

# Cross Border **APEC** Lesson Study Energy Efficiency

Chile - Perú

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# Lima – Santiago (august 1)

8th graders



# Santiago – Lima (august 31)

8th graders

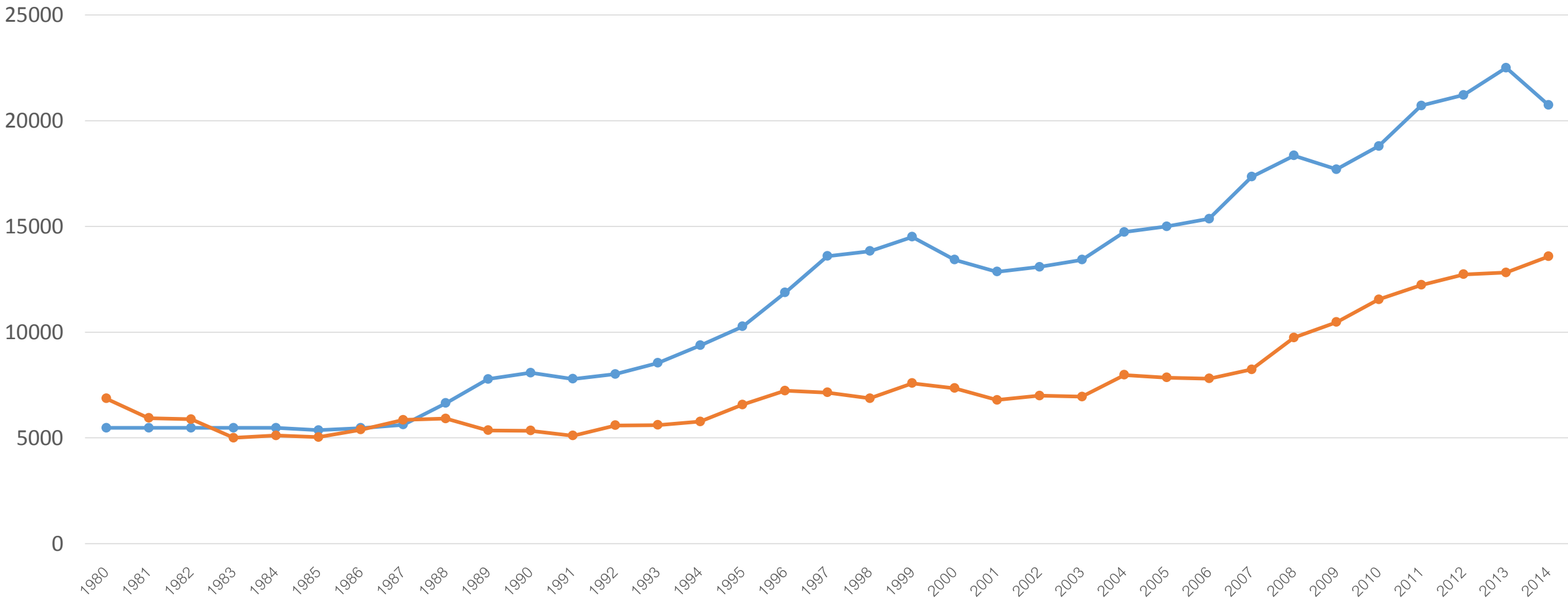


# Energy Efficiency and Emission

- Use APEC energy data bases (Chile – Perú)
- Need to compare countries through per capita estimates and not only total amounts
- Need to consider population and population growth
- CO2 concentration measurement through respiration in a very small closed volume
- Modeling of effect socio economic development on CO2 concentration by jumping leading to raise in temperature and CO2 concentration, difficulty to breath
- Modeling of earth using a bedroom, and CO2 concentration as air quality after people sleeping during a whole night with closed windows and door
- Estimate energy consumption per capita, total energy and total CO2 emission if all countries reaches the socioeconomic development of developed economies.
- Test a Cross Border lesson using APEC data bases and sharing views with class from other country
- Predictions on the near future
- ALL IN 45 MINUTES

# Question 1: In which country the emission of CO2 grow faster, and what could cause it? cause it? Explain your answer

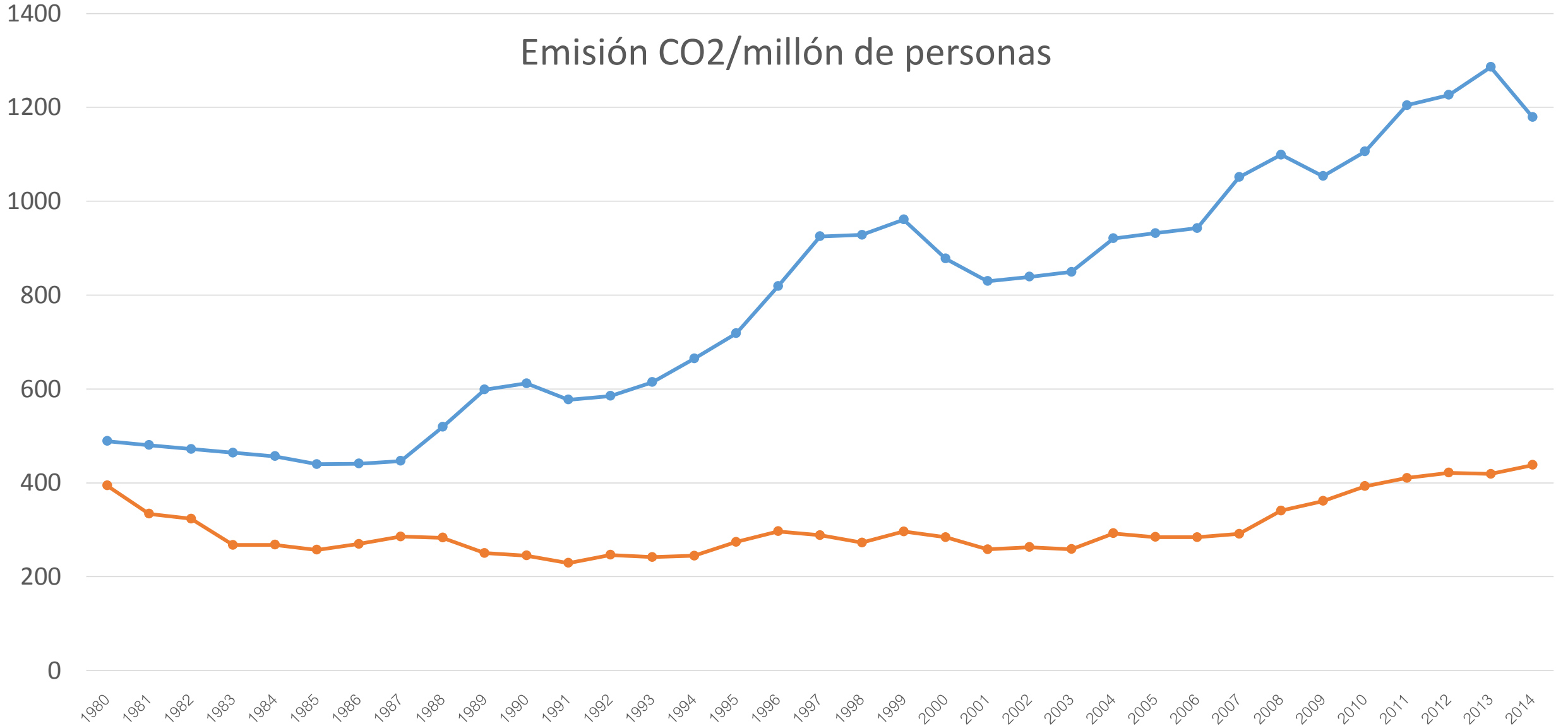
Emisión total de CO2



# Question 2: In which country the emission of CO2 per capita grow faster, and what could cause it? ?

## Explica cómo llegaste a tu respuesta

Emisión CO2/millón de personas



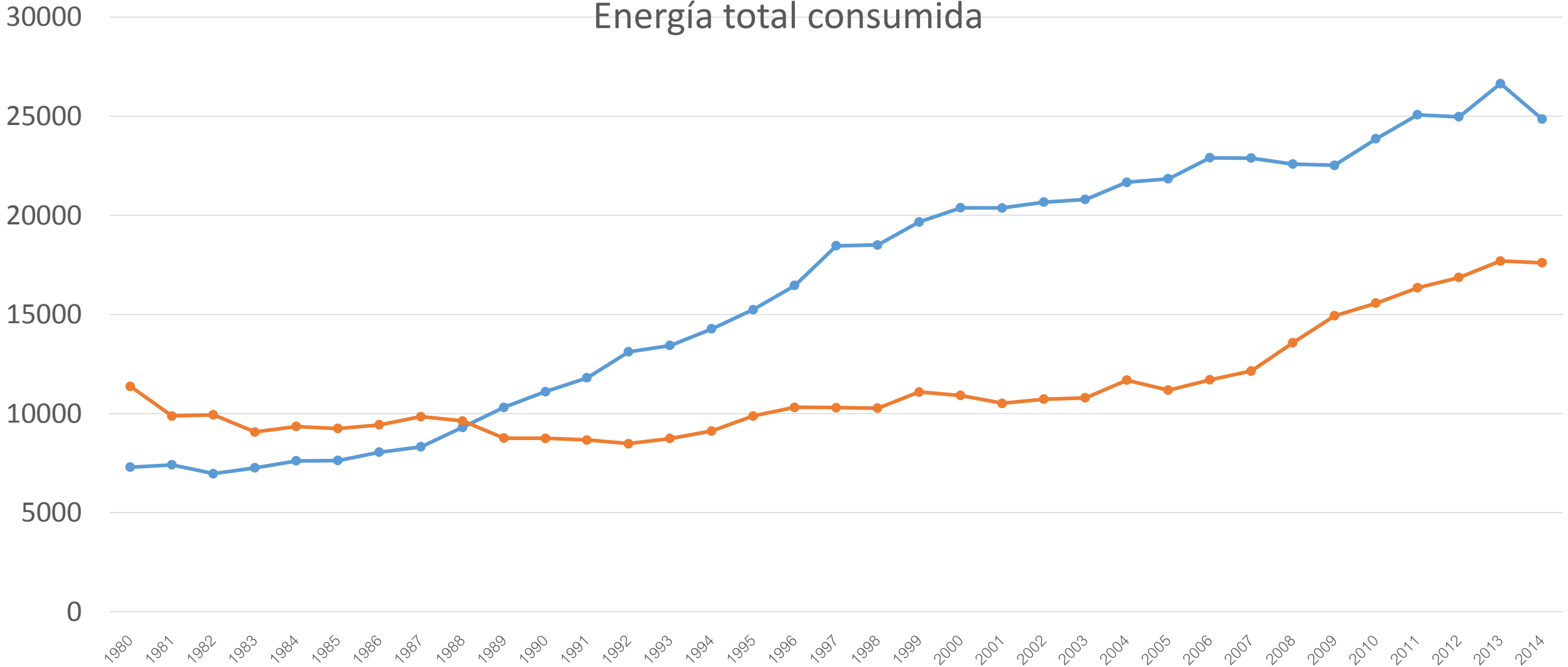
Question 3: Based on the previous graphs,

In which country the population has grown faster?

Explica con tus propias palabras tu razonamiento

# Total energy consumed

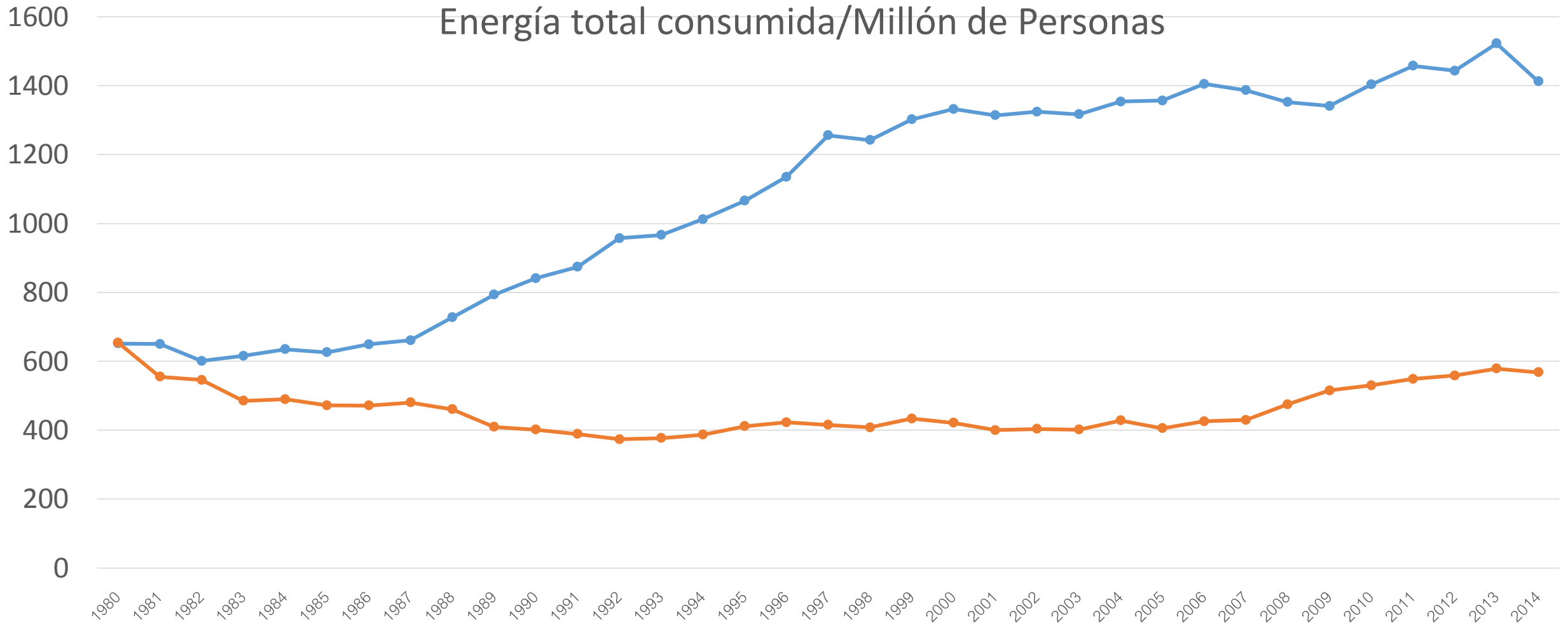
Energía total consumida





# Question 4: In which country the energy consumed grow faster, and what could cause it?

Explain your answer

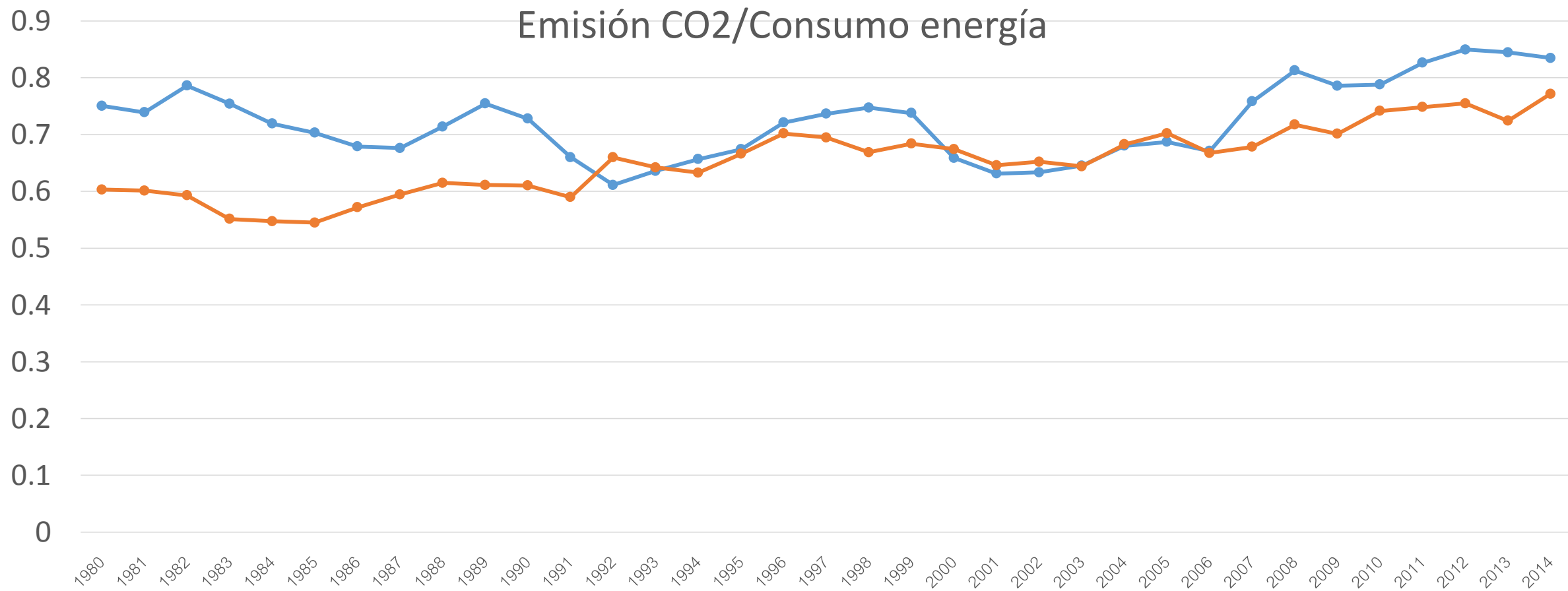


Question 5: Based on the previous graphs,

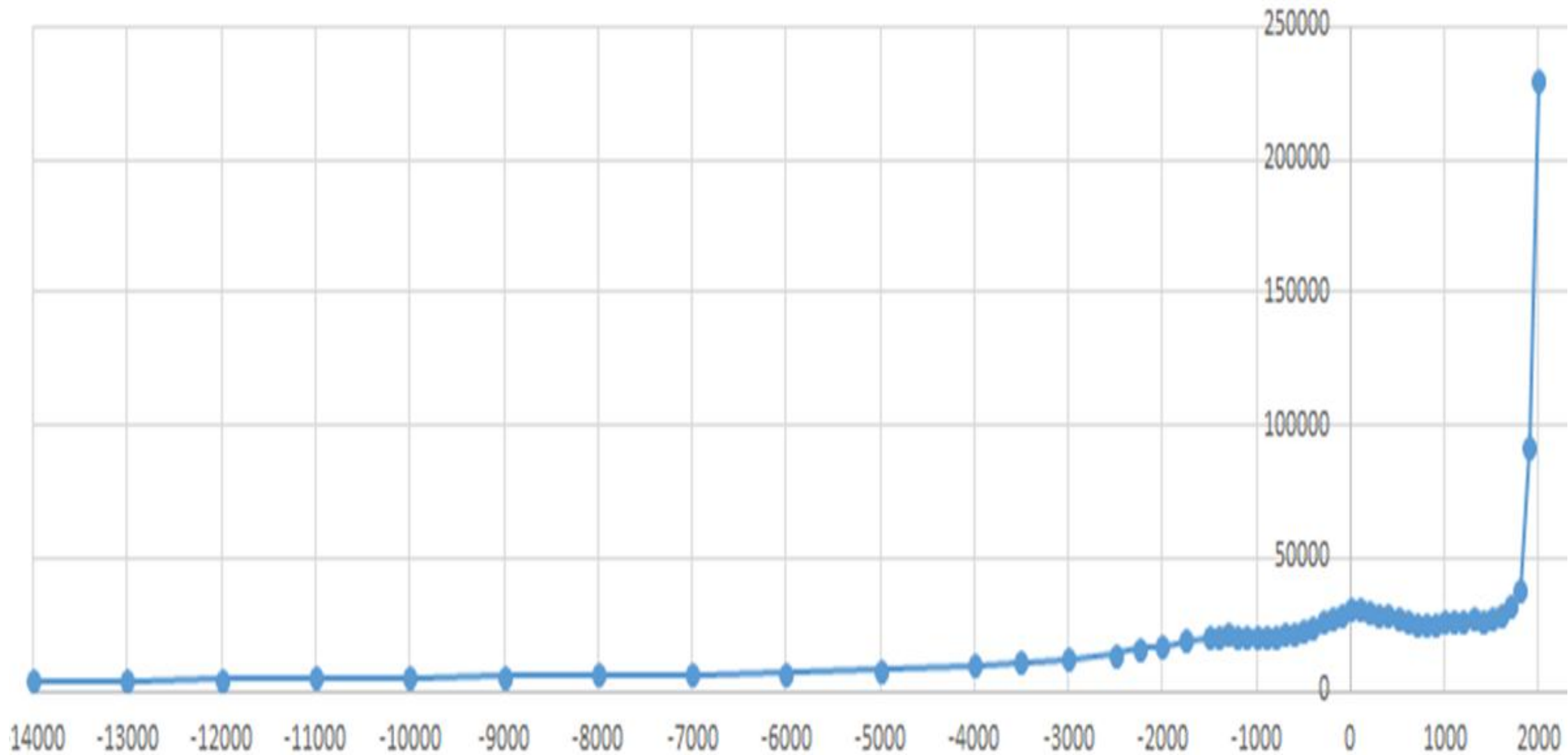
Compare the emission of CO<sub>2</sub> per consumed unit  
of energy

Explain your reasoning

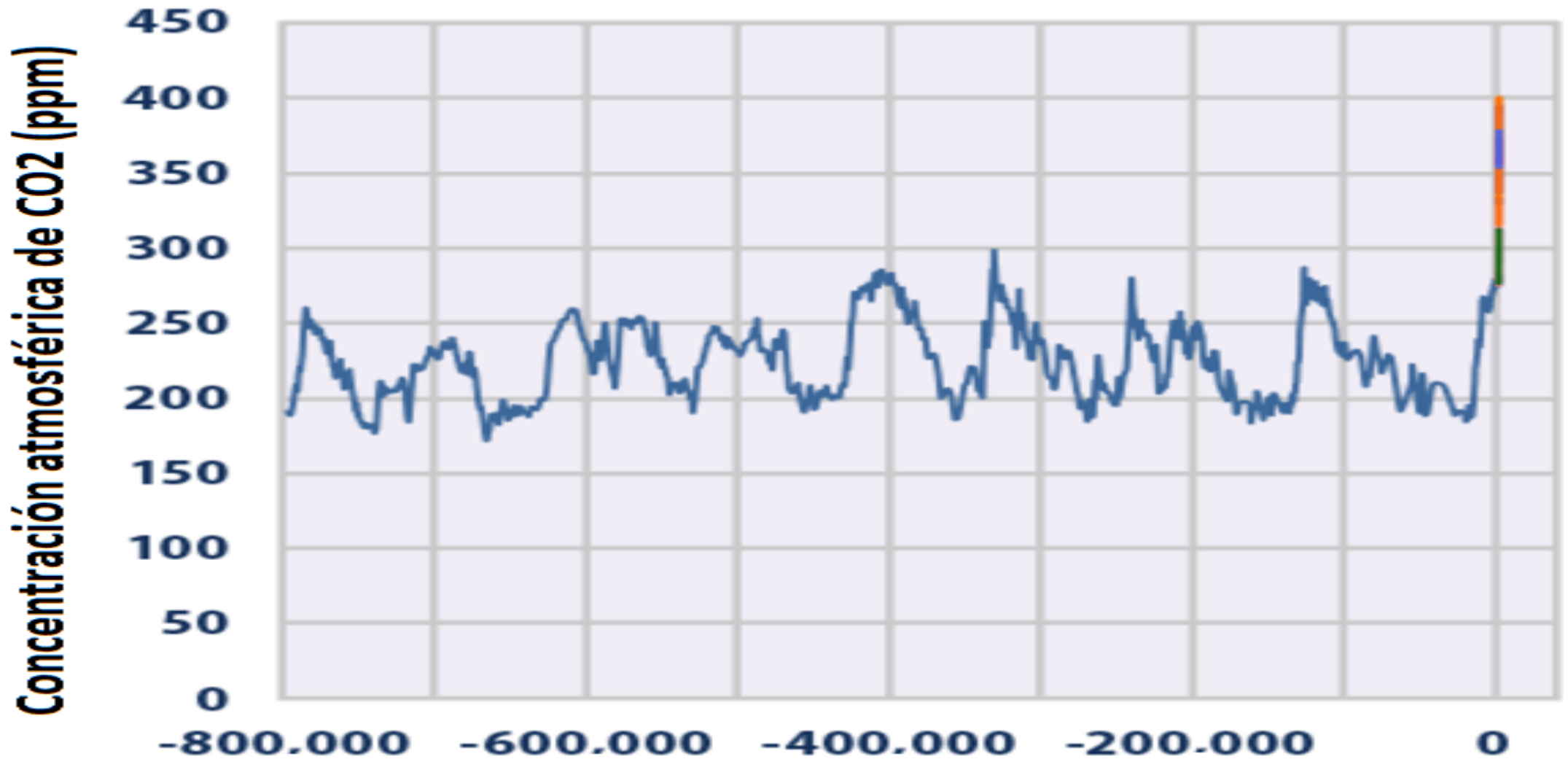
# Emission of CO2 por consumed unit of energy



# Consumed energy per capita



# CO2 concentration in the air



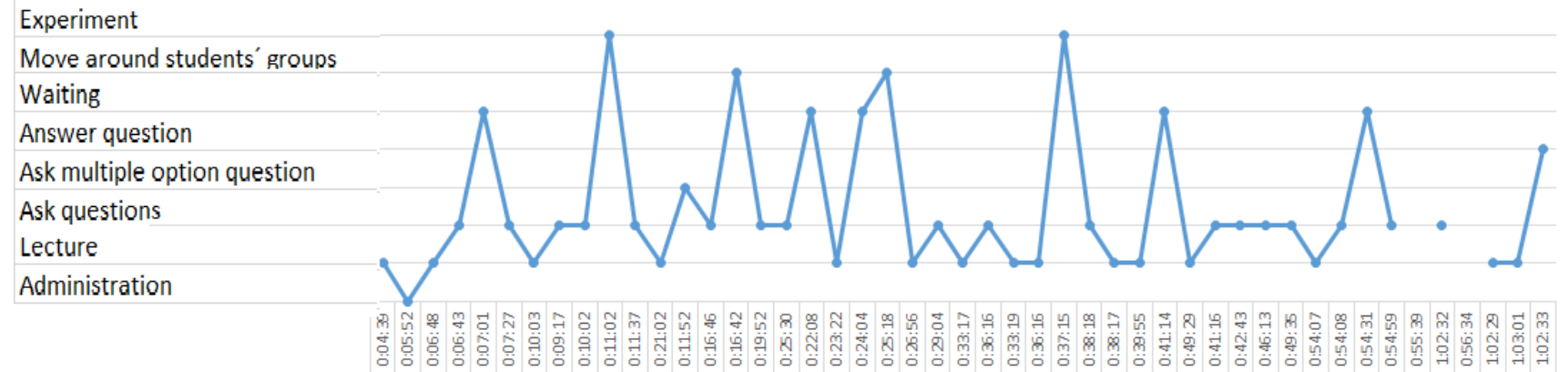
Question 6: If every person of the world consume as much energy as in a developed country

then

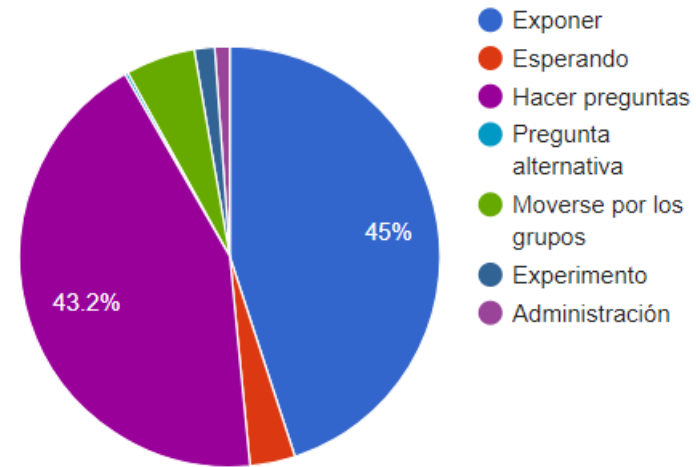
How much more CO<sub>2</sub> emission would be, what environmental implications would mean, and what do you propose to solve it?

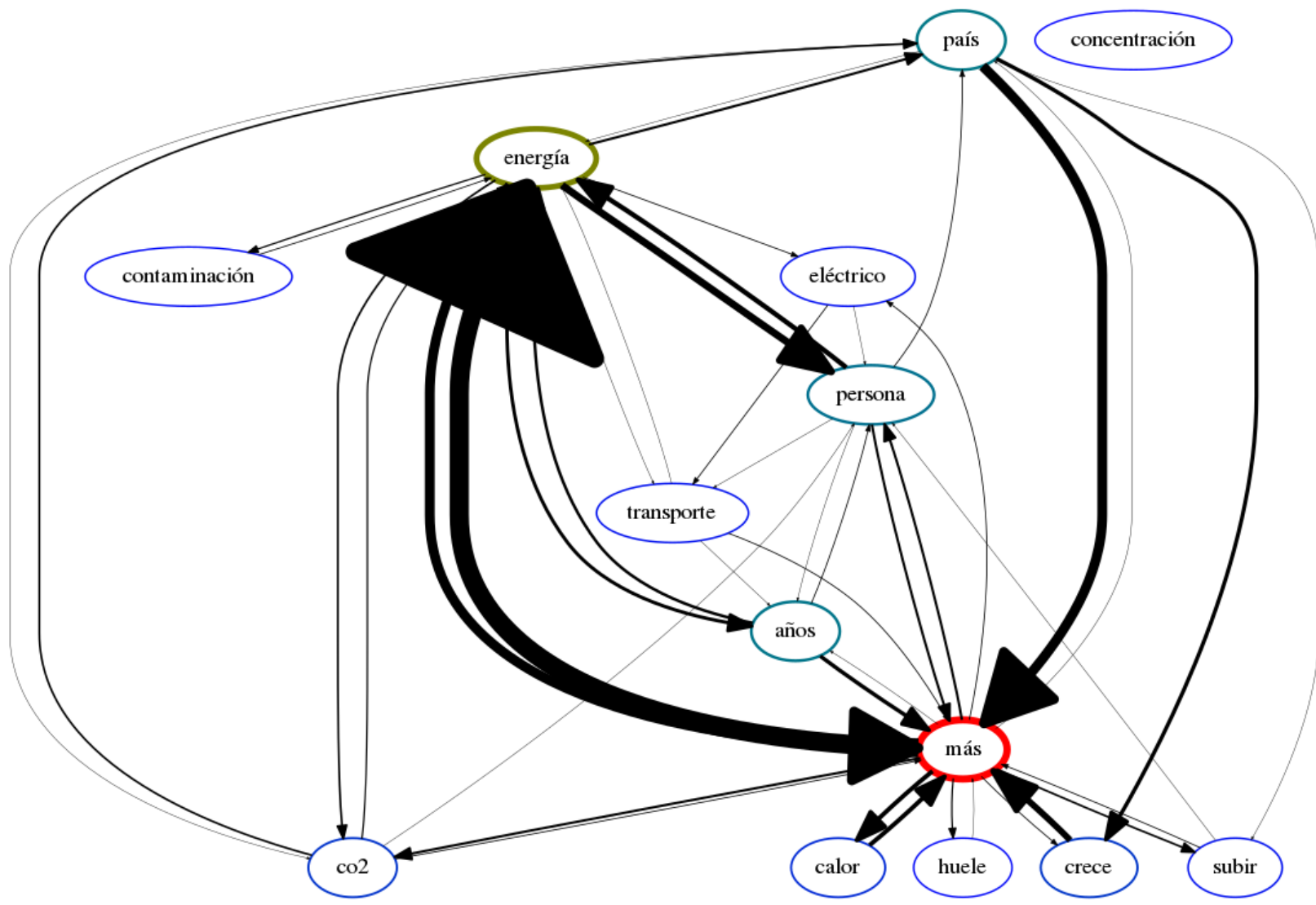
Explain your reasoning and do peer review

Start	End	Duration	Teacher action
0:01:14	0:04:39	0:03:25	Lecture
0:04:39	0:05:52	0:01:13	Administration
0:05:51	0:06:48	0:00:57	Lecture
0:05:53	0:06:43	0:00:49	Ask questions
0:06:48	0:07:01	0:00:12	Waiting
0:07:00	0:07:27	0:00:27	Ask questions
0:07:27	0:10:03	0:02:35	Lecture
0:07:28	0:09:17	0:01:49	Ask questions
0:09:44	0:10:02	0:00:18	Ask questions
0:10:21	0:11:02	0:00:41	Experiment
0:11:02	0:11:37	0:00:34	Ask questions
0:11:04	0:21:02	0:09:57	Lecture
0:11:36	0:11:52	0:00:16	Ask multiple option question
0:11:50	0:16:46	0:04:56	Ask questions
0:12:14	0:16:42	0:04:28	Move around students' groups
0:18:02	0:19:52	0:01:50	Ask questions
0:20:17	0:25:30	0:05:13	Ask questions
0:21:02	0:22:08	0:01:06	Waiting
0:22:09	0:23:22	0:01:13	Lecture
0:23:23	0:24:04	0:00:41	Waiting
0:24:07	0:25:18	0:01:10	Move around students' groups
0:25:29	0:26:56	0:01:26	Lecture
0:26:56	0:29:04	0:02:08	Ask questions
0:28:07	0:33:17	0:05:09	Lecture
0:29:59	0:36:16	0:06:17	Ask questions
0:33:18	0:33:19	0:00:01	Lecture
0:34:44	0:36:16	0:01:31	Lecture
0:36:16	0:37:15	0:00:58	Experiment
0:36:27	0:38:18	0:01:50	Ask questions
0:37:19	0:38:17	0:00:58	Lecture
0:38:49	0:39:55	0:01:06	Lecture
0:39:55	0:41:14	0:01:18	Waiting
0:41:13	0:49:29	0:08:15	Lecture
0:41:14	0:41:16	0:00:02	Ask questions
0:41:47	0:42:43	0:00:55	Ask questions
0:42:43	0:46:13	0:03:29	Ask questions
0:46:30	0:49:35	0:03:04	Ask questions
0:49:35	0:54:07	0:04:31	Lecture
0:49:36	0:54:08	0:04:31	Ask questions
0:54:07	0:54:31	0:00:23	Waiting
0:54:31	0:54:59	0:00:27	Ask questions
0:54:57	0:55:39	0:00:42	
0:55:39	1:02:32	0:06:53	Ask questions
0:55:41	0:56:34	0:00:52	
0:56:37	1:02:29	0:05:52	Lecture
1:02:32	1:03:01	0:00:28	Lecture
1:02:32	1:02:33	0:00:00	Answer question



Profesor







# Conclusions

- Use APEC energy data bases (Chile – Perú)
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