



From PhD to Apps! Session

Life Cycle Inventory of the Electricity Production and Distribution in Chile over 1995-2015: The evidences of the time effect

Mabel Vega, Claudio Zaror
Chemical Engineer Department
University of Concepcion, Chile

Luxembourg, 8th Life Cycle Management Conference, LCM 2017

How could my work be used/transferred to users?



Objective: To unveil the effects of the temporal evolution over the environmental performance of the electricity generation in Chile.

Driven forces: to account with realistic, comprehensive and reliable environmental burden of the electricity generation in Chile.

How could my work be used/transferred to users?



Electricity Generation Systems in Chile



Pop. $1,1 \times 10^6$

Pop. $15,9 \times 10^6$

Pop. $0,25 \times 10^6$

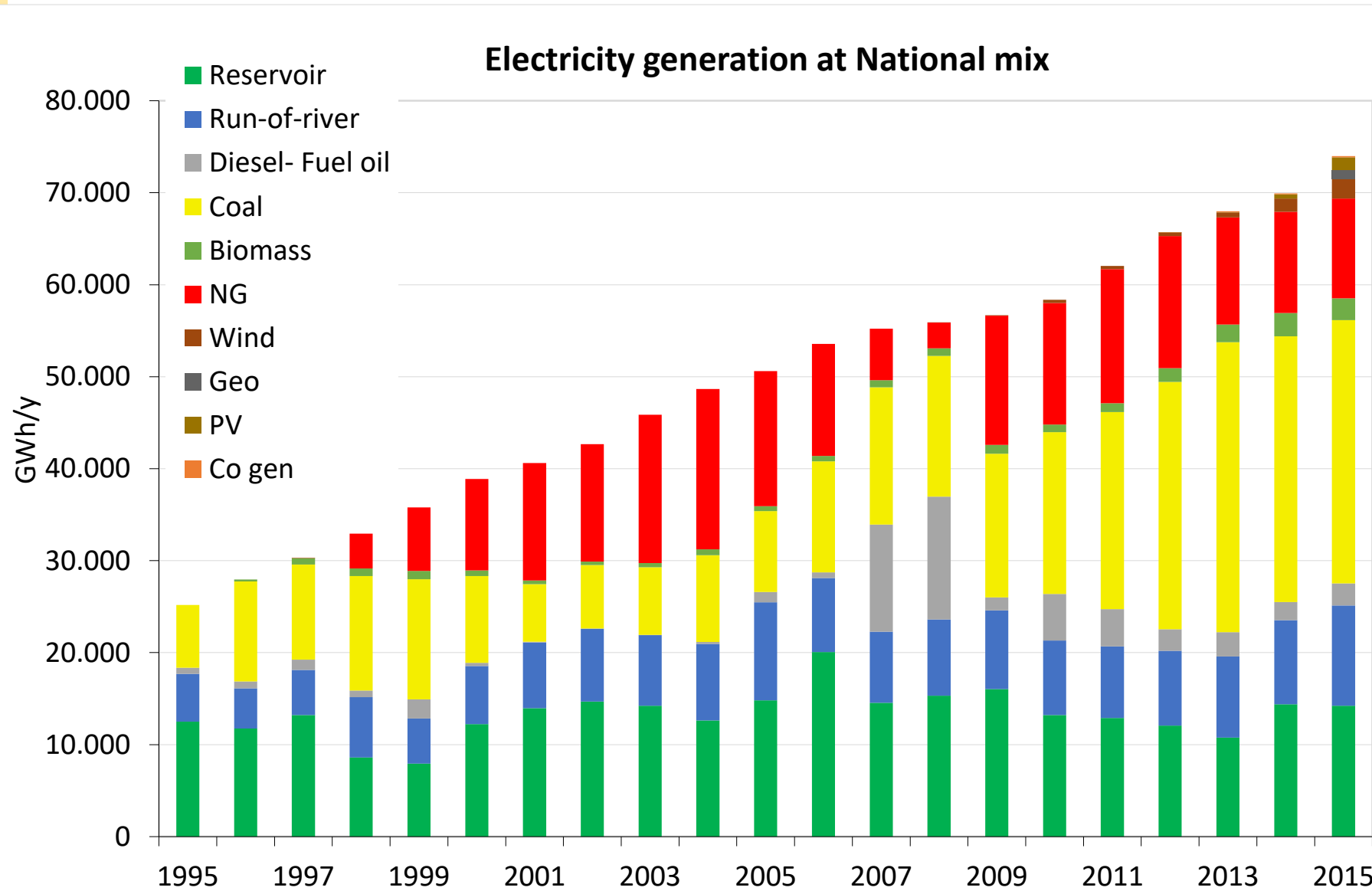
Independent Grids	Installed Power Capacity	Primary Energy Source
Northern SING	4.15 GW	96% thermo 0.4% Hydro 4% PV+ wind+ cogen
Central SIC	16.31 GW	46% thermo 45.4% hydro 11.3% PV+wind+cogen
Others	0.16 GW	86% thermo 12% hydro 1% wind
Total	20.6 GW	

Hydroelectricity @ 2015:

34% of total Electricity Generation Capacity



Electricity Generation Systems in Chile



Condition to operate:

1. Availability of technology/energy source
2. Economic Operation



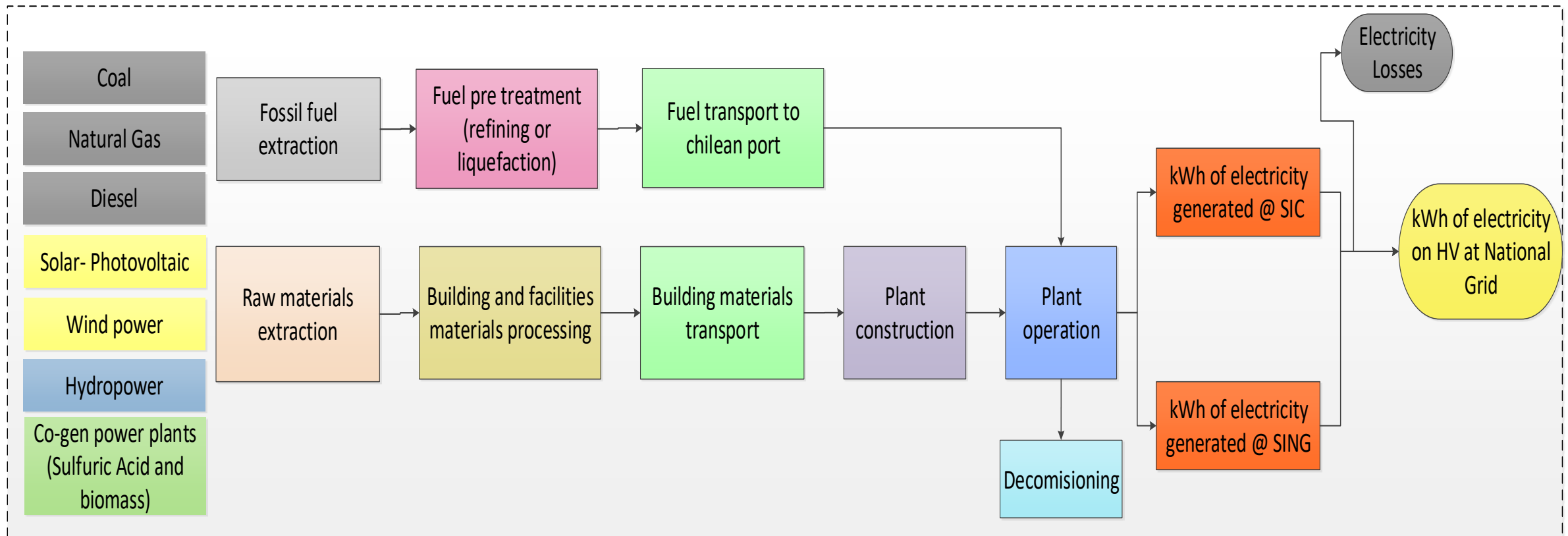
Dynamic electricity matrix



Methodology

ISO 14.040-44 guidelines
Cradle to gate approach
Yearly primary data
99% technologies covered
100% of the electricity production

System boundaries

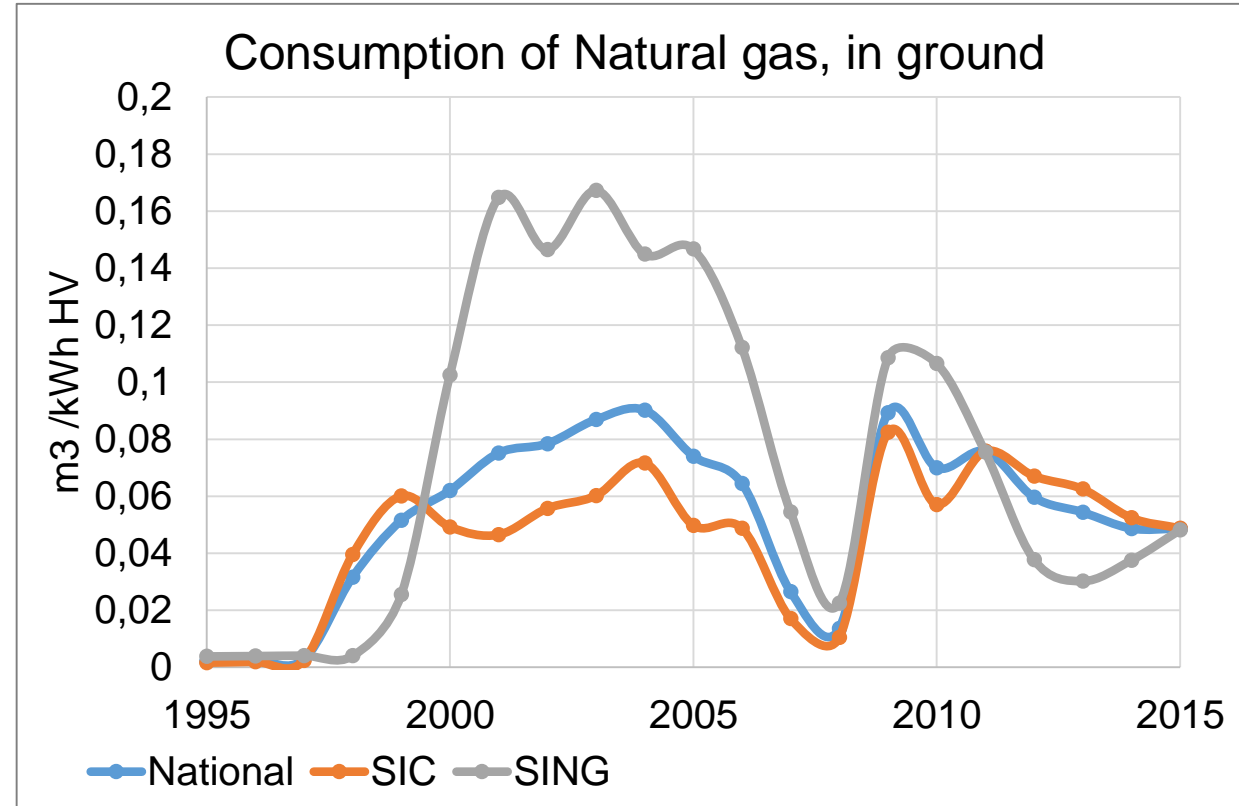
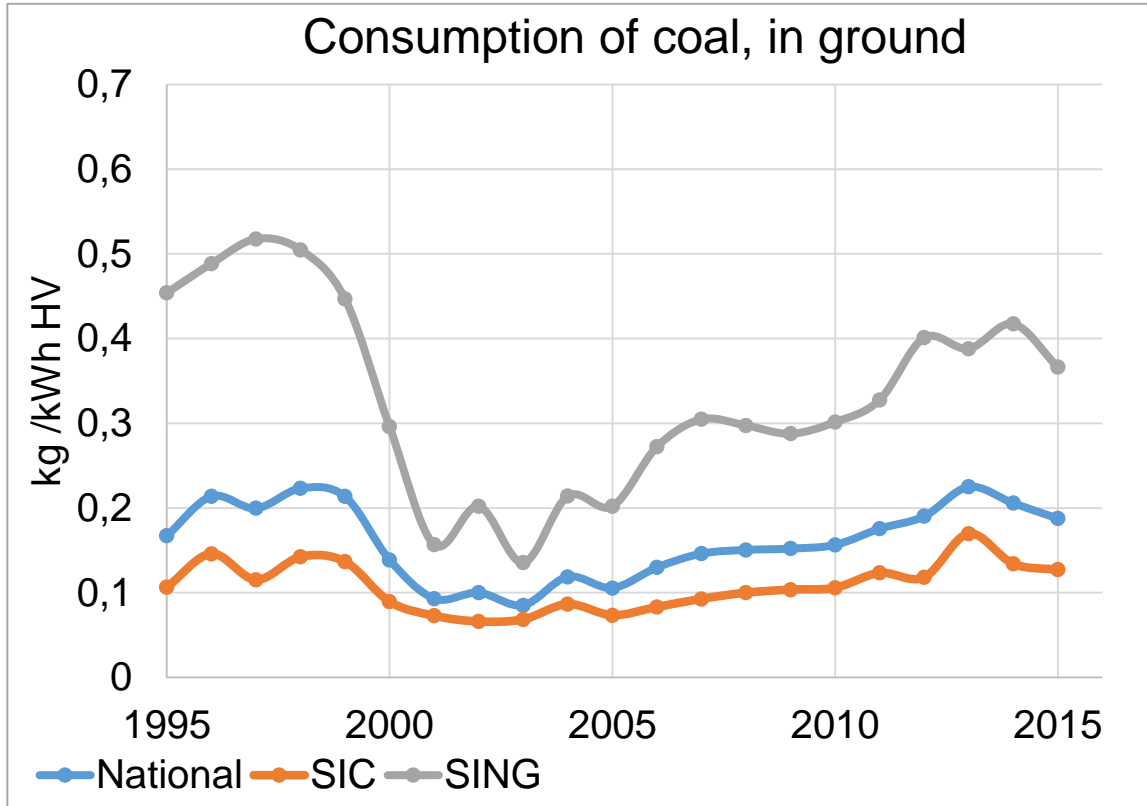


How could my work be used/transferred to users?



Results: LCI of Electricity production in Chile

Raw materials

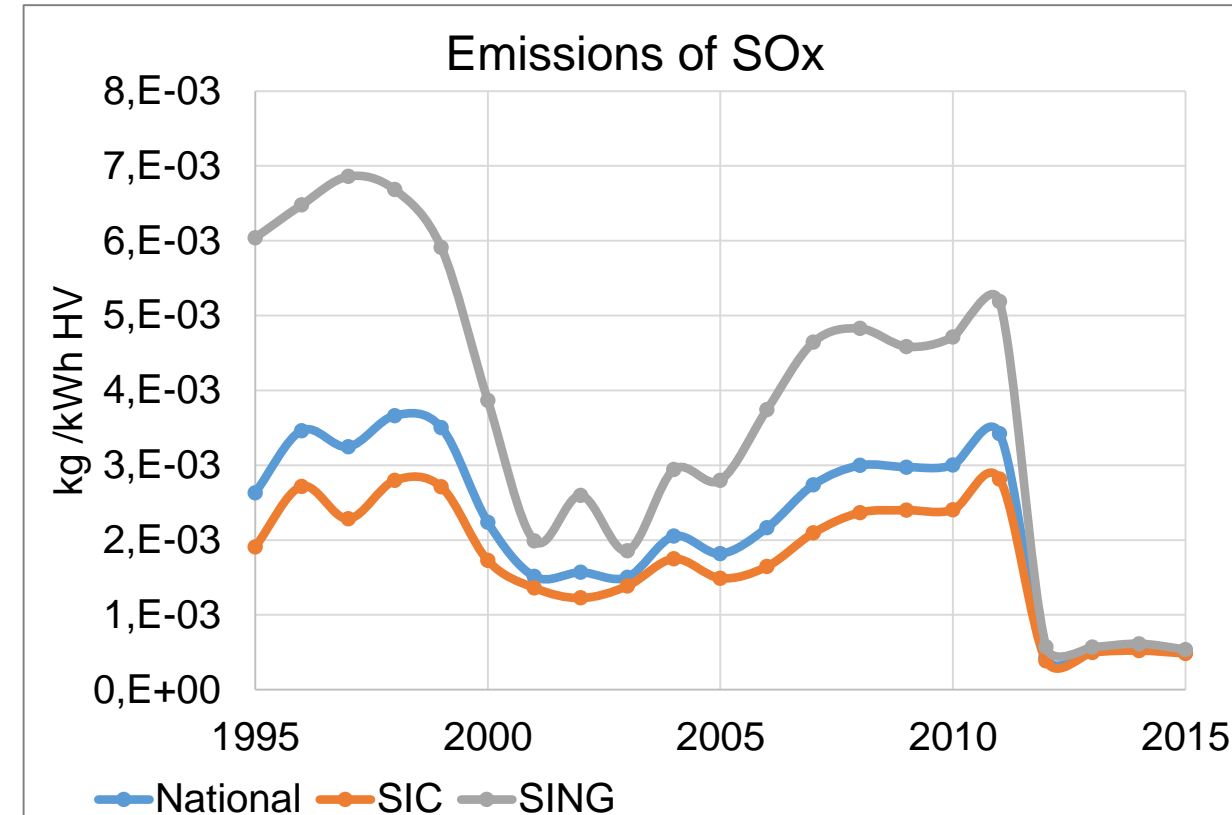
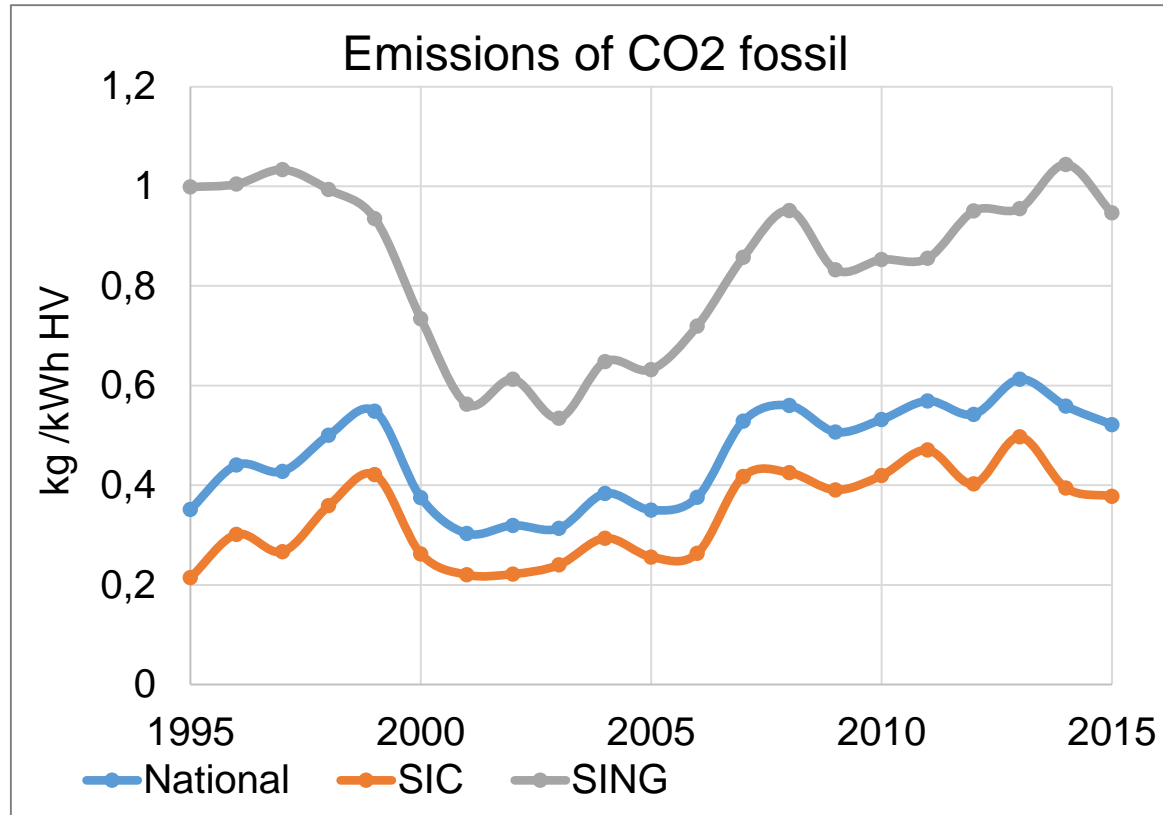


How could my work be used/transferred to users?



Results: LCI of Electricity production in Chile

Air emissions

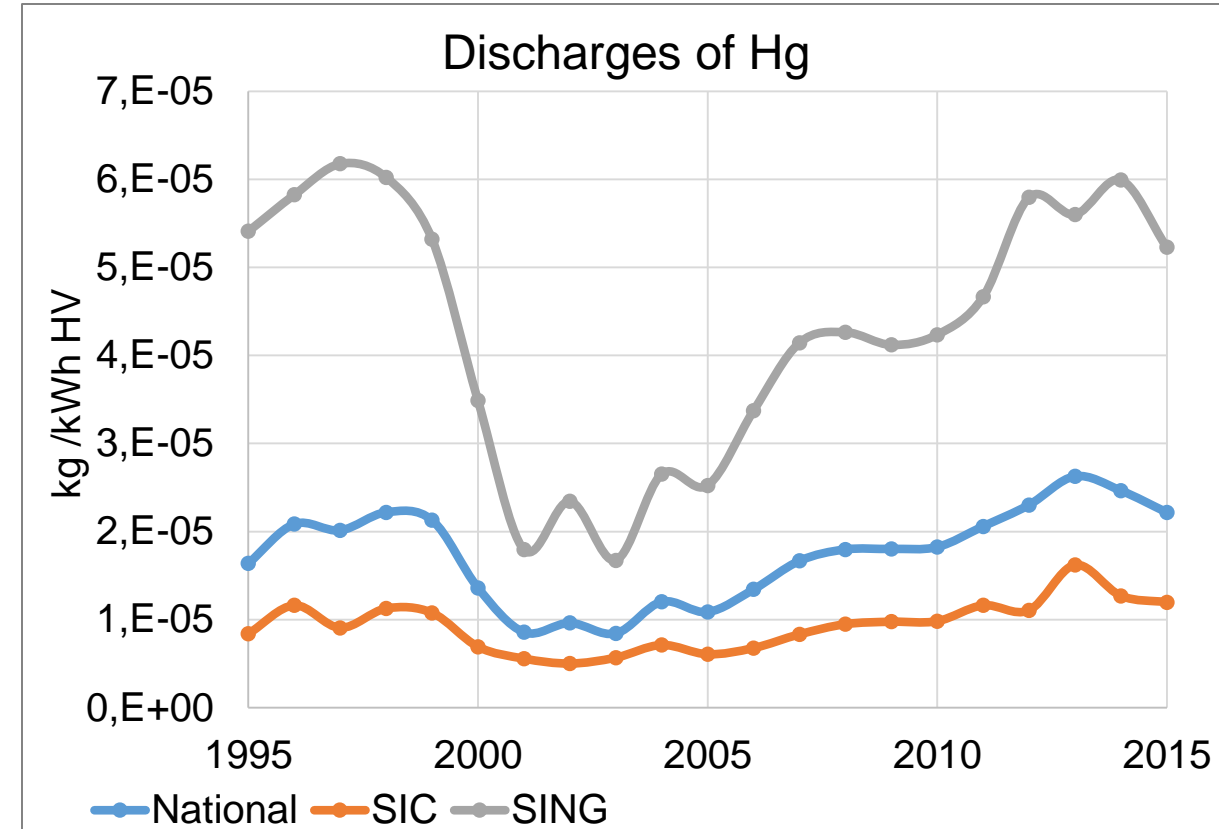
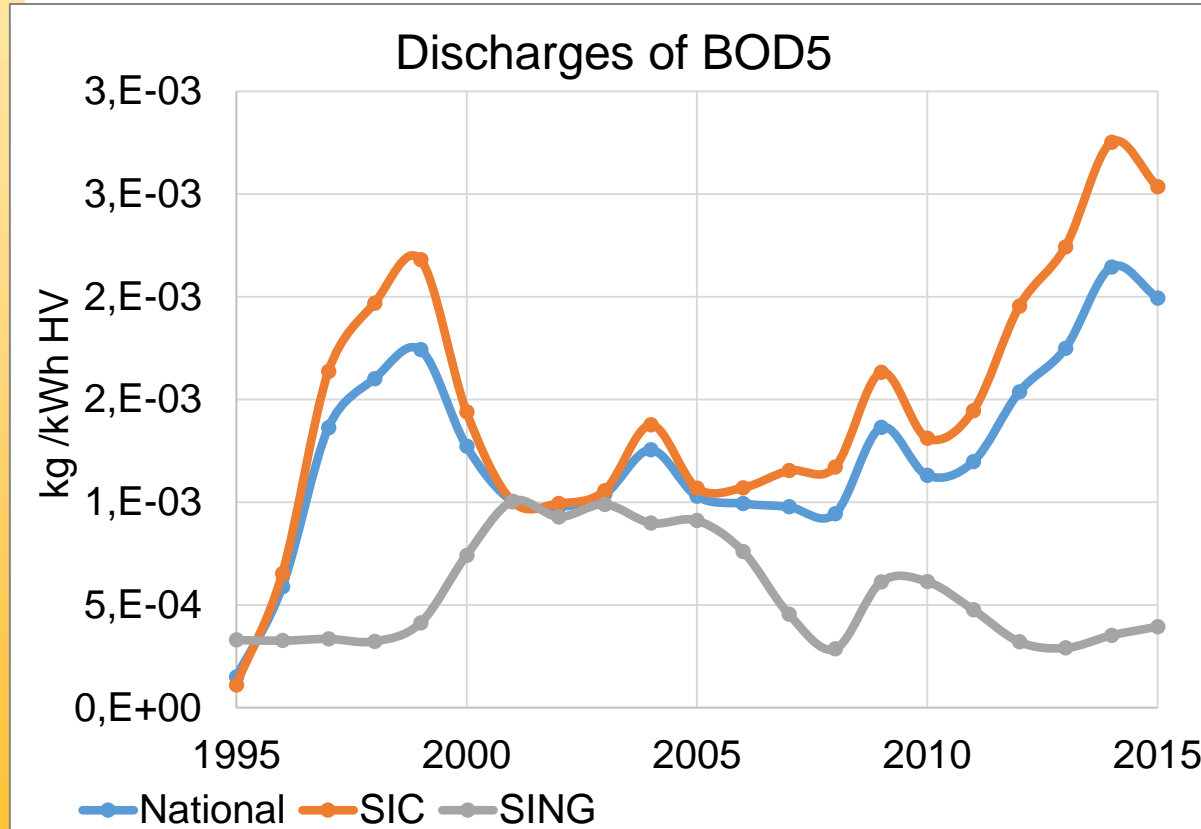


How could my work be used/transferred to users?



Results: LCI of Electricity production in Chile

Water discharges

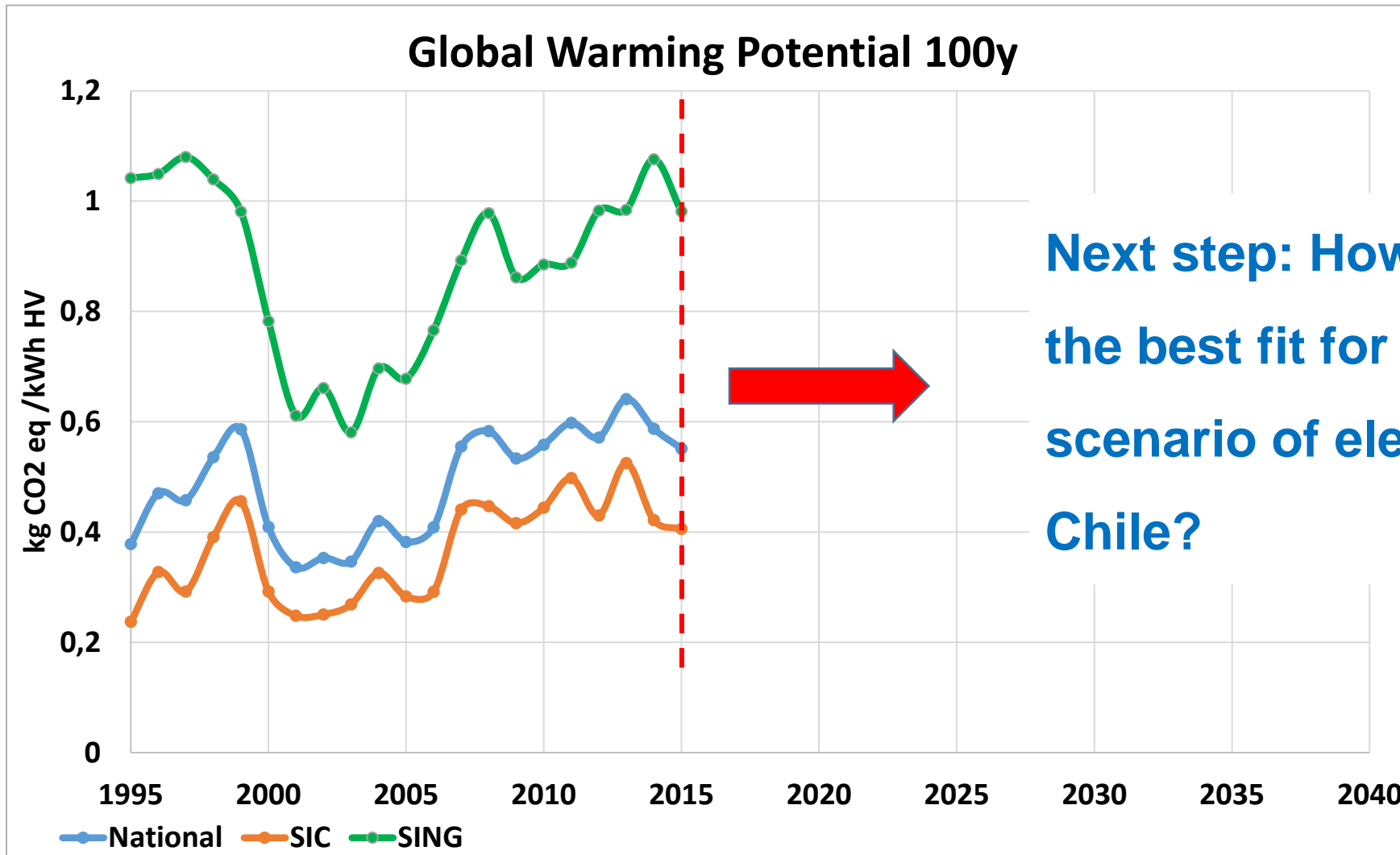


How could my work be used/transferred to users?



Perspectives: LCI of Electricity production in Chile

How could my work be used/transferred to users?



Next step: How we can get the best fit for future scenario of electricity in Chile?



Thanks for your attention!

mabvega@udec.cl