

# Geographical resolution of LCI data on electricity production

LCM Luxembourg

4 September 2017

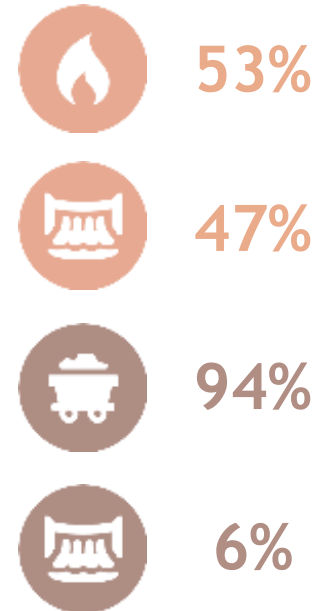
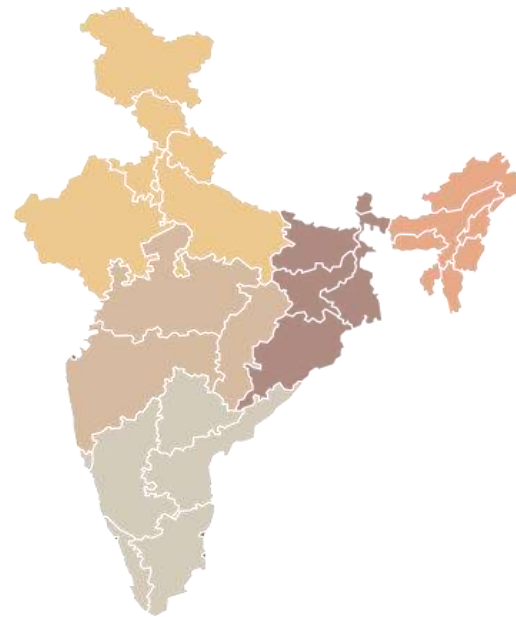
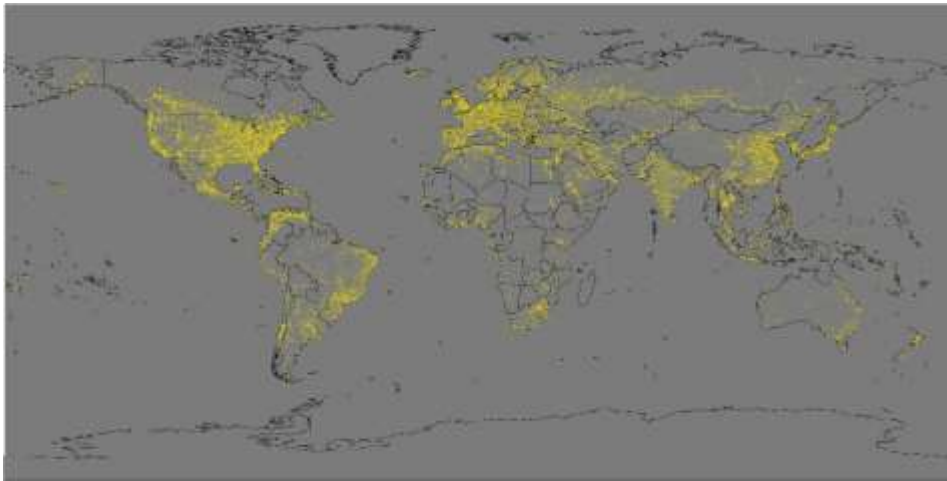
Lucia Valsasina

Data Analyst

**ecoinvent**

# Introduction and objectives

## Large countries can show major differences in production mixes

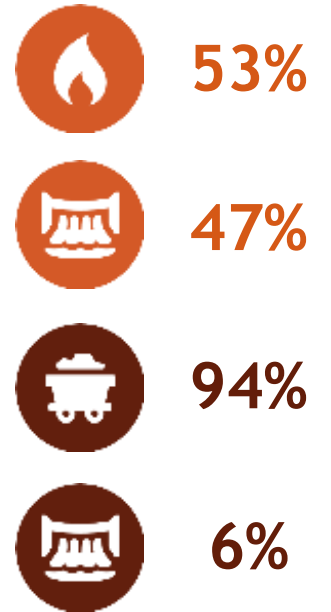
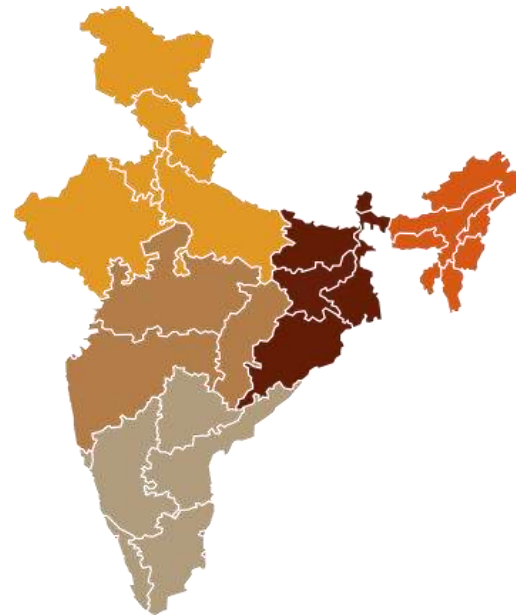
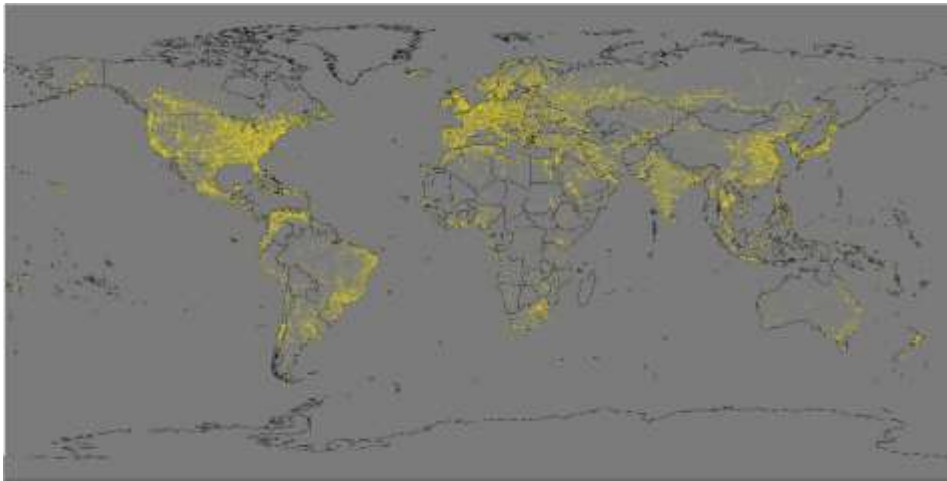


### Objectives

- Is a country level resolution too coarse for electricity?
- How do environmental impacts change with resolution?

# Introduction and objectives

Large countries can show major differences in production mixes

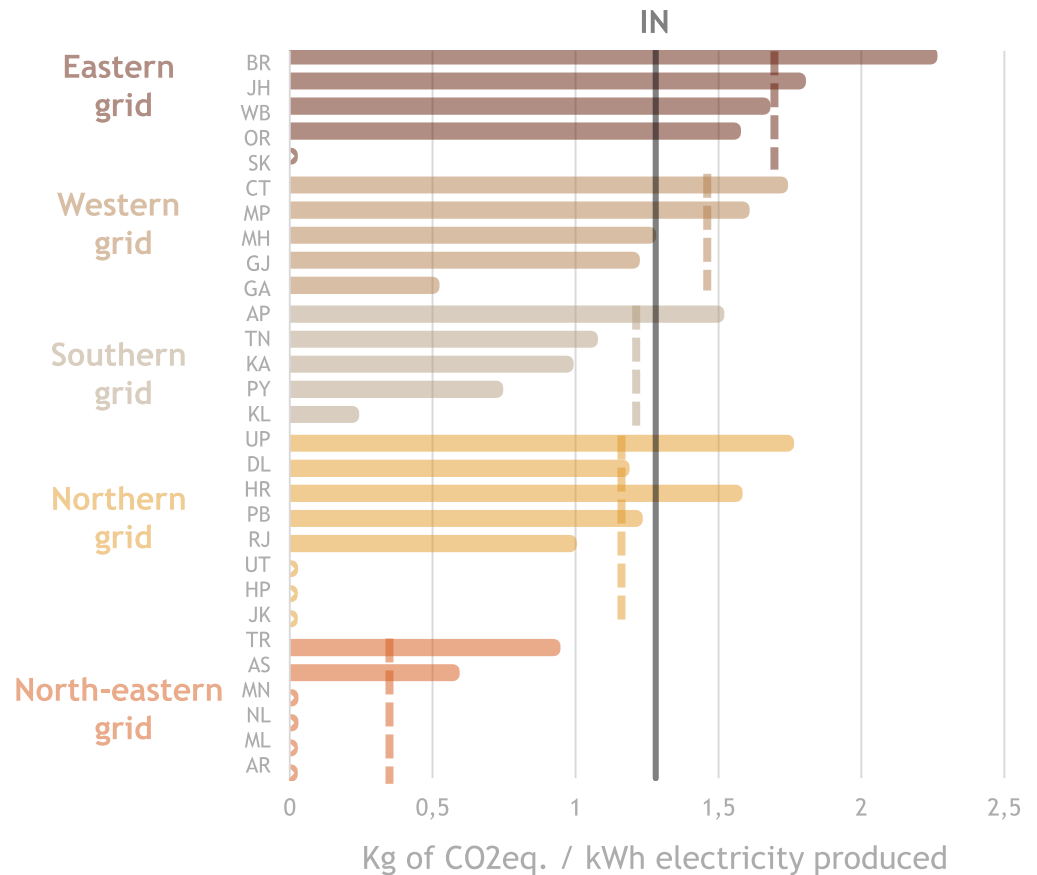
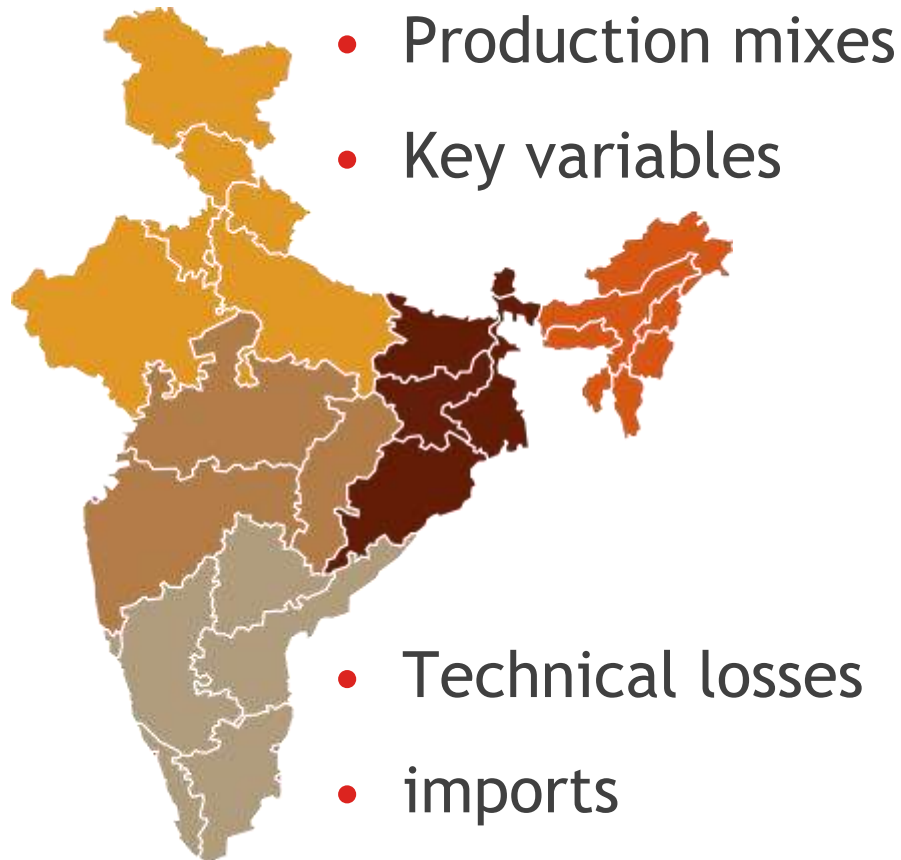


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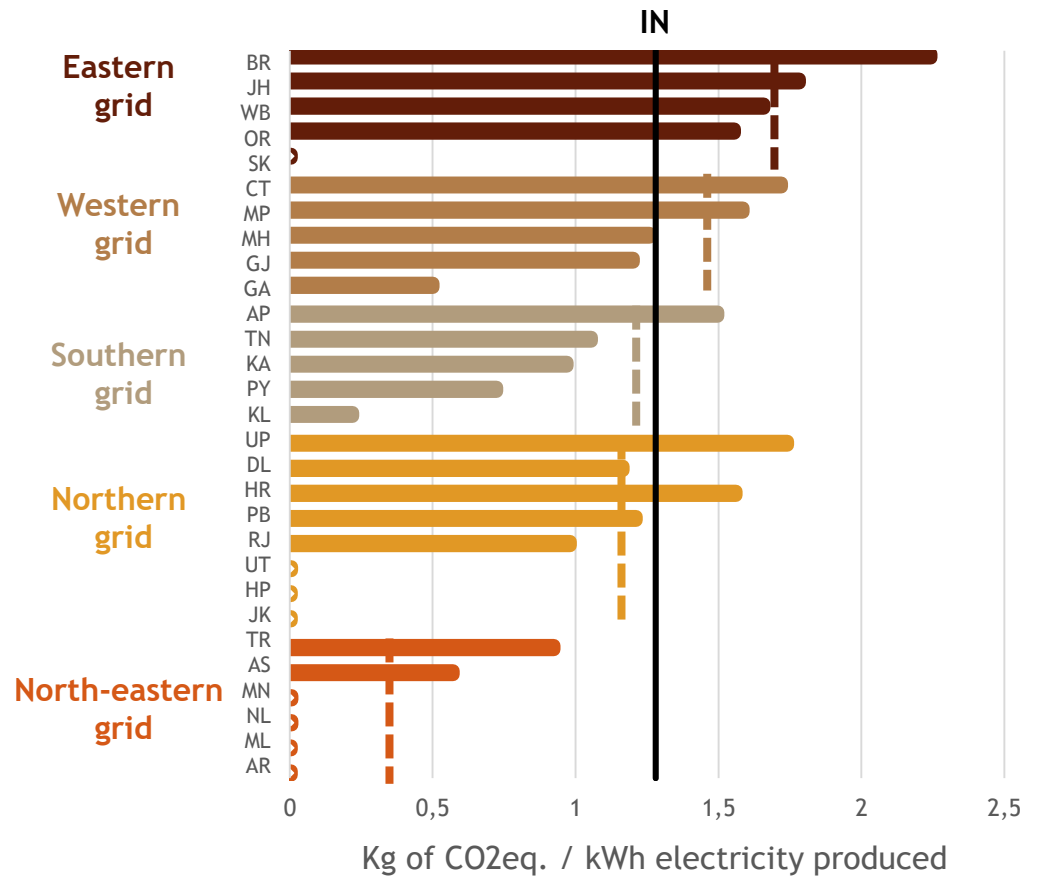
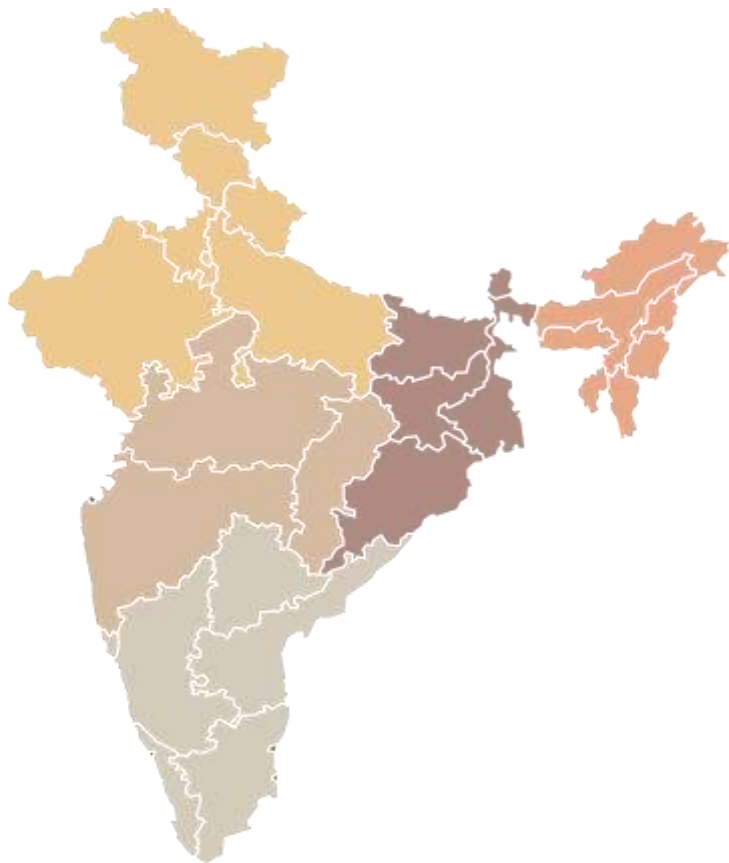
# Material, methods and results

## Materials and methods:



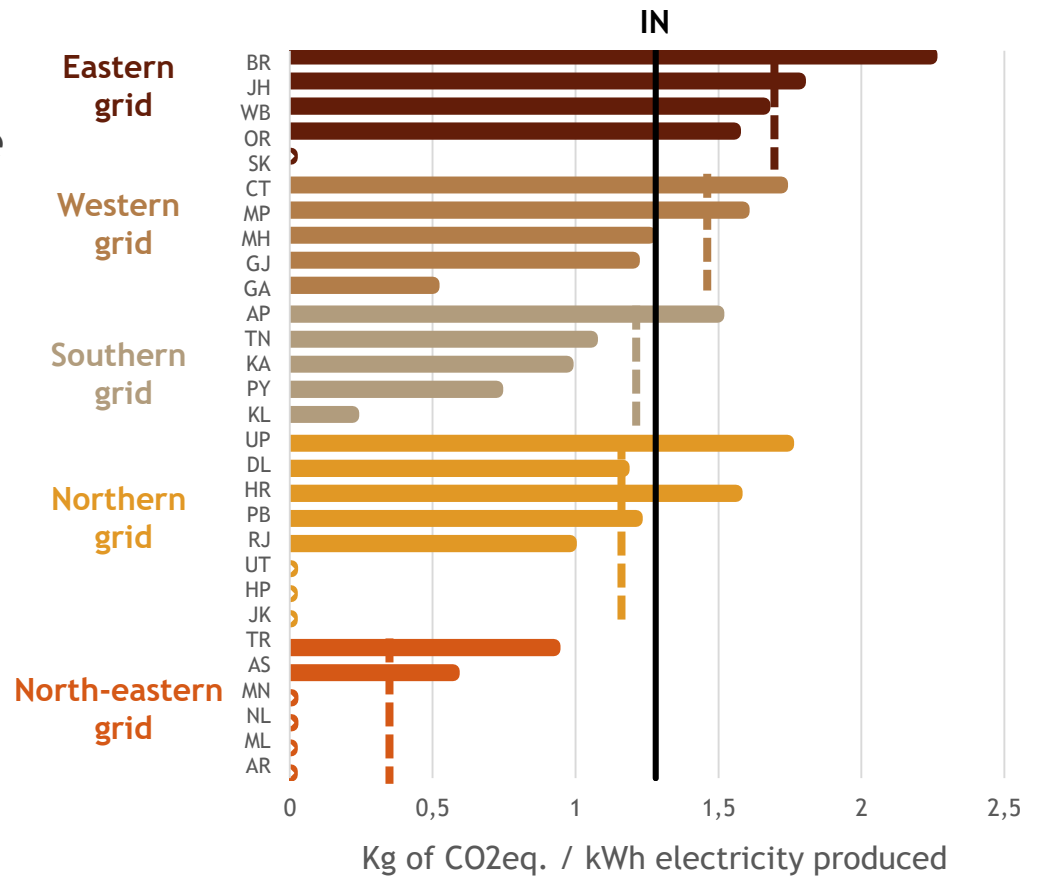
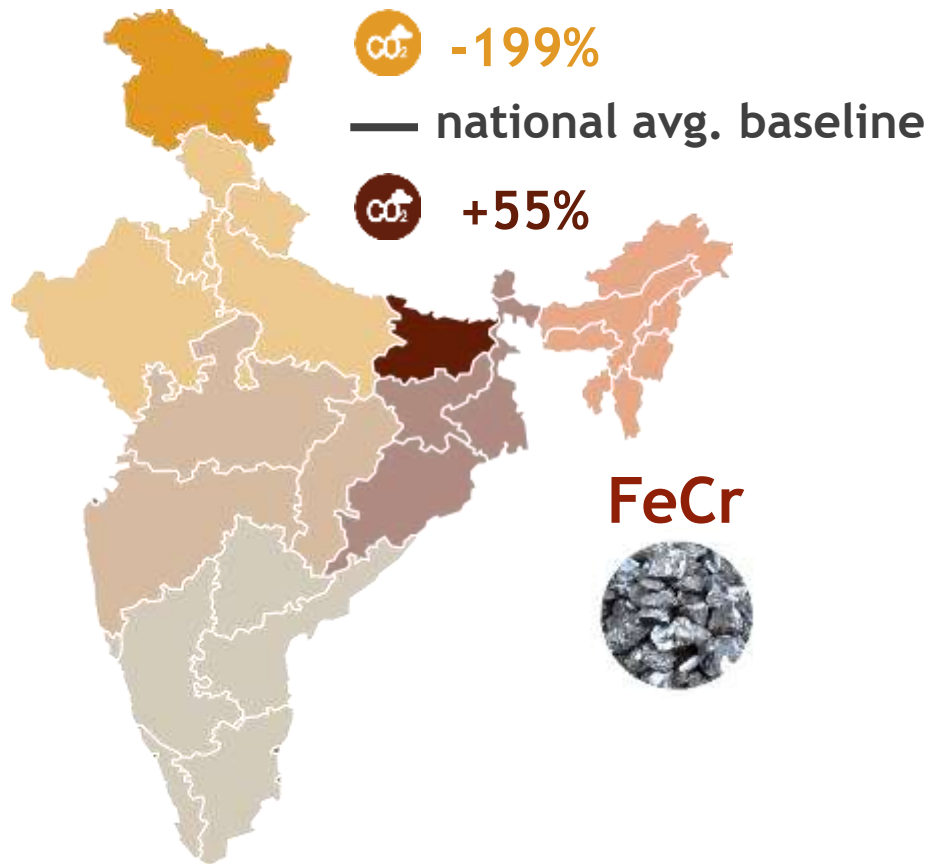
# Material, methods and results

Results: average of grids ~ national average



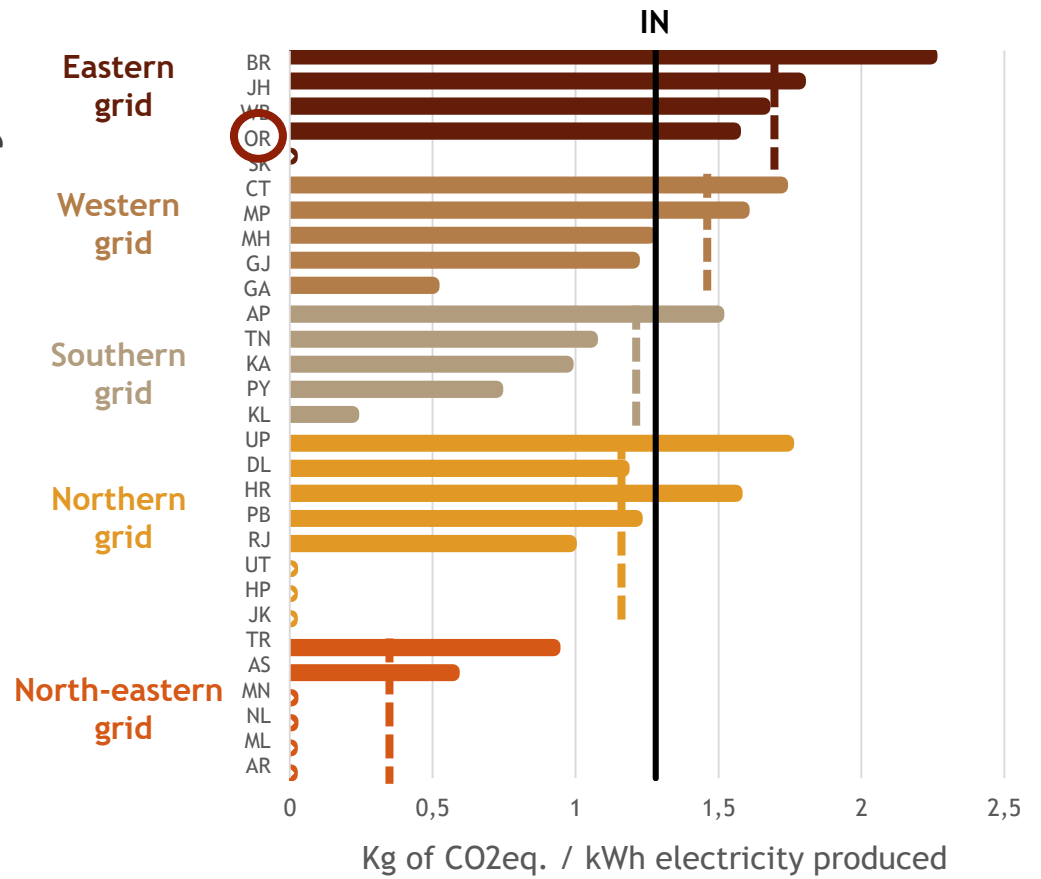
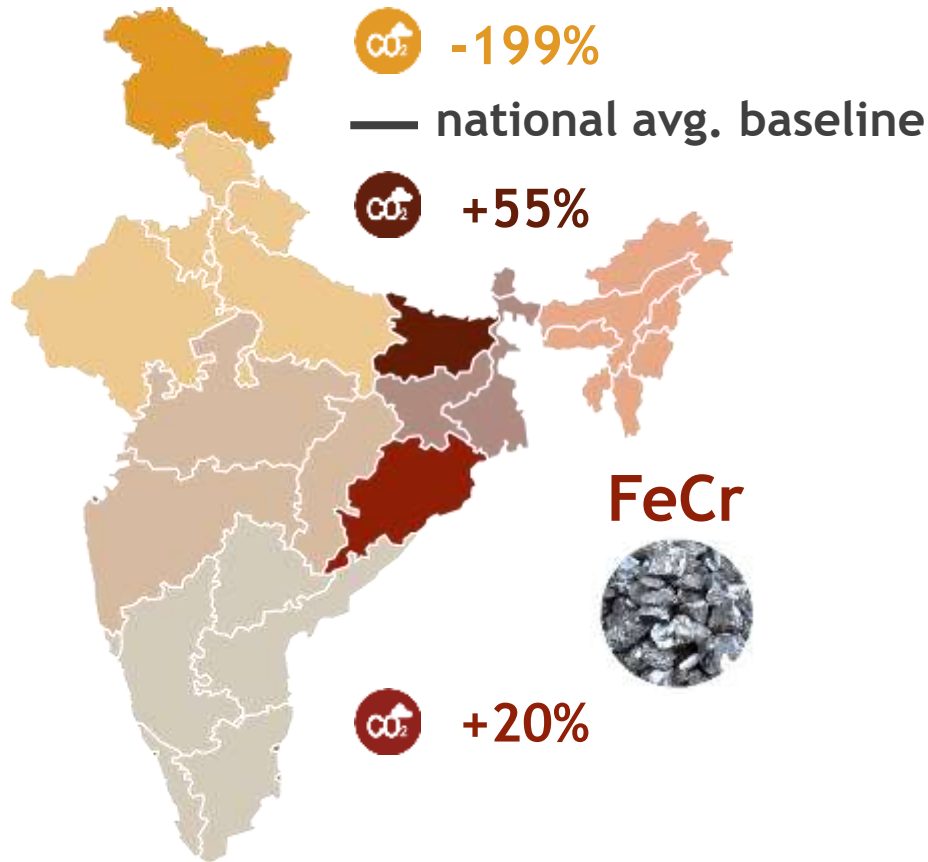
# Material, methods and results

**Results:** dramatic difference amongst states



# Material, methods and results

## Results: ferrochromium in theory and in reality



# Conclusions



- Importance of subdividing selected large states
- Further studies to identify who's next
- Further studies to identify level of resolution and key

Thank you:

Tereza Lérová,

Muhammed Noor Hossain

Lucia Valsasina

[valsasina@ecoinvent.org](mailto:valsasina@ecoinvent.org)

[www.ecoinvent.org](http://www.ecoinvent.org)

## Geographical resolution of LCI data on electricity production - the level of detail needed

Lucia Valsasina, Tereza Lérová

Industriewerk Leoben, Leobenstrasse 1, 8805 Leoben, Switzerland

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**Introduction**

Electricity production data has a role in the impact of human activities on the environment, especially on the climate system. However, the LCI data used in environmental impact assessment is often aggregated into large regions (e.g., countries, states, provinces) which may not be representative of the actual production patterns. This aggregation can lead to inaccuracies in the impact assessment, especially when the production patterns are highly heterogeneous within the region.

**Objectives**

- The objective of this study is to assess the impact of the geographical resolution of electricity production data on the environmental impact assessment.
- The study aims to identify the level of detail needed for the electricity production data to be used in LCI.

**Materials and methods**

- The study uses the 2012 electricity production data from the International Energy Agency (IEA) and the 2012 electricity production data from the European Commission (EC).
- The study uses the 2012 electricity production data from the IEA and the EC to calculate the environmental impact of electricity production at different geographical resolutions.
- The study compares the environmental impact of electricity production at different geographical resolutions to identify the level of detail needed for the electricity production data to be used in LCI.

**Results and discussion**

The results of the study show that the environmental impact of electricity production is significantly higher at the national level than at the regional level. This is due to the aggregation of the electricity production data into large regions, which leads to inaccuracies in the impact assessment.

**Conclusion**

The study concludes that the level of detail needed for the electricity production data to be used in LCI is the regional level. This is because the regional level provides a more accurate representation of the actual production patterns, which leads to a more accurate impact assessment.

**ETH** **IFU** **PEI** **Agroscope** **EMPA**