global capacity with metering system allowing individual billing of consumptions.

CASE STUDY 5: GREENING PRISON ESCORT FLEET AND USE OF HVO FUEL (NORTHERN IRELAND)

As part of the Northern Ireland (NI) Prison Service's continuing climate change journey a number of options were considered, in consultation with industry experts and officials from the NI Department of Infrastructure, to reduce the carbon emissions of the Prison Escort Fleet.

How does it work?

98%*

Reduced tailpipe CO^2 emissions of Prison Escort fleet using HVO Fuel

This led to a decision in Spring 2024 to undertake a 6-month trial of Hydro-treated Vegetable Oil (HVO), as an alternative fuel to diesel, amongst a representative sample of prison custody vehicles. Using HVO is recognised as achieving a 98%* reduction in tail-pipe CO^2 emissions.

The purpose of the 6-month HVO fuel trial was to examine if the use of the alternative fuel would have any detrimental impact on the operation of the vehicles within the prison escort fleet, which may hinder the safe and effective operation of the custody vehicles. Based on the extended use of the product and real-world analysis, the view of the Fleet manager was:

"There was no material impact on either the driven performance or the mechanical integrity of vehicles as a result of their use of HVO fuel. I would be happy to use HVO fuels across the PECCS (Prisoner Escort and Court Custody Service) fleet and all other vehicles that aren't suitable for transitioning to EV."

Northern Ireland Prison Service Fleet Manager

What are the benefits?

At the conclusion of the trial period (31 January 2025) a decision was made to continue to operate HVO amongst the fleet and arrange for a dedicated HVO fuel contract for Northern Ireland.

The NI Prison Service now offers support and advice to a growing number of public bodies (including Education Authority, Police and Health Trusts) on the delivery of their own HVO trials and collaborative arrangements for a regional HVO fuel contract to allow the public sector to purchase HVO fuel at scale.

CASE STUDY 6: SOLAR FARM (NORTHERN IRELAND)

As part of the Northern Ireland Prison Service's continuing climate change journey a Solar Farm was installed within the grounds of Hydebank Wood Secure College and Women's Prison, Belfast.

How does it work?

The solar farm at Hydebank Wood in Belfast was installed in 2024 and consists of 668 solar panels, which are capable of producing 356 kWp of electricity. At current prices, it is estimated the new solar farm will reduce electricity bills by around £60,000 per year and support the ongoing push by the Prison Service to reduce their GHG emissions.

"The new solar panel farm at Hydebank Prison is an excellent example of how the Department of Justice is helping to reduce its carbon footprint.

For some years now, the Northern Ireland Prison Service has pursued a range of sustainability initiatives in its aim to have fit-for-purpose, secure facilities with innovative delivery models. Solar energy is one of the cleanest sources of energy and is a more efficient and sustainable way of replacing conventional energy needs. On top of this, there is savings to be made."

Northern Ireland Justice Minister, Naomi Long

CASE STUDY 7: SOLAR POWER (COMMUNITY BASED) (LOWER SAXONY, GERMANY)

As part of a wider – community based - renewable energy initiative Uelzen Prison, Lower Saxony Germany contributed their spare land to enable the prison to benefit from green electricity.

What is Lower Saxony doing in the field of renewable energies?

In 2022, a Solar Farm – constructed by the local electricity provider - was built on spare land, owned by Uelzen Prison, adjacent to their prison establishment. The Solar Farm generates electricity for the local power network and is designed to generate enough power to meet the power needs of both the prison and the local community.

The Solar PV Farm has a capacity of 6,000 kWp with 16,700 PV modules and is sized to provide approximately 10 % of the total household electricity demand of the City of Uelzen.

It also provides for the electrical needs of the prison and is designed to generate 5.7 million Kwh of electricity each year, saving around 2,700 tonnes of CO^2.

The annual yield is 932 Kwh/kwp with a utilisation rate of 87%.

OVERVIEW

Photovoltaics (PV) convert solar energy, generated by the sun's radiation, directly into electrical energy. Their popularity has increased in recent years as advancements in technology and manufacturing techniques made them far more affordable. Photovoltaic systems now make a significant contribution to the supply of electricity.

Ideally, PV panels should be aligned so that they have an azimuth of ± 40 degrees (south deviation) and an installation angle of between 30 and 35 degrees. The smaller the angle of inclination, the less the orientation affects the yield of the system. East-west oriented solar systems are preferred for use on the grid as they offer the most effective stabilisation of the photovoltaic output throughout the day.

CASE STUDY 8: CREATION OF WATER RESERVOIRS (ITALY)

How does it work?

In a warming climate, with increasingly unpredictable patterns of rainfall, surface runoff rainwater, collected in artificial reservoirs, can be used for all non-potable uses, mainly for irrigation. In penitentiary institutions where there is a large availability of land to cultivate, artificial lakes can be created to store the rainwater flowing off the surface. In Italy, there are currently four active penal colonies which have access to large areas of land that can be used to cultivate crops. Three of which are in the Sardinia region.

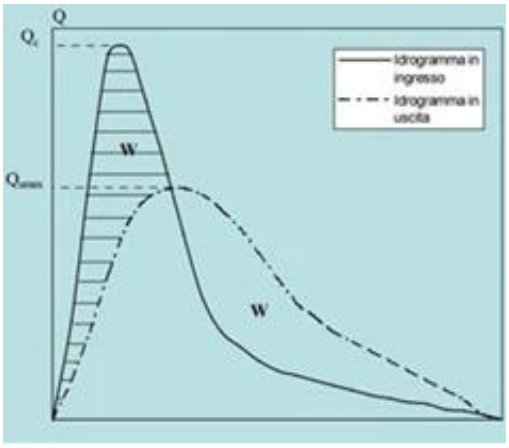
Who manages the system?

The largest is found at Mamone prison in Onanì in the province of Nuoro. Mamone prison houses about 160 prisoners, with less than six years left of their sentence, who can undertake agricultural work. Since its construction, at the end of the 19th century, the Mamone penal colony has offered prisoners work outdoors, in the agricultural sector and in livestock breeding. The colony extends to over a hilly area of 2,700 hectares and agricultural and pastoral activities are carried out with technical assistance by personnel experts in agricultural practices. Agricultural products, cheese and meat are sold both to prisoners and to administration staff.

What do you find most useful?

In the 1960s, five reservoirs of different capacities were created by a regional body for land transformation. The reservoirs collect the flowing water of small streams and drain into the land, using dams made of earth and stone cladding. The main purpose is rainwater harvesting to provide water sources for irrigation crops and watering animals, especially during dry periods. The reservoirs also have the function of flood lamination, slowing down the flow of rainwater and decreasing the risk and potential damage to downstream territories. In recent years, with the increase in intense meteorological events, the function of reservoirs as flood lamination has become very important.

View of S'Alcra lake with flock



Lamination effect of the reservoir

The graph on the left shows the effect of attenuating the peak of the flood by storing water and releasing it more slowly.

Legend

_____ incoming flood hydrograph
_ _ _ _ _ _ _ _ flood hydrograph with reservoir
Qc = peak of the flood
Qmax = maximum water in the reservoir
W = volume of potted water

The process requires careful design and operational management to balance flood protection with other needs, especially during periods of heavy rainfall or multiple storms. The reservoir must be partially or completely emptied in advance of an intense meteorological event to best carry out its flood lamination function. The surface runoff collected in natural reservoirs offers high naturalistic and faunal value by creating habitats and supporting biodiversity. In closed prisons, communities can use the collected rainwater for cleaning, washing clothes, flushing toilets and watering vegetable gardens.

View of S'Alcra lake with birds

In closed prisons, communities can use the collected rainwater for cleaning, washing clothes, flushing toilets and watering vegetable gardens.

What are the benefits?

The reservoirs boost agricultural production by providing a consistent and reliable water supply for irrigation and livestock, increasing crop yields, and enabling inmates to cultivate crops and raise animals.

Reservoirs perform flood lamination by retaining rainwater, reducing downstream flood risk and damage, a function that has become increasingly vital due to more frequent and intense extreme weather events.

Part of the water retained by the reservoir filters into the subsoil, recharging the aquifer and improving groundwater quality.

Furthermore, the reservoirs can indeed improve microclimates by moderating temperatures, reducing the impact of extreme weather events.

The case study can be repeated on a smaller scale for prisons with limited agricultural land, provided they have space for water storage, such as ponds or underground tanks, as rainwater harvesting is a viable strategy for minimising potable water costs and consumption.

CASE STUDY 9: ADAPTION MEASURES (SPAIN)

How does it work?

Taking into consideration the large number of sunlight hours in Southern Spain throughout the year, it seems reasonable to make good use of such a natural resource, trying to avoid abusive use of electricity and overheating. Murcia 2 prison is a huge prison with a capacity for more than 1500 inmates, convicted or not.

It is located in a plain and dry landscape, with no mountains near or around. That allows receiving direct sunlight over the months, especially in the spring-summer period.

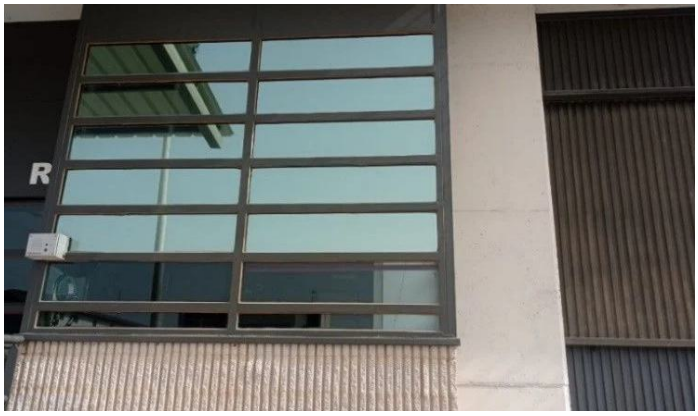
To benefit from such a resource, and also to protect from extreme temperatures, some measures are in place:

- To achieve thermal insulation, there are insulation walls to ensure an optimal temperature. During the construction of the prison, the implementation of thermal enclosure was agreed, having in mind weather conditions in summer as well as in winter. The aim is to try to limit heat gains or heat loss, depending on the season. This is applicable both for inmates' buildings and prison staff offices.

- Reflective vinyls have been installed in all windows at the offices. This has allowed for increased energy efficiency, as most solar radiation is reflected and there is no need to raise air-conditioning power. Below, vinyls are at the office area and at the main entrance door.

- Concerning air-conditioning (absolutely necessary in Southern Spain), there is an automatic system which stops cooling or heating the air every two hours. By doing this, if someone forgets to turn the machine off, it will turn off shortly. Also, it is impossible to leave it on overnight or during weekends, for example. For further control, there is a limit above and below, which means a reduction in the consumption of energy.

- The existence of solar panels at the top of many units provides energy from the sunlight. This energy is captured, stored and used, mainly to provide and ensure hot water over the whole year.



Vinyls at the offices area and at the main entrance door

Solar panels on top of many units

Who manages the system?

Previous elements do not need specific management, as most of them belong to the building, being one of the most sustainable prisons in Spain according to the good use of energy, and being really innovative when it was built in 2010.

What do you find most Useful?

To make the best of extreme temperatures and benefit from a natural and permanent source of energy is not only useful but also particularly sustainable. The existence of the mentioned vinyls and/or the automatic system for air-conditioning allows for controlling indoor temperatures with no need for over-cooling rooms and spaces.

What are the benefits?

Benefits are clear and realistic. Less energy consumption means more sustainable buildings. Adaptations described here help to adapt spaces to a warming climate. Instead of considering sunlight a problem, it turns into a natural way to heat water. Taking overall, measures and initiatives here described are beneficial in themselves and a good example to be followed, when possible.

4.2 THEME 2: PROMOTING RESOURCE EFFICIENCY

WASTE MANAGEMENT

CASE STUDY 10: RECYCLING (NORTHERN IRELAND)

What recycling is occuring at Maghaberry?

Around 30 Prisoners work within Maghaberry Prisons recycling facility, which recycles:

- Plastics (including water and drinks bottles), milk containers and detergent bottles, yoghurt pots and trays.
- Tin Cans.
- Cardboard.
- Newspaper.
- Broken Pallets.
- Waste from electrical equipment (WEEE).

The prison have invested in their recycling facilities including a Material Recovery Facility (MRF) or 'Picking station', compactors, shredder and waste-balers.

What have been the benefits of this work?

By installing on-site recycling facilities, they have not only created jobs for the inmates but also helped reduce the scourge of plastic waste, keeping it out of the environment and in the economy as a valuable resource. The Prison Service is embracing its role to recycle more, improve the environment and reduce the costs of landfill.

"Here at HMP Maghaberry, our prison staff and inmates work really hard to recycle what we can. We are processing up to 1200 HDPE milk containers per day and with the cost of plastic soaring, it makes perfect sense to recycle this valuable resource and recycle what we can."

Governor Tracy Megrath

In addition, prisoners who sign up to this work can also gain NVQ (National Vocational Qualifications), with a number being offered jobs with local recycling companies once their sentence is complete.

What happens to the recycled material once it leaves Maghaberry?

A spokesman for the waste contractor explains: "Most of the plastic recycled within Maghaberry Prison is sold to an environmental company and is processed:

- Polypropylene (PP) yoghurt pots and trays are recycled and manufactured back into flowerpots and crates;
- Low Density Polyethylene (LDPE) squeeze bottles and bread bags are pelletised for use in shrink films, stretch films and collection bags;

- Polyethylene Terephthalate (PET) water and drink bottles are granulated and sold to produce sheeted plastic food packaging; and
- High Density Polyethylene (HDPE) milk cartons are recycled to make high density pellets."

Waste Contract

Recycled materials are segregated and collected separately, helping reduce levels of general waste. Food waste is segregated and collected separately from each site. This reduces the volume of waste sent to landfill. Following collection, the food waste is put through an anaerobic digester to generate heat/electricity.

All general Waste is sent to a Material Recovery Facility (MRF), and any remaining recyclables are removed. Any remaining material is made into waste-derived fuel.

What have been the benefits of this work?

By installing on-site recycling facilities, we have created jobs for the inmates and helped to reduce the scourge of plastic waste, keeping it out of the environment and recirculating it back into the economy as a valuable resource.

WASTE MANAGEMENT

CASE STUDY 11: REDUCING ORGANIC WASTE (IRELAND)

How does it work?

The Irish Prison Service commenced a project in 2022, which aimed to divert all organic waste away from landfill through the introduction of Bio-digesters to locations across the prison estate. We are committed to diverting all organic waste away from landfill by the end of 2024.

The Bio-Digester utilises biotechnology that converts food and other organic waste into a highly valued, dry, safe and nutrient-rich soil product / bio-fertiliser. Using a combination of biological and mechanical processes, organic waste volume and weight are reduced by an average of 80% in less than twenty-four hours.

Who manages the system?

The project is a collaboration between the Irish Prison Service Building Services Division, Care and Rehabilitation division and a private operator that specialises in the development of renewable and sustainable solutions for the management of organic waste.

What do you find most Useful?

The Irish Prison Service produces, on average, about 3,000 tonnes of waste, which is removed from our locations each year. Of this, only 10% is diverted to recycling. Following the introduction of the Bio-digesters into prisons, the Irish Prison Service now has the capacity to divert up to 1,300 tonnes of food waste away from landfill.

What are the benefits?

The waste reduction solution has achieved a 75% reduction in organic waste weight and volume. The process transformed the food waste into a valuable compost-like material, completing the circular loop by becoming a nourishing source for the gardens and landscapes within the prison facility.

- Environmental Impact: The reduction of greenhouse gas emissions associated with food waste reduction contributes to global efforts in mitigating climate change.
- Security Enhancement: Decreasing waste volumes minimises security risks within prison facilities.
- Training and Education: The machines serve as educational tools, raising awareness about waste reduction, sustainability, and environmental responsibility.
- Corporate Social Responsibility (CSR): The project fosters a positive CSR message by promoting waste reduction, environmental stewardship, and community engagement

By significantly curbing waste accumulation through the use of innovative aerobic treatment machines, the project contributes to reducing the carbon footprint associated with waste decomposition. This aligns with Ireland's commitment to mitigating climate change and demonstrates the potential of sustainable waste management as a vital element in achieving environmental goals.

Furthermore, the project's success isn't confined to waste reduction; it has become an incentive for rehabilitation, education, and empowerment. Prisoners engaged in operating the waste management machines gain valuable vocational skills and hands-on experience in sustainable practices. This fosters their personal growth, increases their employability upon release, and empowers them with a sense of contribution to society.

The project's educational impact is equally profound, raising awareness about waste reduction, circular economy principles, and environmental responsibility. This multi-faceted approach demonstrates how sustainable practices can drive positive change not only in waste management but also in rehabilitation, education, and community engagement.

CASE STUDY 12: RECYCLING (LOWER SAXONY, GERMANY)

What is the problem with single-use plastics?

In Germany, 320,000 disposable plastic cups are consumed every hour and 2 billion plastic bags each year. That is an average of 24 plastic bags per person with an average usage time of just 25 minutes. Worldwide, one trillion plastic bags are consumed annually. Depending on the type of plastic, it can take anywhere between 100 and 500 years for a plastic bag to completely decompose. It is not only plastic that pollutes the environment, but also items contaminated with harmful substances but as unsorted waste which hasn't been properly stored and disposed of.

How to separate waste?

In Germany, all households are required to separate their waste into paper, plastic, organic, glass, electrical and rest/leftovers. In Lower Saxony's prison service, a strict waste separation system has been in place for several years. Prisoners are required to separate their waste in the detention rooms and place it into waste containers at nearby collection points. Experience has shown that prisoners sometimes fail to separate their waste, either unintentionally or knowingly. This results in increased costs for the prison for waste disposal.

How is the problem dealt with in prison?

Based on these findings, a recycling operation was set up. The waste, which is often poorly pre-sorted, is re-sorted by prisoners in this operation. The costs for disposal can thus be minimised. In addition, valuable raw materials can be collected and sold by the prison. These include metals, textiles and batteries.

How is the operation set up?

In the prisons of Lower Saxony, usually 2 prisoners accompanied by a member of staff collect the bins from the prisoners' accommodation and take them to the waste separation plant. There are 4 prisoners employed in the company who spread out the rubbish on a large table and sort it. The prisoners wear personal protective equipment.

How is single-use plastic avoided in prison?

The avoidance of disposable plastic is also being pursued in the Lower Saxony prison service. Hot meals are served on trays in reusable dishes with reusable cutlery. Whenever possible, desserts are served without packaging. Cold food (bread, sausage and cheese) for breakfast and dinner is served unpackaged or wrapped in parchment paper instead of plastic.

To avoid small packages, jam and butter or margarine are handed out to prisoners in large packaging units (200 - 250g). Refrigerators are available for food storage to prisoners either in their detention room or in common areas. To avoid the use of plastic bags, the prisoners' purchases have been switched to cardboard boxes.

What happens to food waste?

Food waste is collected and stored separately. The use of compression presses, are used to remove water and fats from the food waste, which helps to achieve further savings on disposal.

WASTE MANAGEMENT

CASE STUDY 13: BIOWASTE (CROATIA)

Biowaste is organic matter from animal and plant resources, such as food scraps and garden waste, that can be broken down by natural processes and microorganisms. This waste stream has significant potential for a circular economy, as it can be recycled to produce valuable products like compost, biogas, biomethane, and bio-based materials.

Who manages the system?

The Croatian Directorate for Prison and Probation were successful in securing funding from Croatia's 'Environmental Protection and Energy Efficiency fund' to support the installation of biodigesters in a number of its prisons.

What are the benefits?

This brought several benefits:

- Promotion of the recycling of biowaste to support a circular economy
- Increased levels of recycling
- Reduced the volume of general waste that was collected from each prison
- Lowered waste collection and disposal charges

A positive side effect of the installation of bio-digesters was increased visibility of the positive steps being taken within prisons to promote environmental improvements, which simultaneously led to government investment to refurbish several prison kitchens to better support the management of food production and biowaste collection.

In this way the biowaste management project produced multiple benefits, introducing external investment to upgrade infrastructure, improved food safety, better working environments and a reduction in operating costs. Food waste is collected and stored separately.

CASE STUDY 14: SMART WATER METERS (ENGLAND/WALES)

How does it work?

The UK Ministry of Justice (MoJ) water management system uses a combination of smart meters, data analysis, and specialist leak detection surveys to identify and repair leaks in the prison estate. Smart meters are installed in prisons to measure water usage. AMR data is analysed using diurnal flow profiles, with particular attention given to the Minimum Night Flow (MNF) between the hours of 2:00 am – 5:00 am. By accounting for Legitimate Night Use (LNU), any remaining flow period is often indicative of leakage or other unintended losses.

Specialist leak detection surveys are also used to locate leaks. These surveys use a variety of techniques, such as listening for the sound of running water, using acoustic sensors, and injecting tracer chemicals into the water supply. Once a leak has been identified, it is repaired by the prison's maintenance team.

Who manages the system?

The MoJ water management system is managed by the MoJ Water Manager. This person is responsible for the installation of smart meters, the analysis of water usage data, and the commissioning of leak detection surveys.

What do you find most useful?

The most useful aspect of the MoJ water management system is the ability to identify and repair leaks quickly and efficiently. This saves the MoJ a significant amount of money, and it also helps to protect the environment. The MoJ have initiated a revolving top 10 sites (based on highest MNF), which aligned with structured site-specific campaign planning.

So far, the MoJ have made several significant water and financial savings at:

- HMP Winchester – fixed a large leak, saving 66,000m3 of water and £198,000
- HMYOI Wetherby – fixed 2 leaks and 1 burst, saving 52,000m3 of water and £156,000
- HMP Humber Wolds – rectified an erroneous meter saving £300,000
- HMP Norwich – fixed a large leak, saving 69,000m3 of water and £207,000

- HMP Huntercombe – fixed leak saving 175,200m3 water and £434,000
- HMP Norwich – located and repaired leak saving 29,400 m3 water avoiding costs of £73,000
- HMP Stocken – located and repaired leak saving 78,000 m3 in water avoiding costs of £249,000

What are the benefits?

The MoJ water management system is very cost-effective. The initial investment in smart meters and leak detection surveys is quickly recouped through the savings generated by repairing leaks. In addition to the financial savings, the MoJ water management system also has environmental benefits. By reducing water leakage, the MoJ is helping to protect the environment and conserve water resources.

"Fixing leakage saves more than money - It helps the habitats & aquifers from which water is resourced, saves carbon associated with source to tap supply, and increases drought resilience."

MoJ Water Management Team

WATER MANAGEMENT

CASE STUDY 15: RAINWATER HARVESTING (ITALY)

How does it work?

In a warming climate, unpredictable rainfall leads to water scarcity and increased risks of floods, creating a greater need for water preservation. Climate change disrupts the water cycle, making both droughts and extreme rainfall events more likely and severe, which threatens freshwater supplies and puts populations at risk. Preserving and managing freshwater resources is crucial for adapting to these changes, ensuring water for communities, agriculture, and ecosystems.

Rainwater harvesting is the collection and storage of rain for various uses, providing a sustainable, alternative water source in both rural and urban areas, which helps conserve municipal water supplies and manage stormwater runoff.

In rural settings, it can be crucial for irrigation and provide water where groundwater is scarce, while urban systems reduce demand on city water infrastructure and help mitigate flooding and pollution.

Systems typically involve collecting rainwater from roofs, storing it, and using it for non-potable needs like flushing toilets, washing, and general cleaning. In some instances, it can also be purified for drinking.

To help with this, rainwater collection is being adopted increasingly frequently in both rural and urban areas to collect supplies of non-potable water, which can then be used for irrigation, to flush toilets or for general cleaning purposes.

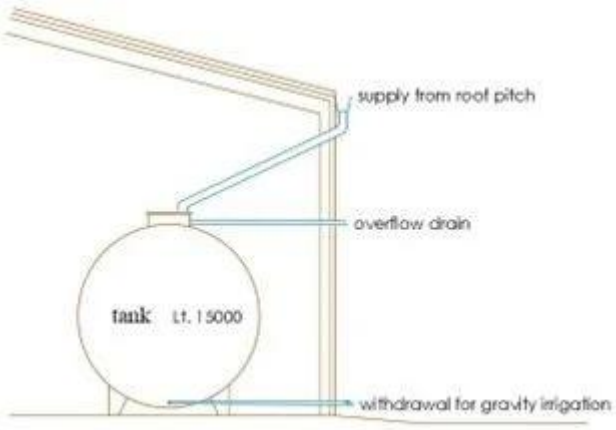
Who manages the system?

In Potenza prison, Basilicata region, the stored water is used to irrigate seasonal vegetable gardens, a mushroom farm and a botanical garden with aromatic plants.

The rainwater harvesting system within the prison is maintained and checked by internal staff, ensuring its proper operation. For irrigation of land situated at higher altitudes than the water storage reservoirs, lifting systems are employed.

What do you find most useful?

This graphic illustrates the simplicity of a rainwater harvesting system. Here, the diagram shows a system consisting of a tank and pipe arriving from the roof, the overflow drain and an outlet pipe to irrigate a vegetable garden.



What are the benefits?

Rainwater harvesting reduces the demand for drinking water by providing an alternative, sustainable source for non-potable uses, like irrigation, thereby lowering the overall energy needed for water treatment and delivery.

4.3 THEME 3: PROMOTING AND ENHANCING NATURE

BIODIVERSITY

CASE STUDY 16: BIODIVERSITY AND NATURE (FRANCE)

How does it work?

The French penitentiary administration has deployed a number of measures in the construction and major remodelling of prisons to comply with a range of different regulations (e.g. to address soils artificialisation and climate disruption and the prohibition of phytosanitary products to prevent the introduction and spread of harmful pests and diseases in plants, plant products, and related items like soil and wood.

Environmental impact studies are undertaken prior to the construction of prisons. It is essential, if land is to be built on, to have ecological measures in place which introduces compensatory actions to preserve and enhance biodiversity. Greening of prisons is part of the current real estate programme. In some instances, these may be inaccessible for detainees, but most of all, function to detainee's profiles, in courtyards and activities spaces such as vegetable gardens.

Actions for biodiversity preservation and recovery have been undertaken in French prisons for many years. Generally, they are associated with detainee's activities. Each year, central prison administration leads meetings with regional directions, in the frame of the supervision of their objectives and performances contract, which includes sustainable development and biodiversity indicators.

Who manages the system?

If the preservation of biodiversity consisted for many years in local actions, the French prison administration has structured its sustainability development strategy, by the creation of a special department, called the LAB (research and innovation laboratory). It relies on a network of sustainability development referents in regional directions. The LAB (research and innovation laboratory) has launched a project in order to promote the place of nature and biodiversity in detention. This project in the Occitanie region consists of a diagnosis of ecological management of green spaces inside prisons, with a particular focus on avoiding the use of phytosanitary products.

For the construction of new prisons and the restructuring of existing structures, the real estate department and the Justice Real Estate Agency (APIJ) surround themselves with collaborators and design offices, specialised in landscape and ecology.

What are the benefits?

The greening of prisons makes life in detention more peaceful and improves the quality of life for both detainees and staff.

However, planting can too often occur between buildings and along pedestrian walkways (there are limitations with planting within exercise yards, as it offers an opportunity to hide prohibited products, or plants are too easily deteriorated).

Plants are more respected by detainees in activity areas such as vegetable gardens.

A 2020 report on sustainable development within French prisons found that:

- 46% offered gardening activities
- 40% of prisons had set up biodiversity actions
- 24% had created eco pastures
- 14% had beehives
- 8% offered farming activities.
- 5% had insectariums
- 3% had arboretums

Eco pasture is particularly developed in the neutral zones of the prisons, beehives are frequently set up in detention, and gardening is also developed for the reinsertion of detainees.

The Eysses detention centre has also produced insect hostels, birdhouses, and bat nesting boxes for the prison itself, but also for the community, in collaboration with a mini eco company “Colibri”, and it was rewarded for its project of garden.

In 2022, 78% of the 196 French prisons have banned the use of phytosanitary products, and 47% have settled biodiversity measures.

BIODIVERSITY

CASE STUDY 17: NATURE RECOVERY PLAN (ENGLAND/WALES)

How does it work?

The UK Ministry of Justice (MoJ) was the first UK government department to publish a five-year Nature Recovery Plan (NRP), which aims to restore biodiversity across the MoJ estate. The plan covers nine key principles, including safeguarding protected areas and landscapes, creating and connecting priority habitats, helping key species, and achieving biodiversity net gain in development.

The NRP is being implemented through a variety of measures, including:

- Managing land through site-specific Ecological Management Plans
- Promoting green skills and green jobs development opportunities for prisoners
- Creating unpaid work placements which deliver nature recovery projects
- Embedding environmental value considerations in strategic decisions
- Collaborating across the organisation to build and share skills, knowledge, and resources

Who manages the system?

The NRP is coordinated and managed by the MoJ's ecology team. The 3 person team is responsible for developing and supporting HMPPS to implement the plan, and monitoring its progress, as well as ensuring construction projects respect biodiversity.

What do you find most useful?

The most useful aspect of the NRP is its focus on collaboration. The plan recognises that the MoJ is large and complex with competing priorities. By enabling outcomes that support the key objectives of the MoJ, such as sustainable prison expansion, green skills and prisoner and staff wellbeing.

The plan's focus on green skills and green jobs development through collaboration with prison industries is very promising. By providing prisoners with opportunities to learn about and work in the natural environment, the MoJ can help them to develop skills that will help them to reintegrate into society after their release.

What are the benefits?

The NRP is a long-term investment in the natural environment. The benefits of this investment will be felt by the MoJ, its staff, prisoners, and the wider community for many years to come. For example, the NRP is expected to reduce reoffending rates by providing prisoners with opportunities to learn about and work in the natural environment. It is also expected to improve the health and wellbeing of MoJ staff and the wider community by increasing access to green space. Overall, the MoJ Nature Recovery Plan is a valuable initiative that will benefit the MoJ, its staff, prisoners, and the wider community.

"As the MoJ commits to doing more on our estate, we also plan to change our operational ways of working and support our people to learn, contribute and benefit. We will also participate in new and effective partnerships to ultimately action widespread change and aid successful nature recovery together."

Nature Recovery Plan, 2022

CASE STUDY 18: BIODIVERSITY-RELATED CONSIDERATIONS FOR NEW PRISONS (DENMARK)

How does it work?

Large areas of land are required to house new closed prisons. In part, this is because of the many functions that must be accommodated inside a prison and partly because of the need to establish a suitable, secure buffer zone around the perimeter of the prison. In Denmark, the lands are often located in rural locations, which already incorporates a high degree of biodiversity.

In connection with the planning, design and construction of new prisons, the Danish Prison and Probation Service has the ambition to do more than required to ensure the delivery of biodiversity gains. In addition to complying with the legal and municipal requirements for the protection of both flora and fauna, it is sought early in the process to uncover what can be done as supplementary initiatives.

Examples of such initiatives are:

- Minimising the use of hard pavements, instead preferring the use of permeable surfaces to promote vegetation growth
- Selecting low-growing plantings which require minimal maintenance/infrequent mowing so plants and insects are minimally affected
- Using perennial plantings to ensure stability in the ecosystem
- Establishing wild growing bio zones, rock piles and dead wood to provide habitats for small animals and insects
- Building green roofs to create additional habitats for insects and birds
- Establishing flower meadows with wildflowers to attract bees, butterflies and other pollinators

A wet meadow with trees contributes both to rainwater management and to biodiversity

Who manages the system?

The planning and design processes are carried out in collaboration with an external adviser, i.e. a landscape architect and biologists who help to ensure that all necessary surveys of the landscape, including the existing wildlife, are carried out.

What do you find most useful?

The preliminary investigation, which is carried out in line with archaeological and geotechnical investigations, is an important tool for assessing what you need to pay particular attention to. The resultant report is included as a valuable element in the planning and design of new prisons.

The environmental screening provides a good overview of existing flora and fauna for use in an assessment of initiatives.

What are the benefits?

In addition to helping to preserve biodiversity in the area and ensuring the local nature continues to exist, the high focus on a green environment contributes to inmates' well-being and motivation through the creation of a normalised prison environment. Moreover, they contribute to a good working environment for the staff and a friendly environment for visitors to the inmates.

Wildly growing bio zones and green areas contribute both to biodiversity and to the environment for staff and inmates.

CASE STUDY 19: PROTECTION OF ENDANGERED SPECIES (NORTHERN IRELAND)

How does it work?

The grounds surrounding our largest prison, Maghaberry, provide an ideal habitat to support one of the UK's most endangered species of birds. Since 2008, pairs of breeding Lapwing have made their home on the marshy flat grounds around the perimeter of the prison.

The unique characteristics of the site mean that a 70-metre-wide strip of grassland exists between the wall of the prison and the outer fence. This has proved an ideal habitat for the ground-nesting Lapwings to raise their young. In 2011, once a regular pattern of use by the Lapwings had been established, an Area of Special Scientific Interest (ASSI) was created on 4.8 hectares of land at Maghaberry to protect breeding colonies of Lapwings.

The habitat provides ideal conditions for the birds to nest and raise their young. This unusual location, inside the fence line, provides protection from predators such as foxes. Each year, the birds return in March to prepare their nests on scraped ground. Once the eggs hatch, the fledglings scour the habitat under the watchful eye of their parents. The site now supports one of the largest breeding colonies of lapwings within the UK and Ireland.

Who manages the ASSI?

The Prison Service has worked closely with the Royal Society for the Protection of Birds (RSPB) and the Northern Ireland Environment Agency (NIEA) to create and maintain an ideal habitat to support breeding populations of lapwings through the preservation of naturally rich grasslands together with the creation of a series of shallow ponds to provide water and encourage insects and invertebrates, a major food source for young chicks.

The grassland is considered a Northern Ireland Priority Habitat, and a local 5-year management plan exists for the management of the land which includes conditions on cutting the grass to 5 cm before March as well as monitoring and replenishing water levels within the ponds and ensuring the birds are not disturbed during the breeding season.

BIODIVERSITY

CASE STUDY 20: NATIVE TREE NURSERY (NORTHERN IRELAND)

All public bodies in Northern Ireland have a statutory duty to advance biodiversity measures on both their own land and on land that they have influence over.

How does it work?

At Magilligan Prison, they have created a native tree nursery where inmates plant and cultivate British and Irish tree species, which are currently in short supply, so that they are able to protect and develop native woodland. The 'Justice for Woodlands' project is a joint venture between Magilligan Prison, the local Binevenagh Landscape Partnership, the Woodland Trust and Causeway Coast and Glens Trust. In the first year, Magilligan prison planted and nurtured 40,000 saplings (Scots Pine, Oak, Chestnut, Birch, Holly, Hazel and Wild Cherry trees) that were first grown within the grounds of the Prison before being replanted within the local area.

Each year, around 7,000 trees are transferred from the prison and planted in the local area, including a scheme to prevent erosion on the banks of a local river. Over the autumn, prisoners collect seeds from the local area. These are then sown and germinate within individual pots over winter within the prison's poly tunnels. Around 30,000 seeds will be sown. During the Spring, once the young saplings appear, they are then sown and planted within the grounds of the Prison. Northern Ireland is one of the least wooded countries in Europe. Previously, a lot of the tree stock had to be imported. Having a local native tree nursery, produced from local seeds for local projects, is an important step forward.

One prison inmate involved in the project told BBC News NI that he would have struggled to name a single tree species before being involved in the project, but now he has developed a real passion for them.

What have been the benefits?

The prison has already begun providing native trees for new woodland as well as expanding new wooded areas in Northern Ireland. The establishment of additional forest and tree cover is helping to fight climate change and increase carbon capture.

> **"You don't plant a tree for yourself; you're planting it for the future."**
>
> **Magilligan Prisoner**

BIODIVERSITY

CASE STUDY 21: SEED KEEPERS PROJECT (SPAIN)

How does it work?

The Seeds Keepers Project (SKP) was first implemented in 2017, in Murcia's 2 prisons, thanks to an agreement between several parties: Murcia University, Institute for Research on Sustainable Agriculture Development and "Templarios de Jumilla" Association.

The project aims to promote and recover traditional species (fruits and vegetables) at risk of disappearance. Approximately 2,000m^2 of land are used to cultivate the seeds, which are grown and maintained by inmates (some of them with mental disorders and/or drug-dependence problems), with the help of prison staff and professionals. Over recent years, a protected area has been created inside the prison, achieving biodiversity and helping native species.

The SKP is being implemented through a variety of measures, including:

- Seed donation, by the mentioned Institute and University, directly from the germplasm bank.
- Compost is made by inmates, using organic waste and coffee grounds, both provided by the own prison.
- Permanent professional advice and support, so inmates do not grow plants arbitrarily.
- Official training on agriculture, which combines theory with practical vocational work.
- Organic farming, using photovoltaic solar energy and recycled water for irrigation.

Who manages the system?

The SKP is mainly managed by inmates (there are some selection criteria), who are supported by prison officers and professionals. Also, the "Templarios de Jumilla" Association provides advice and help, bringing the seeds into prison for their cultivation and monitoring the progress of different species, ensuring sustainability at all times.

What do you find most useful?

The project has turned out to be really useful on three counts:
Firstly, collaboration amongst different administrations (the Institute for Research, the University, private associations and Prison Administration) is key. The scope of the original project has broadened and shown that prisons need to be open to society.

Secondly, the project allows inmates to enrich their training and capabilities. They can practice what they have learnt, and practical work is guaranteed in a natural environment, inside the prison.

Thirdly, and finally, most native and traditional species are grown. Not only common ones, but also those rarely seen or at risk of eradication. In this sense, the project and its approach stand as an example for the promotion of natural environments and, specifically, for the defence of biodiversity.

What are the benefits?

The SKP intends to be a long-term project developed inside the prison, promoting biodiversity and facilitating practical work, linked to official training delivered for inmates.

One of the most relevant benefits is related to the therapeutic side of such activity. This is paramount in any prison. In this case, some interesting things have been evidenced:

- Inmates with addiction problems generally experience improvement in their symptoms (craving, mainly); and
- People with mental disorders and/or special personality traits, have to follow strict rules, which in all cases have proved beneficial for them; and
- The little orchard has turned out to be very positive for inmates at risk of suicide

Overall, the project is expected to improve the health and wellbeing of the prison population. At the same time, it is an extraordinary initiative in terms of biodiversity and promotion of a wide range of species.

5. CONCLUSION

This leaflet report was drafted with the purpose of giving hands-on insights from EuroPris members to EuroPris members. The Real Estate Expert Group shares detailed and practical case studies to support the implementation of sustainable measures in the European prison arena. Climate change and the broader environmental impact of a warming climate affects all of humanity. Yet, prisons can be part of the solution. By implementing sustainable practices, they can not only reduce their ecological footprint but also contribute to broader societal goals.

Prisons represent a unique opportunity to drive environmental change. Given their high resource consumption and closed systems, prisons can serve as models for the delivery of innovative sustainable practices.

There is evidence that greener prisons are more pleasant environments for both staff and prisoners. Incorporating nature through activities like horticulture programmes offers tangible benefits for rehabilitation, improves mental wellbeing, reduces stress and builds self-confidence and skills for prisoners. By involving prisoners in environmental initiatives, prisons foster personal responsibility, community engagement, which helps people in prison better prepare for reintegration into society. For staff, increased green spaces correlate with a reduction in sickness absence, creating a better workplace for everyone.

Undoubtedly, there will be challenges to be faced, but we know that prisons are well able to problem solve and offer solutions to benefit society – it is part of the prison system's DNA. Applying these important attributes to the climate and sustainability crisis will enable great strides to be made to complement the positive work that already occurs within prisons to contribute to a better society for all. Whether it is reaching an improvement in the area of energy, waste, water management or biodiversity, the Real Estate Expert Group believes that even small steps can have a sustainable impact.

Working towards greening our prisons and managing the broader sustainability agenda brings both resource efficiencies, but is also now widely recognised can support wellbeing and improve rehabilitative outcomes.

Those prison services that have already made progress on reducing their greenhouse gas emissions and addressing broader sustainability measures are increasingly seen as ‘leaders’ in government on climate action. These good news stories have the potential to reap lasting political, financial and societal benefits.

EuroPris
Bezuidenhoutseweg 20
2594 AV, The Hague
Netherlands
secretariat@europris.org

Co-funded by the European Union