

Correction

Correction: Hasanbeigi, A.; Zuberi, M.J.S. Electrified Process Heating in Textile Wet-Processing Industry: A Techno-Economic Analysis for China, Japan, and Taiwan. *Energies* 2022, 15, 8939

Ali Hasanbeigi ¹ and M. Jibran S. Zuberi ^{2,*} 

¹ Global Efficiency Intelligence (GEI), 7901 4th St. N STE 4611, St. Petersburg, FL 33702, USA

² Lawrence Berkeley National Laboratory (LBNL), 1 Cyclotron Rd., Berkeley, CA 94720, USA

* Correspondence: mjszuberi@lbl.gov; Tel.: +1-(510)-486-7818

Text Correction

There was an error in the original publication [1]. The total required heating capacities of High Temperature Heat Pumps (HTHP) for the textile wet-processing industry were stated inaccurately.

A correction has been made to 3.1. *Electrifying the Textile Industry through Industrial Heat Pumps, Paragraph 1:*

“The schematic of industrial heat pump (IHP) applications and their corresponding COPs is shown in Figure 6. A high-temperature heat pump (HTHP) can be installed to preheat the makeup feed water to 82 °C before it enters the condensate tank for steam generation. The total required heating capacities of HTHPs for the textile wet-processing industry in China, Taiwan, and Japan are estimated at 142 MW, 3.3 MW, and 3.9 MW, respectively. This is a relatively low heat capacity demand compared to steam-generating heat pumps (SGHP; see later for details) because HTHP is used only to preheat make-up feed water from 25 °C to 82 °C. A larger heat demand is needed for SGHP as shown below.”

There was an error in the original publication. The total required heating capacities of Steam Generating Heat Pumps (SGHP) for the textile wet-processing industry were stated inaccurately.

A correction has been made to 3.1. *Electrifying the Textile Industry through Industrial Heat Pumps, Paragraph 3:*

“Two separate SGHPs can be installed to produce process steam: (1) at 120 °C for de-sizing, scouring, mercerizing, washing, bleaching, and finishing (pad-dry-cure), and (2) at 150 °C for steam drying, dyeing, and printing. The total required heating capacities of SGHPs in China, Taiwan, and Japan are estimated at 11 gigawatts (GW), 0.30 GW, and 0.30 GW, respectively. It should be noted that the utilization of heat sources possibly available at a temperature higher than 60 °C (as assumed in this study) may result in a COP higher than currently estimated and consequently the lower electricity demand by the studied industrial heat pumps.”

There was an error in the original publication. The annual final energy savings due to industrial heat pump (IHP) applications in the textile wet-processing industry were stated inaccurately.

A correction has been made to 3.1. *Electrifying the Textile Industry through Industrial Heat Pumps, Paragraph 4:*

“The change in annual final energy demand due to IHP applications for textile wet-processing in the three economies in different timeframes is shown in Figures 7–9. The figures conclude that IHP applications can substantially decrease the total annual final energy demand. More precisely, it is estimated that nearly 248, 6.6, and 6.5 PJ of the annual final energy can be saved for textile wet-processing in China, Japan, and Taiwan, respectively. The substantial reduction in annual final energy demand is due to the increase



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in the efficiency (measured in terms of COPs of the heat pumps) for hot water and steam generation.”

There was an error in the original publication. The annual CO₂ emissions reduction potentials due to IHP applications in the textile wet-processing industry were stated inaccurately.

A correction has been made to 3.1. *Electrifying the Textile Industry through Industrial Heat Pumps, Paragraph 6:*

“The change in annual CO₂ emissions from the textile wet-processing industry due to industrial heat pump applications in different years is presented in Figures 10–12. The figures show up to 11, 0.3, and 0.4 Mt CO₂ per year emissions reduction potential in 2030 for textile wet-processing in China, Japan, and Taiwan, respectively. This is despite the increase in electricity demand from IHPs. The CO₂ reduction potential further increases to 23, 0.6, and 0.7 Mt CO₂ per year in 2050, in China, Japan, and Taiwan, respectively, due to the projected rate of electricity grid decarbonization between now and 2050 in these economies (it is assumed that the electricity grid will be carbon neutral in 2050 in all three economies).”

There was an error in the original publication. The annual final energy savings due to the electrification of the dyeing process were slightly inaccurate.

A correction has been made to 3.2.1. *Electrification of the Dyeing Process, Paragraph 3:*

“Electrifying the dyeing process can result in large final energy savings. In China, Japan, and Taiwan, annual energy savings of 34,000, 780, and 750 TJ per year can be achieved in 2050 (Figure 16). This is because electrified dyeing is more efficient than the conventional process, resulting in less energy consumption.”

There was an error in the original publication. The annual reduction of CO₂ emissions due to the electrification of the dyeing process were slightly inaccurate.

A correction has been made to 3.2.1. *Electrification of the Dyeing Process, Paragraph 4:*

“Electrification of the dyeing process in China could result in an increase in annual CO₂ emissions in the short term if highly carbon-intensive grid electricity is used (Figure 17). The electrification of the dyeing process could lead to a decrease in CO₂ emissions in Japan and Taiwan in 2030. Between 2030 and 2050, there will be a substantial reduction in CO₂ emissions as a result of the decline in the electricity grid’s CO₂ emissions factor and energy efficiency improvements. In 2050, the annual reduction of CO₂ emissions after electrification of the dyeing process will be around 4800, 115, and 125 kt CO₂ per year in China, Japan, and Taiwan, respectively.”

There was an error in the original publication. The annual final energy savings due to the electrification of the singeing process were slightly inaccurate.

A correction has been made to 3.2.2. *Electrification of Singeing Process, Paragraph 3:*

“Table 7 shows that electrifying the singeing process results in substantial annual final energy savings between 2030 and 2050. Electrification could lead to annual energy savings of about 18,000, 300, and 700 terajoules (TJ) per year for China, Japan, and Taiwan, respectively in 2050. This annual energy savings potential results from the higher efficiency (lower energy intensity) of electrified singeing compared with the conventional singeing process.”

There was an error in the original publication. The changes in electricity loads after the electrification of the end-use wet processes were stated inaccurately.

A correction has been made to 3.2.8. *Total Electrification Potential in Seven Studied Wet Processes, Paragraph 3:*

“Furthermore, while electrification decreases net final energy demand, electricity demand increases. For example, electrifying seven textile wet-processes results in an increase in annual electricity consumption of 64, 1.5, and 1.6 TWh per year in China, Japan, and Taiwan, respectively in 2050. This translates into an increase in electricity load of 8, 0.2, and 0.2 GW in China, Japan, and Taiwan, respectively in 2050 (To estimate these additional loads, we assumed all the additional load is coming from clean renewable energy sources. We further assumed that two-thirds of this additional load is coming from solar power and

one-third from wind power and assumed the capacity factor accordingly). For comparison, in 2021, China had around 2380 GW, Japan had around 313 GW, and Taiwan had around 59 GW of electricity generation capacities [45,46].”

There was an error in the original publication. The total potential final energy savings due to IHP applications were slightly inaccurate.

A correction has been made to 4. *Discussion and Policy Recommendations, Paragraph 1:*

“The total potential final energy savings due to industrial heat pump applications are estimated to be around 248, 6.6, and 6.5 PJ per year in China, Japan, and Taiwan, respectively in 2050. On the other hand, electrification through end-use processes could lead to potential final energy savings of about 145, 3.5, and 3.8 PJ per year in China, Japan, and Taiwan, respectively in 2050. It must be noted that the results of the two pathways are not directly comparable because only seven end-use wet processes have been studied in the second pathway analysis mainly due to a lack of technical data for the remaining processes. Furthermore, the substantial reduction in annual final energy demand in both scenarios is due to the increase in the efficiency and lower energy intensity of the electrified heating systems.”

The “country” in the paper has been changed with “country/region”.

Error in Figures

In the original publication, there was a mistake in Figure 7 as published. The annual final energy demand due to IHP applications in the textile wet-processing industry in China was inaccurate. The corrected Figure 7 appears below.

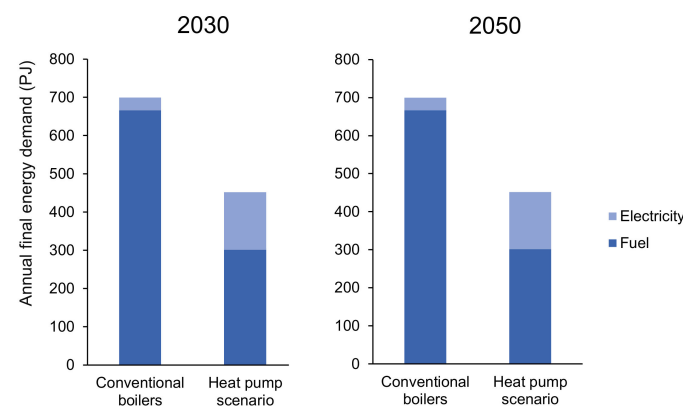


Figure 7. Annual final energy demand in the textile wet-processing industry in China.

In the original publication, there was a mistake in Figure 8 as published. The annual final energy demand due to IHP applications in the textile wet-processing industry in Japan was inaccurate. The corrected Figure 8 appears below.

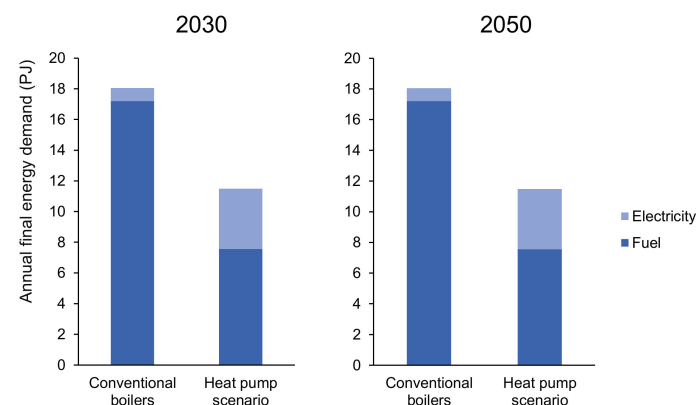


Figure 8. Annual final energy demand in the textile wet-processing industry in Japan.

In the original publication, there was a mistake in Figure 9 as published. The annual final energy demand due to IHP applications in the textile wet-processing industry in Taiwan was inaccurate. The corrected Figure 9 appears below.

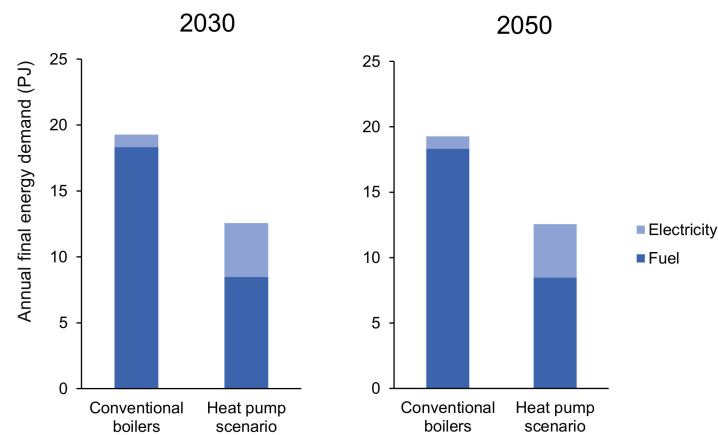


Figure 9. Annual final energy demand in the textile wet-processing industry in Taiwan.

In the original publication, there was a mistake in Figure 10 as published. The annual CO₂ emissions reduction potentials due to IHP applications in the textile wet-processing industry in China were stated inaccurately. The corrected Figure 10 appears below.

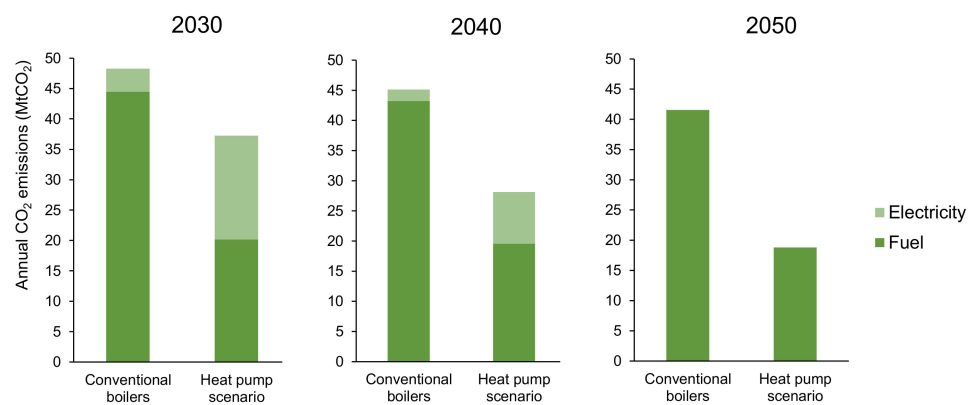


Figure 10. Annual CO₂ emissions from the textile wet-processing industry in China.

In the original publication, there was a mistake in Figure 11 as published. The annual CO₂ emissions reduction potentials due to IHP applications in the textile wet-processing industry in Japan were stated inaccurately. The corrected Figure 11 appears below.

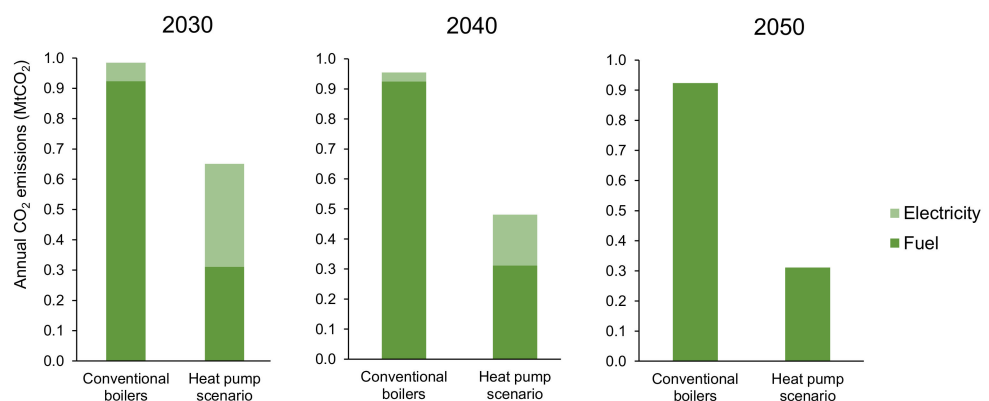


Figure 11. Annual CO₂ emissions from the textile wet-processing industry in Japan.

In the original publication, there was a mistake in Figure 12 as published. The annual CO₂ emissions reduction potentials due to IHP applications in the textile wet-processing industry in Taiwan were stated inaccurately. The corrected Figure 12 appears below.

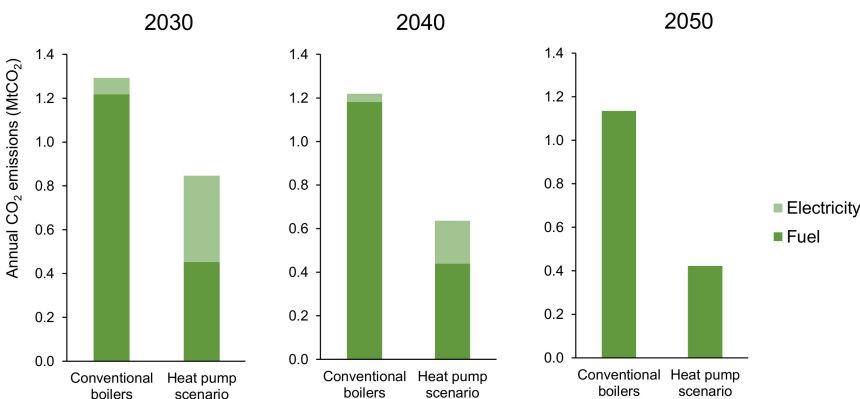


Figure 12. Annual CO₂ emissions from the textile wet-processing industry in Taiwan.

In the original publication, there was a mistake in Figure 13 as published. The energy costs per unit of production for the textile wet-processing industry in China were stated inaccurately. The corrected Figure 13 appears below.

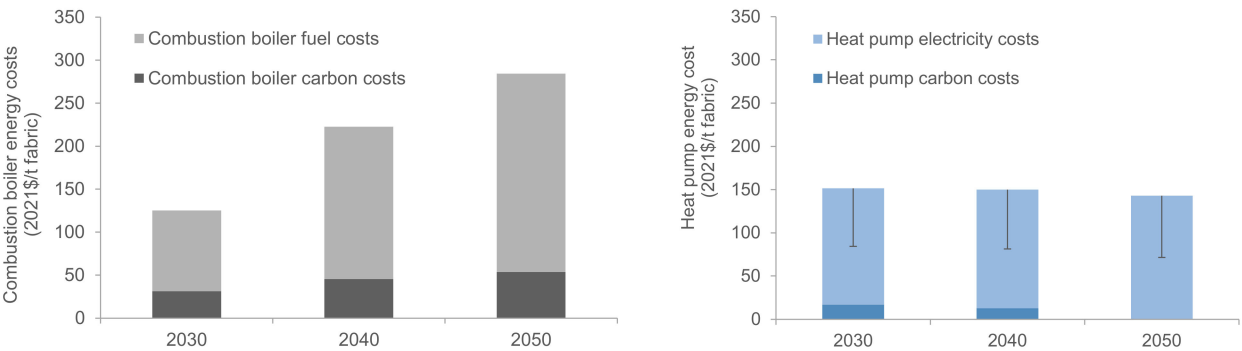


Figure 13. Energy costs per unit of production for the textile wet-processing industry in China.

In the original publication, there was a mistake in Figure 14 as published. The energy costs per unit of production for the textile wet-processing industry in Japan were stated inaccurately. The corrected Figure 14 appears below.

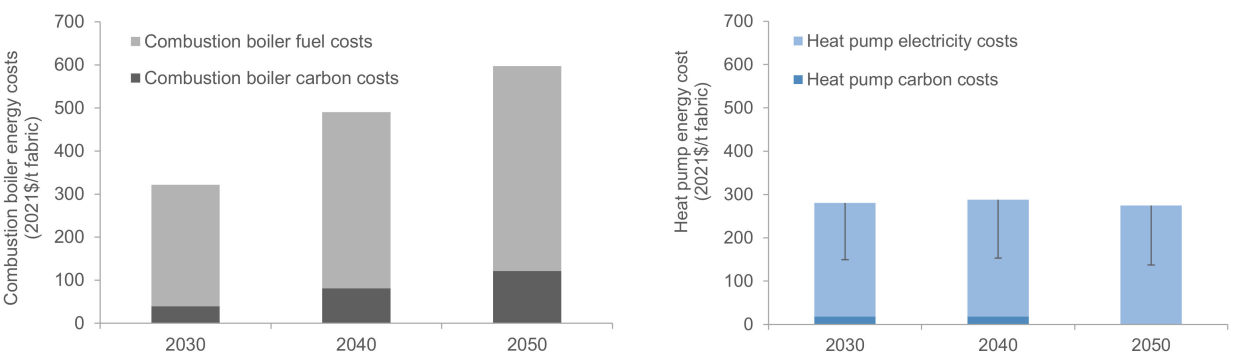


Figure 14. Energy costs per unit of production for the textile wet-processing industry in Japan.

In the original publication, there was a mistake in Figure 15 as published. The energy costs per unit of production for the textile wet-processing industry in Taiwan were stated inaccurately. The corrected Figure 15 appears below.

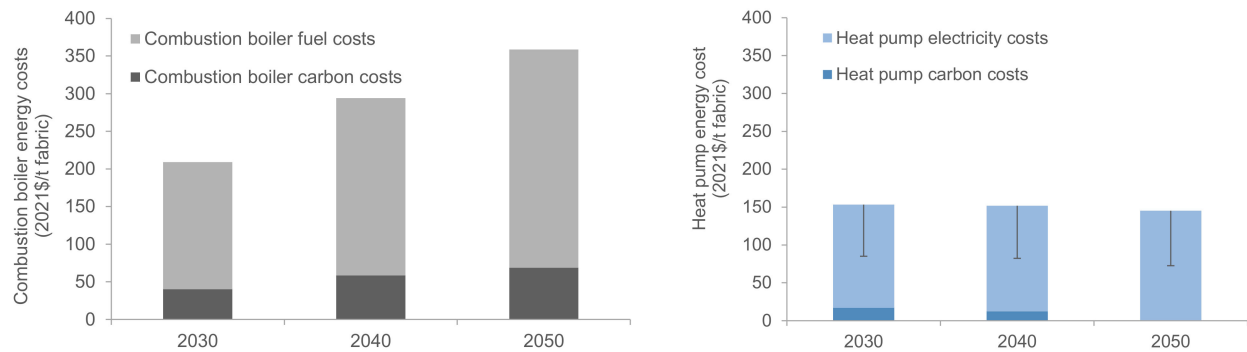


Figure 15. Energy costs per unit of production for the textile wet-processing industry in Taiwan.

The authors state that the scientific conclusions are unaffected. This correction was approved by the Academic Editor. The original publication has also been updated.

Reference

- Hasanbeigi, A.; Zuberi, M.J.S. Electrified Process Heating in Textile Wet-Processing Industry: A Techno-Economic Analysis for China, Japan, and Taiwan. *Energies* **2022**, *15*, 8939. [[CrossRef](#)]

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