

# Heat stress at the workplace: building the adaptive capacity of outdoor workers

## Key Points

- Heat exposure at the workplace is prevalent and serious, with 89% of workers reporting their workplace to be extremely hot or very hot. 47% per cent of respondents experienced heat stress-related symptoms during the last 3 months
- Freelance outdoor workers such as street vendors are the most vulnerable group to the effects of heat exposure.
- A very high proportion of workers have poor knowledge of measures to adapt to high heat at the workplace; only 30% had heard of heat stroke as a condition.
- Action taken should include awareness-raising of symptoms and treatments by both workers and employers, and provision of protective measures and equipment by employers.
- Urban planning measures such as tree planting and provision of public toilets can reduce the vulnerability of outdoor workers to heat stress.

Heat exposure presents a serious health risk to anyone that is physically active, especially if working in outdoor environments, or indoor environments where temperatures are not adequately controlled. This is an important concern, as the 5<sup>th</sup> IPCC Assessment Report predicts with 90% certainty that heat waves will be more frequent and longer-lasting<sup>1</sup>. In Da Nang, Vietnam, the past decade has already seen increases in maximum daily temperature and in the frequency of extreme heat events. Evidence from the study on the adaptive capacity of outdoor workers<sup>2</sup> presented in this briefing suggests that the knowledge of outdoor workers regarding the risks of heat stress, and their ability to adapt to high temperatures, is extremely limited. This has an effect on worker health and productivity. This briefing highlights recommendations to limit these impacts.

## Understanding drivers of vulnerability

In this study, 319 respondents from five areas of work were surveyed regarding their knowledge of heat stress, its symptoms and treatments, as well as their capacity to adapt to heat. The outdoor worker groups sampled included construction workers, fishery workers, farmers, freelance outdoor workers (street vendors) and porters. This followed a hazards, vulnerability and capacity assessment (HCVA) carried out in Da Nang in 2009 which identified these groups as vulnerable

to climate impacts. In order to better target interventions, a deeper understanding of the coping and adaptive capacity of these groups, and the drivers behind their vulnerability, was required.

Vulnerability to heat stress can be differentiated by gender, occupations, and migrant status. Female outdoor service providers, such as street vendors, are the most vulnerable to the effects of heat exposure. Workers of small scale, private enterprises are more likely to be exposed than those working in large enterprises, which more often provide

the necessary protective equipment to their employees. Heat-related symptoms resulted in loss of work productivity by 42 per cent of women and 31 per cent of men, as assessed by the respondents themselves.

Access to health services and social support is an important underlying factor. Workers with unregistered migrant status in the city cannot access these facilities and therefore lack the necessary support. Similarly, the very poor are forced to continue working even if they do feel the effects of heat stress, as they cannot afford to take time off work. When they do take time off, this has adverse effects on family incomes, food supplies and payment of school fees.

Workers may also be exposed to extreme heat at home, due to the inappropriate construction materials such as metal roofs and lack of ventilation.

## Adaptation measures at the workplace

Respondents to the study employ a mix of both reactive (coping) and pro-active (adaptive) measures to reduce the impacts of heat stress on their health and productivity. Coping measures may be limited to staying in the shade and drinking water. However, for certain workers, such as street vendors, this is not an option due to lack of public toilets and the need to sell their goods during lunchtime. About half of respondents used protective clothing, such as hats. Only 23% of workers knew how to treat heat stroke if they or colleagues were affected, and only 56% knew that they should take regular breaks in the shade. At home, measures included wetting the floor to cool it down, and using fans, though this means higher utility bills.

Employers' measures are frequently limited to providing drinking water, with only half of the workers reporting other measures such as shifting schedules to minimise work during the hottest time of day. Medium and small private enterprises are less likely to provide adaptive measures than larger enterprises which have their own health workers. While there are very comprehensive legislative documents such

## Quotes from respondents

If I am sick, I have to have a day off, and during that day, I would not have money to spend, as I would have no pay. I would borrow the money to buy food and medicine. (Interview with outdoor female worker)

If it is too hot and sunny, it causes sparkling against the white stones and against our eyes. This makes it much harder for us to work on the minute details of the statues, therefore affecting the quality of the statues. (Interview with stone engraver)

My house has a corrugated iron roof. In the summer, it is extremely hot inside the house. It is so hot that you cannot stand such heat levels. It is hot all day and night-time, even at 10 pm. It is so hot that I cannot sleep in my bed – I have to sleep directly on the floor. (Focus group discussion, freelance street vender)

as laws, Decrees, and Circulars regarding occupational hygiene and health, enterprises and employers receive little guidance from the appropriate Ministries about measures related to heat exposure in the workplace.

## Approaches for improving adaptive capacity

Actions can be taken by various stakeholders at the city scale to ensure measures are in place to support workers who face the risk of heat stress. City level health agencies can improve the technical capacity of health care workers (from city to community level) in treating heat stress and in raising the awareness of local workers in preventing heat stress. The Department of Labour, Invalids and Social Affairs (DOLISA) can collaborate with the Department of Health (DOH) and the City Enterprise Association to raise the awareness of employers of the risk of heat stress and the impact it can have on workers' health and therefore productivity. This should be framed by national level guidance for employers on adaptive measures for outdoor workers exposed to high temperatures, by the Ministry of Health and the Ministry for Labour, Invalids and Social Affairs.

There is also a role for civil society to directly target the vulnerable populations. NGOs and CSOs can enhance the bargaining power of workers by informing them of their rights

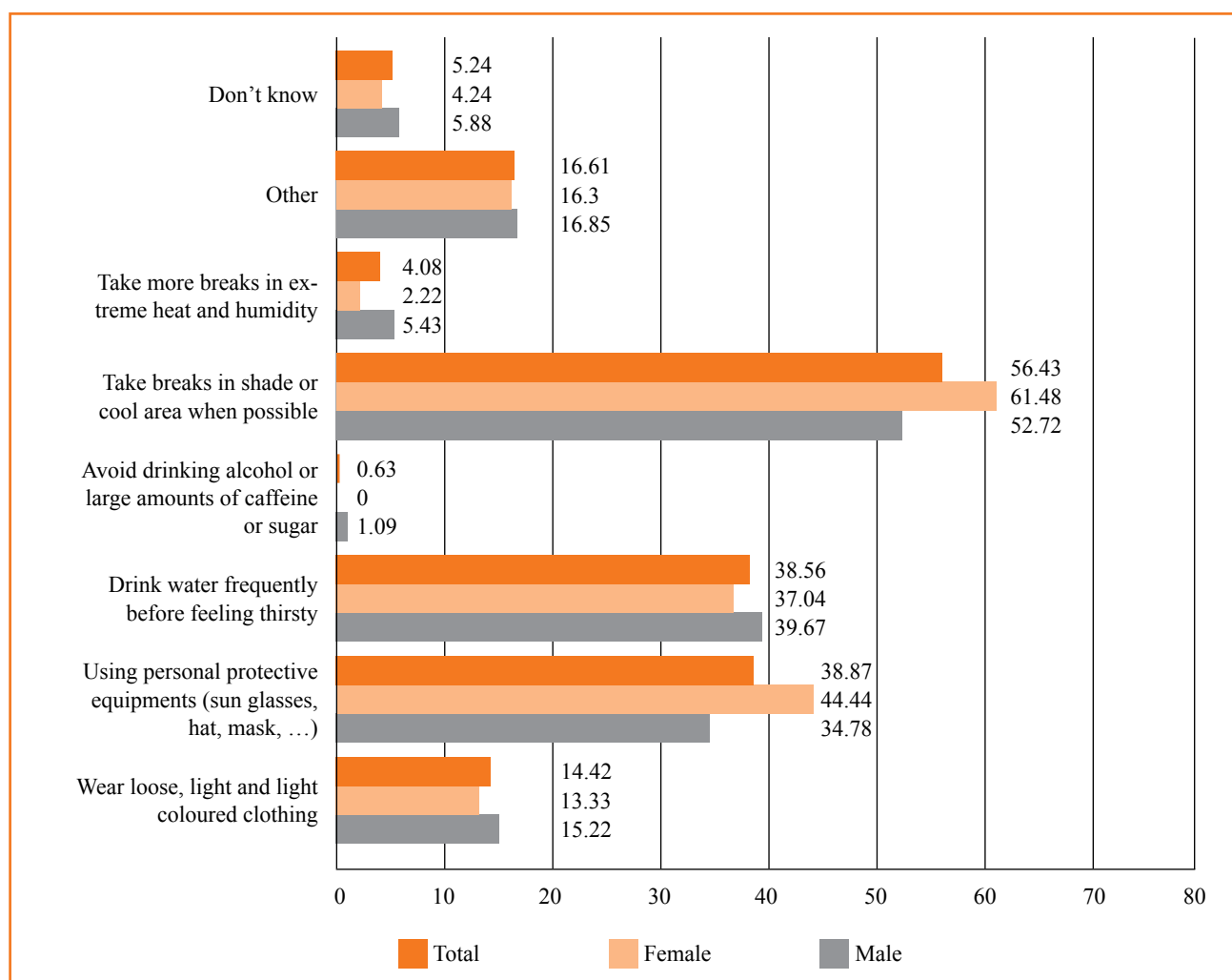


Figure 1: Knowledge of adaptive strategies for extreme heat, by gender (%)

at work, as well as relevant legislation and regulations regarding health and safety at work. NGOs can target health education to groups of freelance and migrant outdoor workers. These groups of workers can also be supported to establish their own self-help groups or trade unions, to facilitate information sharing, implementation of capacity building activities and adaptive measures, and provision of other mutual support.

Mass organisations, such as the Women's Union, are well-placed to integrate education messages about heat stress within their existing programs targeted at vulnerable groups. They can also address the underlying vulnerability of outdoor workers through livelihoods programmes and social support. The Women's Union in Da Nang is implementing models of storm resistant housing for the poor – this could be an entry point for integrating heat resistant housing designs, as a way of adapting to high

temperatures at home. This could be combined with urban planning measures for more trees and parks for urban cooling, with added mitigation co-benefits.

### Taking steps to build adaptive capacity

As a result of the gaps in adaptive capacity identified by the study in Da Nang, the Center for Community Health and Development (COHED) will be implementing a two and half year project entitled 'Protecting urban livelihoods from climate change – building heat stress resilience amongst Da Nang's most vulnerable workers'. This is funded by the Rockefeller Foundation, as part of the Asian Cities Climate Change Resilience Network (ACCCRN) initiative. The project targets 1,300 workers from three work sites in Da Nang, who are at risk of heat stress from working in both outdoors and semi-indoor environments. The

project will also include the management staff at the enterprises, and government officials, who will benefit from increased knowledge regarding heat stress and worker productivity, and practical measures to be applied in the workplace. The vulnerable workers will gain a better ability to carry out adaptive practices both at work and at home.

This study of the adaptive capacity of outdoor workers has demonstrated that heat stress is a serious issue which affects worker health and well-being, and therefore productivity. It identifies that underlying drivers of

vulnerability include poverty which may push people to work in extreme conditions. Behavioural change is required to enhance the adaptive capacity of certain workers. Heat stress should be addressed within workplace regulations, and the capacity of health staff to treat heat stress should be improved. However, there is also a need to integrate this within wider economic development approaches. As climate change means heat events will become more frequent, Da Nang's steps to understand and develop adaptive capacity can provide valuable insight into approaches to be applied across Vietnam.

### Aim of Series:

The findings presented here are drawn from research published in the Asian Cities Climate Resilience working paper series. The series has arisen out of the Asian Cities Climate Change Resilience Network (ACCCRN), an initiative funded by the Rockefeller Foundation – more information can be found at [www.acccrn.org](http://www.acccrn.org)

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## References

- 1 IPCC, *Climate Change 2013: The Physical Science Basis*, Summary for Policy Makers, 2013
- 2 *Heat stress and adaptive capacity of low-income outdoor workers and their families in the city of Da Nang, Vietnam*. By Dao Thi Mai Hoa, Do Anh Nguyet, Nguyen Hoang Phuong, Dang Thu Phuong, Vu Thu Nga, Roger Few, and Alexandra Winkels. Asian Cities Climate Resilience working paper series, October 2013, available for download at <http://pubs.iied.org/10051IIED.html>



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