

# Green Prisons in Hungary?<sup>1</sup>

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In accordance with the requirements of its own development policy and the high-level requirements of the performance tasks, the Hungarian Prison Service constantly strives to keep in mind and use innovative and environmental solutions in its daily work in our prisons. The large-scale energy rationalization and deployment of solar systems in recent years has affected most all of our prison institutes. Can we, as prison service, really take or be part of the Hungarian plan of climate neutrality? Can we become Green Prisons to help our country to achieve all the goals and plans of the European Green Deal policy? This is the main question. The Hungarian Prison Service has been engaged in quite serious tender activities in recent years, so the question has arisen to discuss whether prison can be part of this dream and, if so, how?

**Keywords:** prison, climate, environmental protection, energy rationalization, solar panels

## I. Introduction

The Hungarian penitentiary system has been engaged in quite a lot of tendering activity in recent years, so the question arose for discussion: can the penitentiary system be part of this dream and if so, how? The Hungarian penitentiary system, in line with the demands of development policy and the high standards required for the execution of its tasks, has been constantly striving for years to meet innovative and modern technical, logistical, development and environmental expectations. The primary concern of the national prisons is, among other things, to improve the quality of secure operation. Energy rationalisation, the installation of solar systems<sup>5</sup> and the importance of selective waste collection are all integral parts of this.

## II. Background

For many years now, Hungary has given high priority to international climate policy negotiations, to the development of energy and climate relations between countries, and to major global trends such as the clean energy transition, whereby countries around the world are gradually moving away

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<sup>5</sup> KEHOP-5.2.11-16-2016-00019 „For example, the project "Installation of a photovoltaic system in the Zala County Prison" has involved an investment of HUF 102.1 million. A solar system of the value of almost 133 million HUF was also installed in the Sátoraljaújhely Prison and Detention Centre in 2018.

from high carbon emission fossil energy sources such as coal, oil and natural gas to more environmentally friendly renewable and other clean energy technologies such as solar, wind and nuclear. However, it is very important that the driving force behind all this is the Paris Climate Agreement, signed by most countries of the world in 2015, in which countries pledged to keep the global average annual temperature rise to within 2 degrees Celsius, but will make efforts to keep it to within 1.5 degrees. The most important issue at the moment is what the European Union and its Member States are currently doing to meet this Paris Agreement climate target. The European Green Deal is, in fact, a reflection of this climate target, which is a green development strategy with the ultimate goal of achieving climate neutrality by 2050, and this will certainly affect all areas and even involve a transformation of the whole economy. The European Union has always been a global leader in this endeavour. On the one hand, by setting a good example for other countries by making sufficiently ambitious commitments, and on the other hand, by actively urging other countries to act: to translate national commitments into action, to set out clear strategies and to establish concrete action plans.<sup>6</sup>

Domestic political direction in the field of climate policy is being set by the Ministry of Innovation and Technology. Hungary has made an independent commitment in the 2020 Climate Protection Act to become climate neutral by 2050. Of course, these commitments are based on analyses and data that indicate that it is possible to achieve this target. In addition to this, Hungary has also set another goal in this climate law and in the national energy and climate plan, namely that it will reduce its domestic emissions by 40% by 2030 compared to 1990. This is also unique and exemplary because there is no requirement in the European Union for any Member State to set a sufficiently ambitious national economic target at national economic scale, especially not at legislative level, and there is no binding obligation for Member States to commit to a climate neutrality target.

### **III. The intersection between the penitentiary system and environment protection**

From an environmental and energy consumption point of view, the penitentiary sector is also a very interesting and specific area. It is basically a mini-city where the detainees have to be provided with all kinds of services. It is quite a challenge, however, that Hungarian prisons are considered a curiosity from a technical point of view, as our prison buildings are well over 100 years old. The vast majority of Hungarian prisons were built at the end of the 19th and beginning of the 20th century, which, in accordance with the conventions of the time, implies that the technology used is at the very least outdated and obsolete. For this reason, the renovation, maintenance and energy-efficient operation of the buildings as well as of the various systems and electrical networks within the buildings have been ongoing for many years. However, all this requires substantial financial resources. In recent years, the national penitentiary system has carried out a series of renovations using its own resources and on the basis of tenders. Two forms of tender funding have been used: tenders from the Ministry of the Interior and EU tender funding. The essence of the Ministry of the Interior tenders is that only bodies belonging to this Ministry could apply and a 6-year payback limit is applied, which means that the tender is also sustainable in the long term. This type of tendering is not suitable for the complete renovation of an entire institution, but it is perfectly

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<sup>6</sup> Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 (European Climate Law) COM/2020/80 final

adequate for the thermal insulation of buildings, the replacement of windows and doors, the installation of grey water technology, lighting upgrades (whether it be spatial or interior lighting) or, where appropriate, the elimination of kitchen technology, steam technology and the use of modern equipment. Since 2007, the Hungarian penitentiary system has had 77 successful tenders of this type, representing approximately 500 million HUF. The first EU tenders were launched in 2009. Their big advantage is that they cover 100% of the costs for budgetary bodies. In these tenders, domestic penitentiary institutions have mostly applied to save thermal energy and electricity production or consumption. A total of 4.2 billion HUF was awarded in EU tenders, of which 2.4 billion HUF was specifically earmarked for renewable energy sources.<sup>7</sup>

The Hungarian penitentiary system also saw a huge opportunity in energy and resource efficient building/construction and modernisation. Particular attention has been paid to this in recent years, whether it is the expansion of prison capacity or the modernisation of existing buildings. Obviously buildings are 'responsible' for 40 % of energy consumption. The Green Deal strongly supports modernisation programmes for public and private buildings to address the twofold challenge of energy efficiency and affordability. Increasing the modernisation rates is not easy, but it reduces energy costs and can contribute to a reduction in energy poverty.<sup>8</sup> This is a long-term programme that the applicant penitentiary institutions have sought to join. Between 2003 and 2019, energy consumption data show that energy use in the penitentiary sector decreased by around 37%. A significant part of this reduction was due to the reduction of fossil fuels and the efforts made to reduce heat energy.

In 2020, the Hungarian penitentiary system implemented expansion projects at ten sites, and at these sites - where around 2,700 detainees are held - the entire heat energy supply is provided by heat pump systems. A noteworthy example is the prison health centre in Berettyóújfalu, which also uses heat pumps for cooling and heating, as well as domestic hot water.

However, for more detailed examples, we would like to mention two exceptional institutions that have successfully tendered and implemented major environmental projects on several occasions in recent years. One of these outstanding institutions is the **Sátoraljaújhely Prison and Detention Centre**, where the basic task is to ensure the execution of prison and detention sentences for adult men with a custodial sentence and where approximately 300 prisoners are serving their sentences. The building was built in 1905 for the purpose of serving as a Royal Prison, so it is a distinctly old building complex.

From 2009 onwards, the institution's mission has included the establishment of an economical operation, the preservation of the building and the maintenance of a conscious economy. To this end, the Institute applied for and was awarded a grant of more than 422 million HUF under the Environment and Energy Operational Programme for the implementation of the scheme "Energy efficiency improvements in buildings combined with renewable energy sources". The technical content of the tender included the replacement of the windows and doors of the buildings, the subsequent thermal insulation of the detention building, the installation of a solar electricity backup system, the construction of a solar hot water system, as well as the replacement of boiler rooms, kitchens and laundry rooms.<sup>9</sup> The main objective of the project was to reduce operational costs,

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<sup>7</sup> Az ökoszisztémák és szolgáltatásaik döntéshozatalba való integrálásáról szóló uniós iránymutatás. SWD (2019)305 FINAL.

<sup>8</sup> European Green Deal 2.1.4.

<sup>9</sup> The tender included the insulation of the facade and the plinth of the building in order to save energy. The project involved the replacement of 371 windows and doors, 174 of which were plastic, 189 wooden and 8 aluminium, the renovation of 107 radiators with thermostatic valves and replacement of the hoods, the installation of 3 condensing

which are expected to amount to 20-25 million HUF per year. A further goal was the use of environmentally friendly technologies and the installation of modern equipment. Subsequently, in 2016, the institute won another tender under the Environment and Energy Efficiency Operational Programme, the "Development of photovoltaic systems for central budgetary bodies"<sup>10</sup>, this time for more than 132 million HUF. The application requested funding for a so-called "small solar power plant". The total capacity of the system implemented is 222 kWp, which is a huge investment for a penitentiary institute. On 2 June 2020, the power plant at the institute has started its extraction operation. The completed system ensures a significant reduction of the institute's electricity consumption.<sup>11</sup> In practical terms, this means that while in 2009, the year before the application period, the annual heating bill for the institute totalled 73 million HUF, 11 years later, even with inflation, the same utility bill in 2020 is less than 30 million HUF.<sup>12</sup>

The more than 1,000 square metres of solar panel complex installed at the facility has also given the institute autonomy in a number of areas, such as hot water production, which the institute now produces itself. Also, these 1,000 square metres of solar panels cover the entire electricity consumption of the institute. The power plant not only covers the needs of the institute, but in 2020 it also produced electricity for external customers, generating more than 2 million HUF income per year for the institute. The Institute's management expects that in 2021 this production for external customers will be considerably higher, providing significant revenue. In addition to production, however, the plant has a significant - also environmental - function. The Institute estimates that it will reduce emissions by 180 tons of pollutants per year. If we add to this the full impact of the complex improvements that the Institute has won through tenders: from replacing windows to heating upgrades, from insulation to the purchase of industrial machinery for the laundry, and including the replacement of the entire boiler system, this represents a reduction of more than 260 tons of emissions annually. Just for one institution!

The other institute with an outstanding tender result is the **Penitentiary Institute of Bács-Kiskun County**. The correctional facility, which houses male prisoners serving their final sentences both on prison and jail level, mothers who are co-housed with their children during their detention, juvenile female and male detainees, as well as adult and juvenile prisoners, has a capacity of holding 238 inmates. The institution actually consists of two buildings, one of which - Mátyás Street - was built as a courthouse, similar to the one in Sátorajáújhely, and was opened to the public in 1904. The second building - the Wéber Ede Street unit - was completed ninety years later, so there is a huge architectural difference between the two buildings.

In the beginning, the institute engaged in small environmental tenders, mainly aimed at raising the awareness of the prisoners, such as recycling PET bottles, then creating vegetable gardens from these PET bottles and using the vegetables produced there for the prisoners' meals. Inspired by these small initiatives, the institute entered a Ministry of the Interior energy rationalisation tender

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boilers and 2 steam boilers. In addition, 70 solar collectors for hot water production and 72 solar panels with 3 single-phase inverters were installed (KEHOP-5.3.0/B/09-2010-0087 programme).

<sup>10</sup> KEHOP 5.2.11-16-2016-00048. programme Environmental and Energy Efficiency Operational Programme for the Sátorajáújhely Prison and Penitentiary

<sup>11</sup> The implementation of the project will result in 199 759 kWh/year savings, 499 397.5 kWh/year reduction of primary energy consumption, 719.1324 GJ/year of renewable energy production and 182.28 tons of harmful carbon dioxide emissions reduction.

<sup>12</sup> Over the years, Sátorajáújhely has also participated in several other tenders, as a result of which the institute has fluorescent lamps everywhere, from the guard posts to the commandant's office. Another tender result is the installation of time switches in the prisoner showers as well as a mixed water system for the detainees.

and won 5.5 million HUF, which enabled them to start replacing their boilers.<sup>13</sup> This was followed by other smaller Interior Ministry tenders, all successfully contributing to small scale energy nationalisation processes.<sup>14</sup>

The first major breakthrough was achieved in 2017, when the Institute won a tender for 106 million HUF for the installation of a solar power plant in premises I and II.<sup>15</sup> The investment was co-financed by the Cohesion Fund and national central budget appropriations. The development has resulted in significant electricity cost savings in the two premises of the institute, with the installation of 180 kilowatts of solar power. This system will enable the Institute to save more than 80,000 kilowatts of electricity per year. Thanks to these savings, they were able to bid for further tenders as a co-financing, which were then used to modernise the air-conditioning system in the Institute's premises and offices, which also significantly reduced carbon dioxide emissions. The Institute is now at the stage where, thanks to the improvements, gas consumption has been reduced by around 45 thousand cubic metres per year in building I. alone, which is a significant improvement on the initial target.<sup>16</sup> The Institute is still continuously involved in developments and tenders whenever possible. Currently, efforts are underway to replace the entire lighting system of the Institute with LED lighting. The situation of the Institute in Bács-Kiskun County is different from most modern institutes in that building I. is under very strict monument protection regulations. For this reason, for example, the replacement of the already very basic windows and doors is not allowed or very difficult.

#### **IV. Future projects and plans**

The penitentiary sector wants to be an integral part of Hungary's ambitious climate goals. Accordingly, one of the most important areas that definitely needs attention - for the sake of a green and circular economy - is the disposal of waste. There is incredible potential in the recycling and reutilisation of waste emissions from goods and closely related materials processed in the prison sector. The aim is to make the product recyclable, durable and repairable. This can significantly reduce the amount of waste in the context of a sustainable product policy. As waste production cannot be avoided, one should capitalise on its economic value and minimise its impact on the environment. The Hungarian prison system is so committed to this that not only is selective waste collection practised in many of its institutions, but also a joint training programme for prisoners is included as a reintegration programme. Our inmates have been able to obtain partial qualifications in waste sorting and processing in several national prisons. However, this is not only a qualification, but also an attitude adjustment, which must be part of an effective and efficient reintegration into society. A GD product policy could be introduced in prison operations, such as catering, to minimise waste. Also related to this is the fact that food consumption in penitentiary institutions is significant.<sup>17</sup>

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<sup>13</sup> Considering the limited funds available, the amount won from the tender was used to upgrade the heating system in the new facility.

<sup>14</sup> These objectives have been achieved and the institution has saved 4-5 million HUF per year on maintenance costs, which is a significant saving for an institution of this size.

<sup>15</sup> KEHOP-5.2.11-16-2017-00105

<sup>16</sup> In total, 110,000 cubic meters of gas can be saved annually in the two facilities, which, according to the calculations of the institute's commander, will save 1,520 trees, as about 1,520 trees would be able to reprocess this amount of carbon dioxide, which means almost 4 hectares of forest.

<sup>17</sup> Many experts like: Berki A. & Nyitrai E. (2021). Bullock, G. & Wilder, N. (2016). Celikdemir, D. Z., Gunay, G., Katrinli, A., & Penbek Alpbaz, S. (2017). Chapin, E. (2019). Csáji Balázs Cs. (2003). El-Jardali, F., Ataya, N., &

Accordingly, the amount of plastic containers (jam, butter, hazelnut cream, etc.) used here should be reduced<sup>18</sup>, and the purchase should be contracted on terms that guarantee less waste. Alternatively, purchasing food from producers who have a "green" product policy is also an option. Obviously, the financial implications of this could impose a considerable burden on the prison service at present, and could therefore be seen as a long-term goal.

Another area to be highlighted is the plan to create a fair, healthy and environmentally friendly food system.<sup>19</sup> Given the fact that, in the context of internal supply in the domestic penitentiary system, the economic enterprises of the correctional services provide a significant part of the food supply to the institutions, there is scope for achieving results in this area too. Indeed, with the creation of the Central Supply Organisation, the domestic penitentiary institutions have been integrated into the central supply system and thus into the internal supply chain. Under the term of internal supply chain, we mean the provision of food to the institutions. Since 2011, owing to the favourable changing legal environment and as a result of continuous investments, the economic companies of the penitentiary system have made significant improvements in the field of internal supply chain, both in terms of quantity and quality.<sup>20</sup>

With the help of inmate labour, the economic enterprises of the penitentiary system grow their own cereals, fruit and vegetables, raise poultry, and produce meat products as well as dry pasta. According to the Green Deal, new opportunities are opening up for all actors in the food value chain thanks to new technologies and scientific discoveries. The European Commission has prepared a "farm to fork" strategy and is calling for a broad debate with stakeholders at all stages of the food supply chain, which could pave the way for a more sustainable food policy. This could be closely linked to the launch of the EU Common Agricultural Policy (which is likely to be delayed until early 2022 due to the epidemic), which aims to ensure that national strategic plans for agriculture fully reflect the ambitions of the Green Deal and the farm-to-fork strategy from the outset.<sup>21</sup> These plans should lead to the adoption of sustainable practices such as precision farming, organic farming, agroecology, agroforestry systems and higher animal welfare standards. The domestic penitentiary system also plans to introduce these forms of farming.

Perhaps the most well-known and most common aspect of the climate issue is the greenhouse gas emissions from transport. According to the Green Deal, transport is responsible for a quarter of the EU's greenhouse gas emissions, and this share is steadily rising. Achieving climate neutrality requires a 90% reduction in transport emissions by 2050. Achieving sustainable transport means putting users first and providing them with more affordable, accessible, healthier and cleaner alternatives to their current mobility options. The Agreement calls for a strategy for sustainable and smart mobility to meet this challenge. This is an issue that also concerns the prison sector, as the means of transport (vehicles) used by the penitentiary system will also need to be modernised

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Fadlallah, R. (2018). Filho, W. L., et al. (2019a). Findler, F., Schönherr, N., Lozano, R., & Stacherl, B. (2019). Gallup, J. (2018). Geissdoerfer, M., Savaget, P., Bocken, N. M., & Hultink, E. J. (2017). Matson, P., Clark, W., & Andersson, K. (2016). Miller, T.R., Wiek, A., Sarewitz, D. et al. (2014). Nyitrai E. (2018).

<sup>18</sup> From 1 July 2021, Hungary has banned the use of single-use plastics under its climate policy.

<sup>19</sup> European Green Deal 2.1.6

<sup>20</sup> This is evidenced by the fact that pork, which was worth nearly 239 million HUF in 2013, had already exceeded 257 million HUF by 2016; chicken meat, which was worth 92 million HUF, had increased to nearly 130 million HUF three years later; while the total value of bakery products had increased from 240 million HUF in 2013 to 392 million HUF (www.bv.gov.hu - accessed 25 January 2021).

<sup>21</sup> Remington-Doucette, S. (2017). Sustainable world: approaches to analyzing & resolving wicked problems. Dubuque, IA: Kendall Hunt.

and the content of the GD will need to be taken into account in the procurement of the vehicle fleet.<sup>22</sup>

Finally, one of the greatest potentials of prisons is manpower. This manpower is, of course, limited in capacity in many respects (security, human rights, health aspects, etc.), but in many other regards it could provide a stable and long-term workforce. It is a long way off, but according to the Green Agreement, "forest ecosystems are under increasing pressure as a result of climate change. The quality and quantity of the EU's forests must be improved." and that "the new EU forestry strategy will have as its main objectives the effective reforestation, conservation and restoration of forests in Europe."<sup>23</sup> Ecosystems provide essential services such as food, drinking water, clean air and habitat. It is well known that sustainable reforestation and afforestation as well as the restoration of degraded forests can increase carbon sequestration, thereby improving forest resilience and promoting a circular bioeconomy. National strategic plans under the Common Agricultural Policy should encourage forest owners to maintain and increase forest sustainability through their work.<sup>24</sup> The penal system could make an excellent contribution to this objective in the context of prisoner employment. In the Penitentiary Institute of Bács-Kiskun County and in many other institutions, tree planting and nursery programmes have been taking place for years. In this context, not only the role of practice-oriented training is being valued, but also the development of competency frameworks to develop and assess knowledge, skills and attitudes related to climate change and sustainable development, which can be made available not only to prisoners, but also to the staff. It is clear that proactive re-education and upskilling of citizens from all sectors of society is necessary to reap the benefits of the ecological transition. This also includes prisoners!

## V. Conclusion

All EU countries must contribute to achieving the objectives of the Green Deal. The penitentiary sector has a great potential to support Hungary in achieving these goals. If we consider and build on the environmental steps taken by the Hungarian prison sector in recent years, we can already join some of the strategic points contained in the Green Deal. We can transform the industrial activities of the domestic penitentiary system, i.e. companies and other workplaces, into environmentally friendly ones, or we can reconsider production (textiles, construction, electronics, and plastics) so that it would be less resource-intensive and more environmentally friendly. The modernisation of buildings is an ongoing process. The Hungarian prison sector is paying particular attention to this, as buildings account for 40% of energy consumption. Well-insulated walls and windows mean less energy consumption. Traffic pollution in prisons and related institutions can be reduced by electric vehicles. At present, the cost of these is significantly higher, but if the action plan of the Green Deal is implemented, a shift will be implemented in the long term. If only because vehicle use in prisons is more predictable than in the police, for example. Another aspect that cannot be neglected is the absence of pollutants. Exploiting the potential for grey water use could be a good idea. Currently, toilets in prisons are flushed with drinking water. If grey water

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<sup>22</sup> According to the GD, the Commission will tighten standards for air pollutant emissions from vehicles with internal combustion engines and will take the initiative to review legislation on carbon emission standards for cars and vans, opening the way to zero-emission mobility from 2025. In parallel, it will consider the application of European emissions trading to road transport, complementing current and future carbon emission standards for vehicles.

<sup>23</sup> European Green Deal 2.1.7.

<sup>24</sup> Avila, L.V. et al. (2017). Barriers to innovation and sustainability at universities around the world. *Journal of Cleaner Production*, 164, 1268-1278. <https://doi.org/10.1016/j.jclepro.2017.07.025>

management is introduced in prisons, we could significantly reduce water use and at the same time minimize sewage emissions.

And finally, the use of human resources and the potential therein is not only exceptional, but can be a very good marketing tool, not to mention an easy fit with the prison objectives set out in the legislation.<sup>25</sup> Forestry in Hungary has always been a fragile business, especially in the plains. The task itself is simple, the difficulty in the competitive sector is more a question of employment (or lack of it) and equipment. For the penitentiary system, the employment issue is a given, and hopefully funding for the equipment will be forthcoming soon, according to the GD guidelines. Keeping security aspects in mind, tree planting/nurturing could be possible in the larger underutilized areas owned by prisons. In addition to the many reintegration guidelines and objectives (employment, education, training, cooperation with external organisations: NGOs, forestry, etc.), there is also an excellent opportunity for image development: the prison service, as it contributes to the restoration of Hungary's natural capital, environmental protection and biodiversity conservation. Besides, many other reintegrating and restorative programmes can also be linked to such an idea.

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