Added text at top of article
CORRECTION: This article text, Table 1, and Figures 2 and 3 have been revised in order to correct a factual error in which the author mistook 2030 cost input assumptions in several papers as 2020 cost input assumptions. Revisions have been kept to the bare minimum needed to correct this misinterpretation and specific statements that invoked these values as evidence. A full document listing all tracked changes, with original and revised table, figures, and text shown side-by-side, can be found <<HERE>>.

Original text	Revised text
Click here for interactive table: ASSESSED 100% RENEWABLE LITERATURE FOR ASIA AND AFRICA [two occurrences in text]	Updated link to corrected table: https://docs.google.com/spreadsheets/d/15i6G6EdKCbYlpIfcDc-9Y5XVnKAZw6kL8en867gnvWM/edit?usp=sharing

Previous table version can be accessed here: https://docs.google.com/spreadsheets/d/1pYCamHZCyvJvvwEJ7oCrI0XJs1naLwPgmgXxPuO2tfY/edit#gid=0

Original text	Revised text
For instance, some LUT model studies assume that the capital costs of utility-scale solar systems in 2020—in developing countries and high-cost East Asian countries like South Korea or Japan—are 66%-69% of what the National Renewable Energy Laboratory's Annual Technology Baseline (NREL ATB) datasets assume that large solar farms cost in 2020 in the United States.	For instance, some **of the cited** LUT model studies assume that the capital costs of utility-scale solar systems in 2020—in developing countries and high-cost East Asian countries like South Korea or Japan—are **68%-82% (USD 707 to USD 863/kW$_{\text{(DC)}}$)** of what the National Renewable Energy Laboratory's **2023** Annual Technology Baseline (NREL ATB) datasets assume that large solar farms cost in **2021 (USD 1047/kW$_{\text{(DC)}}$)** in the United States.

Previously this erroneously took a 2030 value of EUR2015 620/kW(DC) from Barasa et al., 2018 and correctly took a EUR2015 638/kW(DC) value from Bogdanov et al., 2018. These were converted to USD2020 ($814/kW(DC) and $791/kW(DC) respectively), and compared against a $1200/kW(DC) value from ATB 2019. All values for single-axis tracking utility-scale.

The corrected version considers a range of EUR2015 523/kW(DC) (Satymov et al., 2021 [Turkmenistan]; Oyewo et al., 2021 [Ethiopia]) to EUR2015 638/kW(DC) value from Bogdanov et al., 2018 and others. This converts to a range in USD2020 of $707 to $863/kW(DC). These are compared against an updated $1047/kW(DC) value from ATB 2023, which is more fair as it accounts for more of recent price declines. All values for single-axis tracking utility-scale.

In the revised version, 1 EUR 2015 = 1.23 USD 2015 assumed, compared to the previously assumed ratio of 1 EUR 2015 to 1.16 USD 2015. We note that capital cost values are fairly sensitive to this choice of exchange rate.

Inflation adjustment is $1.00 USD 2015 = $1.10 USD 2020. U.S. inflation calculated using January values from the U.S. Bureau of Labor Statistics CPI Inflation Calculator (https://www.bls.gov/data/inflation_calculator.htm). Note that ATB cost figures are converted from 2021 to 2020 dollars using this tool as well.

Original text	Revised text
The LUT researchers are essentially assuming that developers can build solar PV farms today in South Korea, the Democratic Republic of the Congo, or the Central African Republic for about the cost of what the NREL ATB assumes future cheaper solar farms will cost in the United States in 2050.	<sentence deleted>

The adjusted LUT solar PV project costs are higher than as originally written. The shift to ATB 2023 means future cost projections are also lower, which further weakens the comparison made previously. As this sentence was therefore incorrect as originally written, we have removed it.

Original text	Revised text
The same pattern appears in LUT model wind project cost assumptions, which are 43%-90% of the model input cost assumptions the NREL ATB recommends for onshore wind projects in the United States.	The same pattern appears in LUT model wind project cost assumptions (**$1555/kW)**, which are **within 6% of** the model input cost assumptions the **2023** NREL ATB recommends **($1462/kW)** for onshore wind projects in the United States.

After redacting the erroneous 2030 values, only the higher 2015EUR 1150/kW wind capital cost assumption is used uniformly across all the studies cited in Table 1. This converts to $1555/kW in 2020 dollars and is on par with 2023 NREL ATB ($1462/kW).

Original text	Revised text
Even from a global perspective, these costs fall noticeably on the lower end of government estimates, modeling assumptions, and real project costs produced by researchers and industry today (Figure 2 and Figure 3).	Even from a global perspective, these costs fall on the **lower-middle** end of government estimates, modeling assumptions, and real project costs produced by researchers and industry today (Figure 2 and Figure 3).
Certainly, countries like Japan or South Korea, where renewable projects currently confront higher costs, can see dramatic cost improvements as deployment accelerates. But the LUT team's assumption that such countries can install new clean energy capacity today at the low costs characteristic of wind or solar projects in China or India is clearly aggressive.	Certainly, countries like Japan or South Korea, where renewable projects currently confront higher costs, can see dramatic cost improvements as deployment accelerates. But the LUT team's assumption that such countries can install new clean energy capacity today at the **same global average costs assumed for** wind or solar projects is clearly aggressive.
Meanwhile, despite common knowledge that energy infrastructure costs are considerably higher in many low- and middle-income countries, LUT model papers on Sub-Saharan Africa assume that natural gas power plants cost the same there as they do in China or South Korea and that rooftop solar, wind, and lithium-ion battery storage projects in Africa actually cost less than they do in Asia (Table 1). These papers similarly apply identical costs of capital to…	Meanwhile, despite common knowledge that energy infrastructure costs are considerably higher in many low- and middle-income countries, LUT model papers on Sub-Saharan Africa assume that natural gas power plants cost the same there as they do in China or South Korea and that rooftop **solar, utility solar**, and lithium-ion battery storage projects in **Ethiopia and Turkmenistan** actually cost less than they do in Asia (Table 1). **To be fair, some of the cited LUT papers do conversely assume higher costs for biomass and synthetic methane infrastructure in some contexts.** **<added line break>** These papers similarly apply identical costs of capital to…
The LUT researchers assume many of these costs to be quite low. LUT model direct air CO2 capture costs start at around $450-$525/ton in 2020 (2020 dollars) (compared to rates of $600-$1000/ton offered by direct air capture pilot firms today). Their electrolyzer costs in Sub-Saharan Africa begin at $485/kW	The LUT researchers assume **some** of these costs to be quite **low in some studies. Papers on Northeast Asia, Ghana, and Bangladesh** model direct air CO2 capture **capital** costs start**ing** at around **$555/ton capacity** in 2020 (2020 dollars) (compared to rates of $600-$1000/ton offered by direct air capture pilot

in 2020, when much of the literature assumes current global costs of around $760-$1200/kW. Such aggressively low cost inputs raise the question of how sensitive LUT model total system cost results would be to higher, more realistic starting and future cost assumptions.	firms today). **Other studies on the Himalayas, Ethiopia, Nigeria, and West Africa do assume higher costs of $867-$987/ton, although this is still effectively on par with the global state-of-the-art in wealthy countries.** Their electrolyzer costs in Sub-Saharan Africa **are $926**/kW in 2020, when much of the literature assumes current global costs of around $760-$1200/kW. Such ~~**aggressively**~~ low cost inputs raise the question of how sensitive LUT model total system cost results would be to higher~~**, more realistic**~~ starting and future cost assumptions.
The researchers further assume that synthetic natural gas production occurs in synchronization with hydrogen production and direct air capture, as the model does not consider hydrogen and CO2 storage.	**<sentence deleted>** (Per clarification from Christian, in early studies the intermediate storage capacities for H2 and CO2 were not reported, while the required CH4 storage for seasonal balancing was; in studies from 2018 onwards the intermediate storage was reported)

Original Table 1:

	Bogdanov et al., 2018 (Table S1)	Barasa et al., 2018 (Supplement Table 1)
	Northeast Asia	Sub-Saharan Africa
	USD$ 2020 per kW	USD$ 2020 per kW
Solar PV, ground-mount, utility-scale, fixed-tilt (per kW DC)	740	701
Solar PV, ground-mount, utility-scale, one-axis tracking (per kW DC)	814	791
Solar PV, rooftop, residential	1492	1037
Onshore wind	1467	1276
Nuclear	7660	
Open-cycle gas turbine	606	606
Closed-cycle gas turbine	989	989
Biomass combined heat and power	3343	3190
Grid storage battery, Li-ion	383	191
Adiabatic compressed air grid storage	45	40
Synthetic methane gas storage	0.06	0.06
Water electrolysis (per kW H_2)	874	485
Methanation (per kW CH_4)	537	299
Direct air capture (USD$ 2020 per ton CO_2 per year)	524	454
Notes	Identical or similar costs assumed in other LUT studies covering North Africa, Nepal and Bhutan, and Turkmenistan	Identical or similar costs assumed in other LUT studies covering Southeast Asia and Sub-Saharan Africa

All values are assumed 2020 project CAPEX costs, converted to and expressed in USD 2020
1 EUR 2015 = 1.16 USD 2015 assumed, inflation adjustment is $1.00 USD 2015 = $1.10 USD 2020

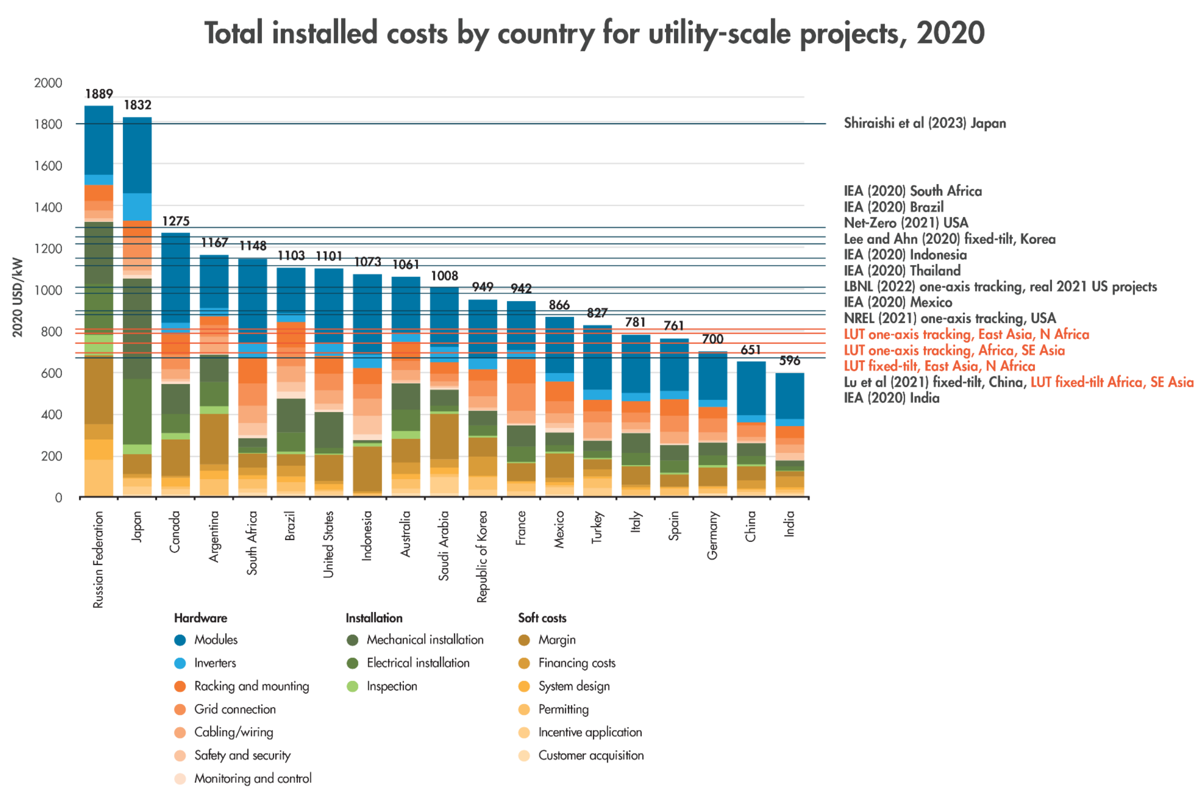
Revised Table 1:

	Bogdanov et al., 2018 (Table S1) 2020 project CAPEX costs
	USD$ 2020 per kW
Geographic region of example study	**Northeast Asia**
Regions in which other cited LUT studies assumed identical or largely identical costs	**North Africa, Nepal and Bhutan*, Turkmenistan**, Ghana, Ethiopia**, West Africa***, Bangladesh, Nigeria*** **
Solar PV, ground-mount, utility-scale, fixed-tilt (per kW DC)	784, 642**
Solar PV, ground-mount, utility-scale, one-axis tracking (per kW DC)	863, 707**
Solar PV, rooftop, residential (per kW DC)	1582, 1555**
Onshore wind	1555
Nuclear	8120
Open-cycle gas turbine	642
Closed-cycle gas turbine	1048
Biomass combined heat and power	3544, 3922***
Grid storage battery, Li-ion	406, 366*, 317**
Adiabatic compressed air grid storage	48 (80 assumed in 2021 Ethiopia paper)
Synthetic methane gas storage	0.06
Water electrolysis (per kW H_2)	926
Methanation (per kW CH_4)	569, 679*,679**
Direct air capture (USD$ 2020 per ton CO_2 per year)	555, 987*, 987**, 867***

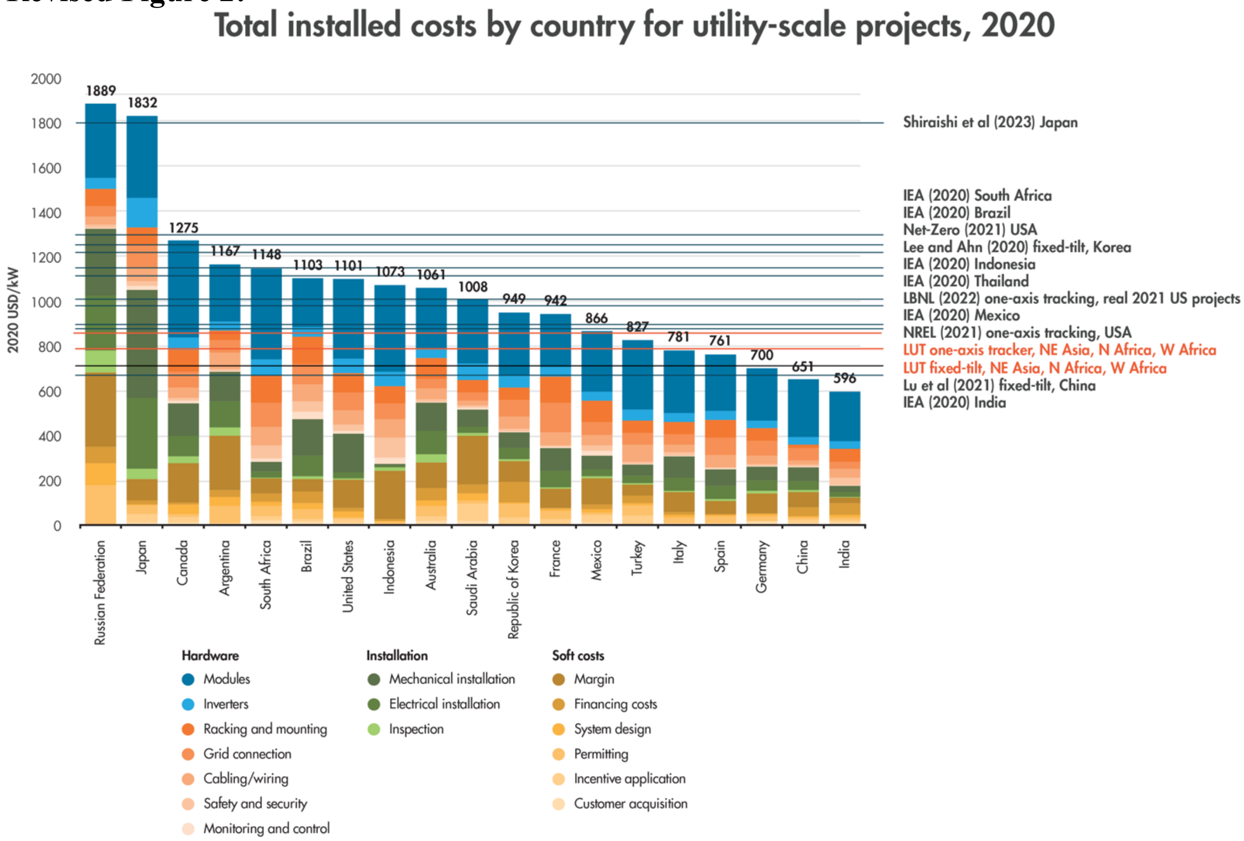
All values are assumed 2020 project CAPEX costs, converted to and expressed in USD 2020
1 EUR 2015 = 1.23 USD 2015 assumed, inflation adjustment is $1.00 USD 2015 = $1.10 USD 2020

Original title	Revised title
Table 1: Assumed energy project capital expenditure (CAPEX) costs for two LUT modeling studies	Table 1: Assumed energy project capital expenditure (CAPEX) costs in selected LUT modeling studies
Original caption text	**Revised text**
Assumed energy project capital expenditure (CAPEX) costs for two LUT modeling studies published by the Breyer team focusing on the Northeast Asia and Sub-Saharan Africa regions. The LUT team assumes identical or similar costs in numerous other papers covering regions from Sub-Saharan Africa to Southeast Asia to North Africa to Central Asia to the Himalayas. Link to table and spreadsheet.	Assumed energy project capital expenditure (CAPEX) costs for ~~**two**~~ LUT modeling studies published by the Breyer team ~~**focusing on the Northeast Asia and Sub-Saharan Africa regions**~~. The LUT team assumes identical or similar costs in numerous ~~**other**~~ papers covering regions from Sub-Saharan Africa to **Northeast** Asia to North Africa to Central Asia to the Himalayas. Link to table and spreadsheet. [updated link]

Original Figure 2:



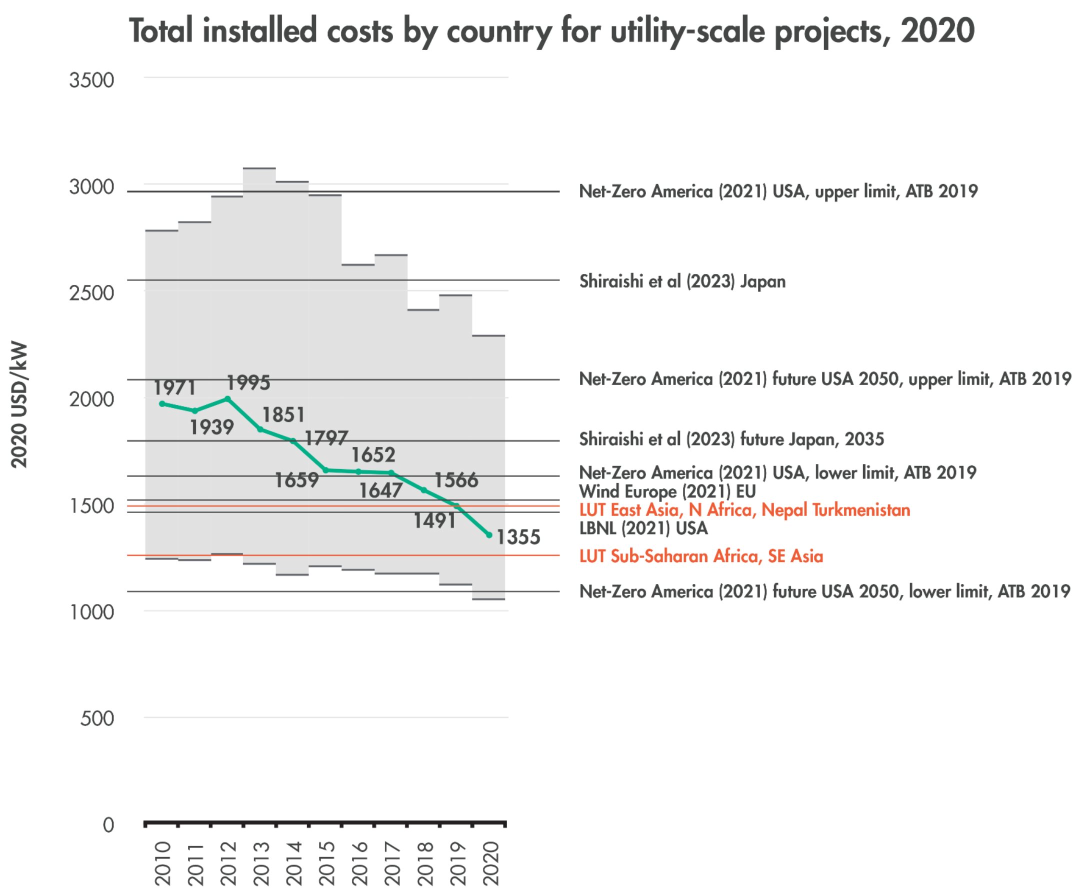
Revised Figure 2:



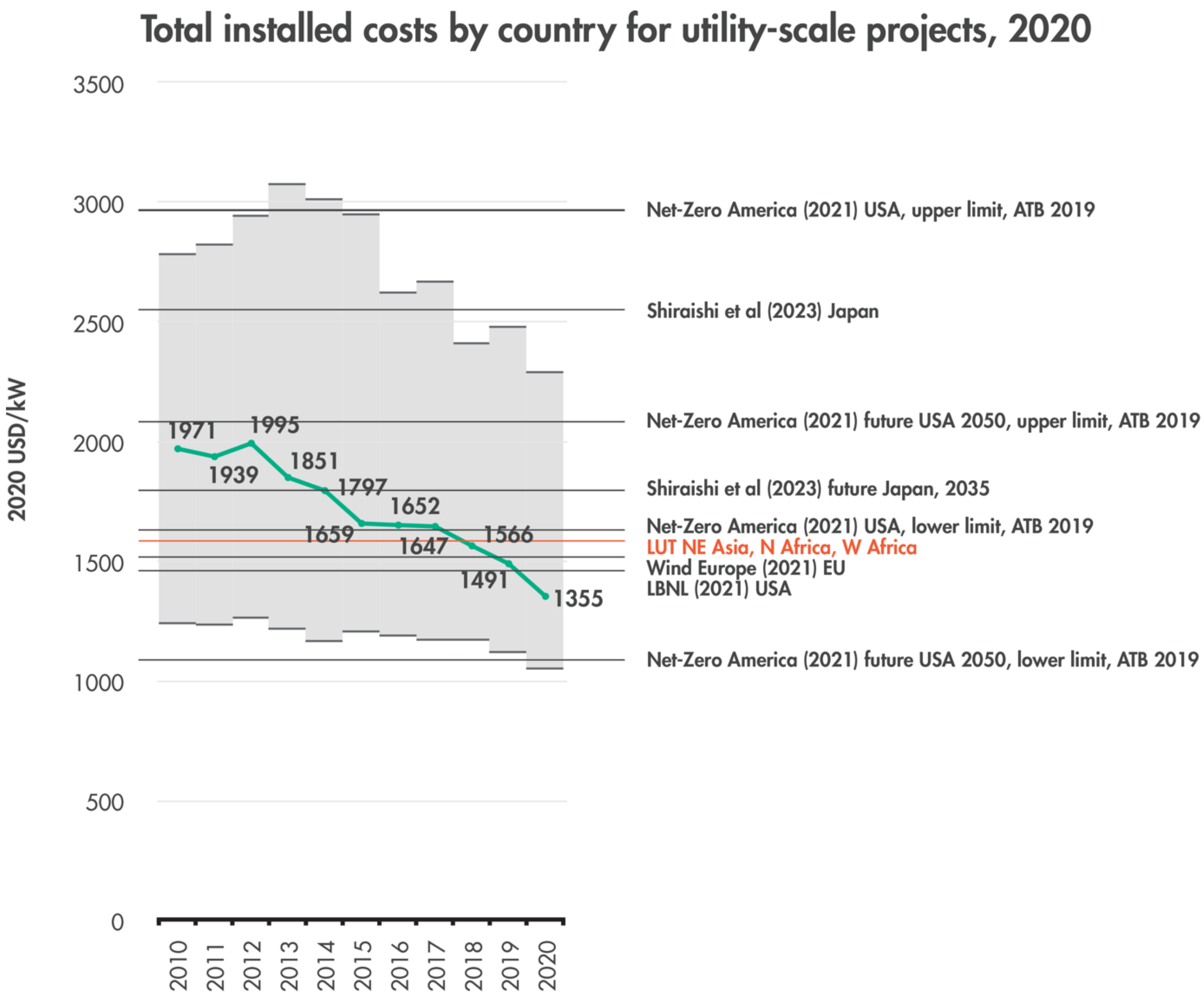
Original caption text	Revised text
Comparison of compiled and assumed modeling solar PV project capital costs from across other literature (black) and from LUT modeling papers (red). All costs are converted and inflation-adjusted to 2020 U.S. dollars and normalized per unit capacity (DC). Base figure adapted from IRENA (2020), "Figure 3.5 Detailed breakdown of utility-scale solar PV total installed costs by country, 2020." Sources: Shiraishi et al., 2023; IEA, 2020; Larson et al., 2021 (Net-Zero America); LBNL, 2022; NREL, 2021; Bogdanov et al., 2018 (LUT East Asia); Breyer et al., 2019 (LUT North Africa); Gulagi et al., February 2017 (LUT SE Asia); Barasa et al., 2018 (LUT Africa); Oyewo et al., 2018 (LUT Africa); Gulagi et al., April 2017 (LUT SE Asia); Lu et al., 2021.	*Comparison of compiled and assumed modeling solar PV project capital costs from across other literature (black) and from LUT modeling papers (red). All costs are converted and inflation-adjusted to 2020 U.S. dollars and normalized per unit capacity (DC). Base figure adapted from IRENA (2020), "Figure 3.5 Detailed breakdown of utility-scale solar PV total installed costs by country, 2020." Sources: Shiraishi et al., 2023; IEA, 2020; Larson et al., 2021 (Net-Zero America); LBNL, 2022; NREL, 2021; Bogdanov et al., 2018 (LUT East Asia); Breyer et al., 2019 (LUT North Africa);* ***Oyewo et al., 2020 (LUT West Africa)****; Lu et al., 2021.* Removed: Gulagi et al., February 2017 (LUT SE Asia); Barasa et al., 2018 (LUT Africa);

	Oyewo et al., 2018 (LUT Africa); Gulagi et al., April 2017 (LUT SE Asia)

Original Figure 3:



Revised Figure 3:



Original caption text	Revised text
Comparison of compiled and assumed modeling onshore wind project capital costs from across other literature (black) and from LUT modeling papers (red). All costs are converted and inflation-adjusted to 2020 U.S. dollars. Base figure adapted from IRENA (2020), "Figure 2.1 Global weighted-average total installed costs, capacity factors, and LCOE for onshore wind, 2010-2020." Sources: Larson et al., 2021 (Net-Zero America); Shiraishi et al., 2023; Wind Europe, 2021; Bogdanov et al., 2018 (LUT East Asia); Breyer et al., 2019 (LUT North Africa); Gulagi et al., 2021 (LUT Nepal and Bhutan); Satymov et al., 2021 (LUT Turkmenistan); LBNL, 2021;	*Comparison of compiled and assumed modeling onshore wind project capital costs from across other literature (black) and from LUT modeling papers (red). All costs are converted and inflation-adjusted to 2020 U.S. dollars. Base figure adapted from IRENA (2020), "Figure 2.1 Global weighted-average total installed costs, capacity factors, and LCOE for onshore wind, 2010-2020." Sources: Larson et al., 2021 (Net-Zero America); Shiraishi et al., 2023; Wind Europe, 2021; Bogdanov et al., 2018 (LUT **North**east Asia); **Oyewo et al., 2020 (LUT West Africa);** Breyer et al., 2019 (LUT North Africa); LBNL, 2021.*

Gulagi et al., February 2017 (LUT SE Asia); Barasa et al., 2018 (LUT Africa); Oyewo et al., 2018 (LUT Africa); Gulagi et al., April 2017 (LUT SE Asia).	Removed: *Gulagi et al., 2021 (LUT Nepal and Bhutan); Satymov et al., 2021 (LUT Turkmenistan); Gulagi et al., February 2017 (LUT SE Asia); Barasa et al., 2018 (LUT Africa); Oyewo et al., 2018 (LUT Africa); Gulagi et al., April 2017 (LUT SE Asia).* (Note: wind values for Nepal, Bhutan, Turkmenistan were originally correct, as they were the same as Bogdanov et al., 2018. Voluntary removal on our part)