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Excess heat in homes during the summer in Cyprus

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Excess heat in homes during the summer in the policy debate

The climate is Cyprus is characterised by prolonged hot summers. High temperature and humidity levels in Cyprus often result in extreme heat conditions, with the Department of Meteorology announcing yellow alerts (above 40°C) on a frequent basis during the summer months. This is also partly due to climate change, which leads to extreme heat phenomena being observed more frequently and more intensely. The Republic of Cyprus has taken measures to ensure the health and wellbeing of employees during the heat season. This concerns primarily employees working outdoors (e.g. in construction, road maintenance etc.), but also employees in indoors conditions (Republic of Cyprus, 2014). The original legislation was released in 1996 and has had revisions since then, with the last amendment being released in 2014. There is no officially recognized link to energy poverty, or to extreme heat in homes at the moment. Rather, the only consideration of excess heat in dwellings was during the finalisation of the electricity disconnection protection measure, when temporarily, it was prohibited to disconnect any dwelling from the electricity grid during the summer months. Nevertheless, once the measure was finalised, this prohibition was lifted and no additional measures were taken to mitigate extremely hot indoor conditions.

Generally, the way to combat excess heat in summer involves adding insulation on the elements of the building envelope (walls, floor and roof), shading devises and thermally-efficient window systems, among other energy efficient interventions. The vast majority of households, especially in urban inland areas, use air conditioning (AC) units to cool indoor space (Kyprianou & Serghides, 2020a). Nonetheless, EU-wide indicators such as the ability to keep homes

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adequately cool, indicates that almost 30% of Cyprus' population is thermally uncomfortable in summer, calling into question the affordability of AC units in terms of running electricity, maintenance or replacement costs (EPOV, 2018). As more emphasis is expected to be given to refurbishments under the new EU Green Deal and the proclaimed renovation wave, some aspects of excess heat in summer are estimated to be dealt with.

Research perspective on excess heat in homes during the summer in Cyprus

Research on excess heat in homes has focused on the urban heat island effect encountered in Cyprus urban environments and the health impacts of extreme heat as projected over the next century (Heaviside et al., 2016; Theophilou & Serghides, 2015). Moreover, there has been considerable investigation into the national building stock in Cyprus, as well as energy refurbishments of building envelopes towards better indoor environments and reduced energy consumption (D. K. Serghides, Dimitriou, Michaelidou, Christofi, & Katafygiotou, 2017; D. K. Serghides, Dimitriou, & Katafygiotou, 2016; D. K. Serghides, Dimitriou, Katafygiotou, & Michaelidou, 2015; D.K. Serghides, Michaelidou, Christofi, Dimitriou, & Katafygiotou, 2017; D K Serghides, Markides, & Katafygiotou, 2015; Despina K Serghides, Dimitriou, Katafygiotoi, & Chatzinikola, 2016). In a 2016 investigation, the importance of vegetation in relation to sealed soil in urban settings was presented for Nicosia, the capital of Cyprus (Fokaides, Kylili, Nicolaou, & Ioannou, 2016). Moreover, a different research team investigated the importance of linear parks along urban rivers, noting that park visitors felt thermally comfortable in their vast majority, in relation to urban areas beyond the park (Giannakis, Bruggeman, Poulou, Zoumides, & Eliades, 2016). Ziogou et al. (2017) studied the electricity savings and environmental impact of green roofs in office spaces in Cyprus during the summer and winter seasons (Ziogou, Michopoulos, Voulgari, & Zachariadis, 2017). In a further study on green roofs, a reduction of up to 35% in primary energy consumption was modelled for single-family buildings in the summer period of Cyprus (Ziogou, Michopoulos, Voulgari, & Zachariadis, 2018). Nevertheless, green roofs were assessed as not cost-effective; therefore, this technology cannot at the moment be applied in the policy debate on energy poverty and low-income households.

Research on this topic has thus been relatively plentiful and diverse for a small country such as Cyprus; however, a link between energy poverty and excess heat has not been given much research attention. In a small-scale survey (Kyprianou & Serghides, 2020b), approximately 10% of the sample reported rarely or never

Source: EP-pedia Website

feeling comfortably cool in their homes during the summer, while almost half reported spending more than 10% of their net monthly income on cooling (Fig. 1).

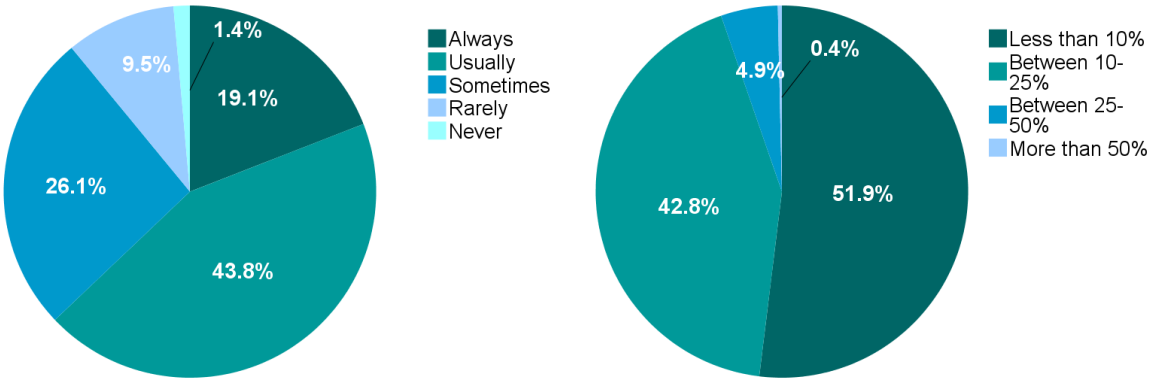

Figure 1. Responses to the question "Do you feel comfortably cool in your home in summer?" (left) and "On average, what percentage of your net monthly income is spent on space cooling in summer?" (right). With information from (Kyprianou & Serghides, 2020b).

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