**Data sources:**

For the life cycle inventory data:

1. Photovoltaic, Concentrated Solar Power, Wind, Hydropower:

Primary source of data is based on Ecoinvent dataset.

*Ecoinvent Version 3:*

Wernet, G., Bauer, C., Steubing, B., Reinhard, J., Moreno-Ruiz, E. and Weidema, B., 2016. The ecoinvent database version 3 (part I): overview and methodology. *The International Journal of Life Cycle Assessment,* 21(9), pp.1218–1230. <https://doi.org/10.1007/s11367-016-1087-8>

*Ecoinvent Version 2:*

Frischknecht R., Jungbluth N., Althaus H.-J., Doka G., Dones R., Heck T., Hellweg S., Hischier R., Nemecek T., Rebitzer G. and Spielmann M., 2005. The ecoinvent database: overview and methodological framework. *International Journal of Life Cycle Assessment,* 10(1), pp.3–9. <https://doi.org/10.1065/lca2004.10.181.1>

1. Cement:

SES sal., 2014. *Environmental audit report for the cement manufacturing facility in Lebanon.* Beirut: Sustainable Environmental Solutions.

SES sal., 2016. *Environmental impact assessment for addition of kiln 5 and quarry at the cimenterie nationale.* Beirut: Sustainable Environmental Solutions.

1. NPV and LCOE: CAPEX and OPEX of PV, CSP, wind and hydropower from the following sources:

World Bank, Electricité du Liban, and Lebanon. Ministry of Energy and Water, 2021, September. *Least cost generation plan.* Beirut: Electricité du Liban.

IRENA. 2022. *Renewable power generation costs in 2021*. Abu Dhabi: International Renewable Energy Agency. ISBN 978-9260-452-3.

Sogreah, 2012. *Schéma directeur hydroélectrique du Liban, phase 2.* (Report 1360943-R2-Schema Directeur). Beirut: Ministry of Energy and Water.

**Data processing and preparation activities:**

Changes in values were introduced in the datasets of Ecoinvent. By copying an existing process in the Ecoinvent datasets, values appropriate and representative to Lebanon are then introduced/changed. Irrelevant sub-processes are deleted. The final result preserves the integrity of the original dataset while the values are "localised" to reflect the local conditions.

For the NPV and LCOE calculations, once the capital expenditure (CAPEX) and operating expenditure (OPEX) are determined, the discount rate and lifetime were chosen based on the technology. The formula for calculating both the LCOE and the NPV were then introduced in the MS Excel spreadsheet and calculations executed.

**Technical details and requirements:**

The files were exported from SimaPro version 9, apart from the spreadsheet containing the NPV and LCOE calculations. The spreadsheets are in Microsoft Excel (.xlsx) format.