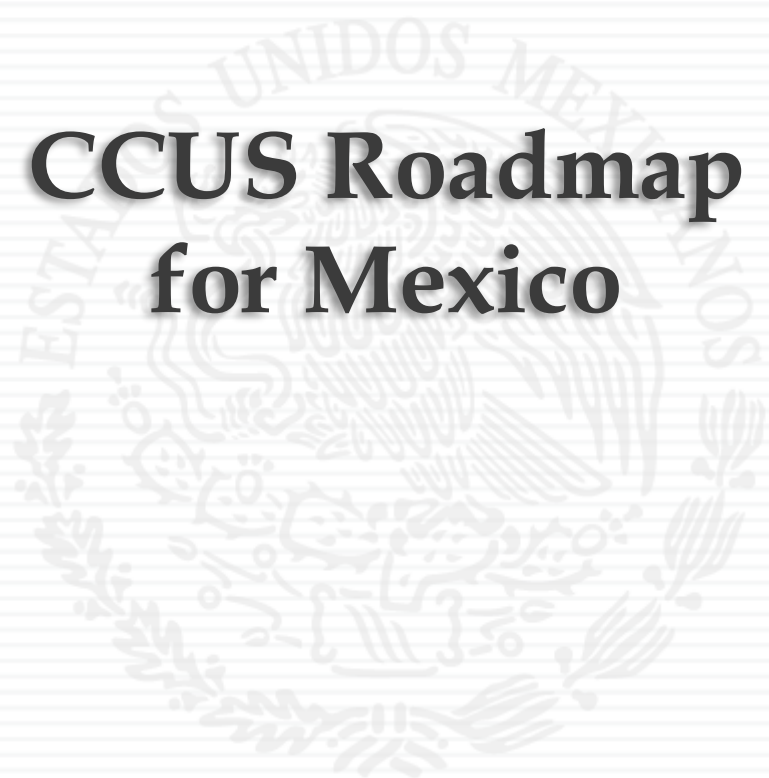


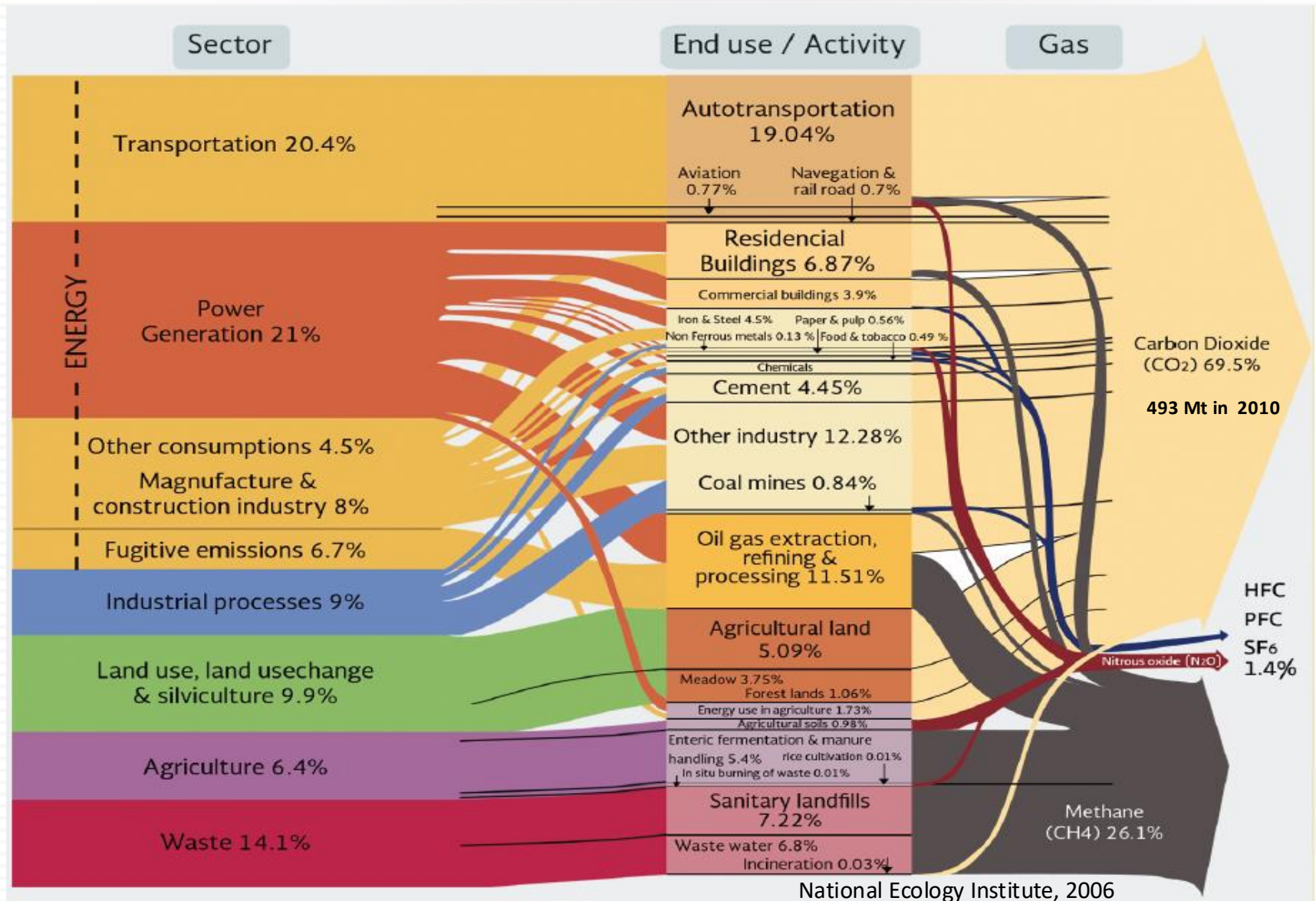
CCUS Roadmap for Mexico



September 2014

GHG in Mexico

(748 Mt CO₂e in 2010)



MAJOR STATIONARY SOURCES EMITTING GHG IN MEXICO

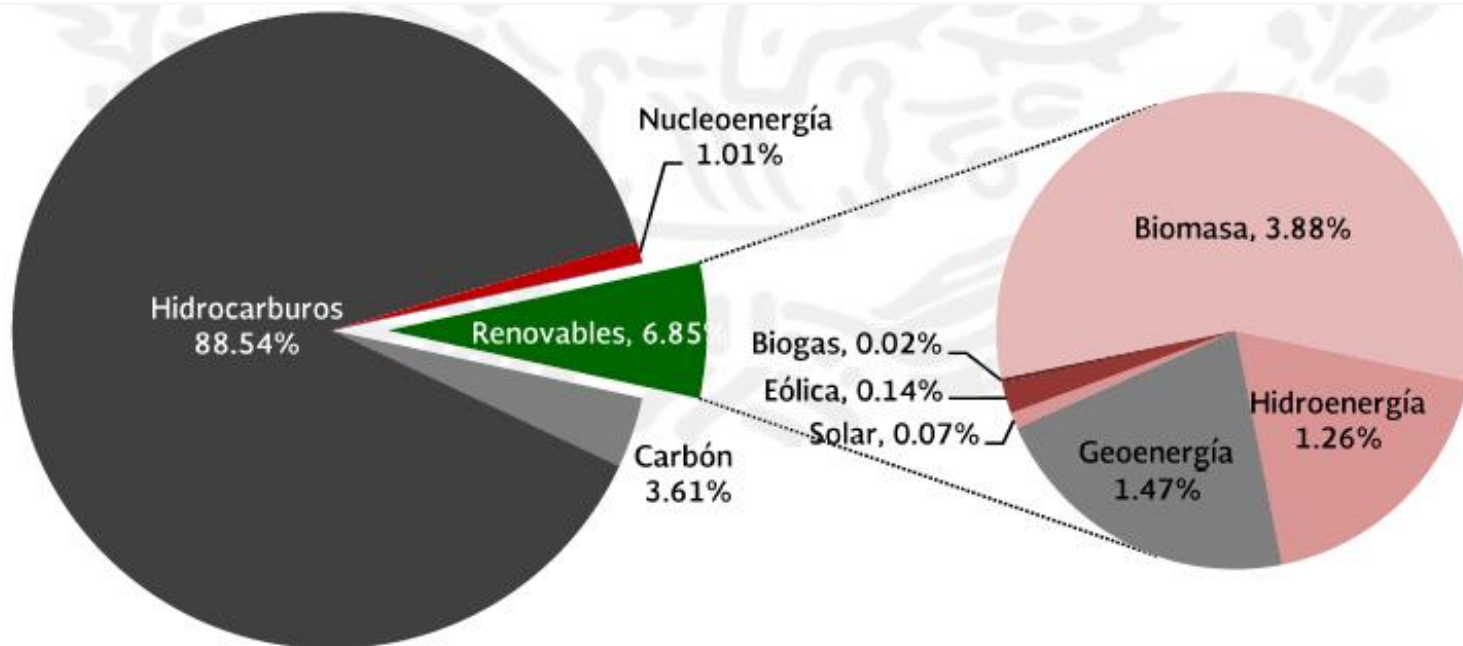
258 Mt CO₂ in 2010 by 196 major sources of a total of 1935



	2011	2012	Variación	Estructura
			porcentual (%)	porcentual (%)
			2012/2011	2012
Total	9,292.51	9,073.83	-2.35	100
Carbón	392.28	327.69	-16.47	3.61
Hidrocarburos	8,152.10	8,033.58	-1.45	88.54
Petróleo	5,933.53	5,918.86	-0.25	65.23
Condensados	100.38	87.69	-12.64	0.97
Gas natural	2,118.19	2,027.03	-4.30	22.34
Nucleoenergía	106.39	91.32	-14.17	1.01
Renovables ¹	641.73	621.24	-3.19	6.85

Primary Energy Production (PJ)

(Balance Nacional de Energía, 2013)

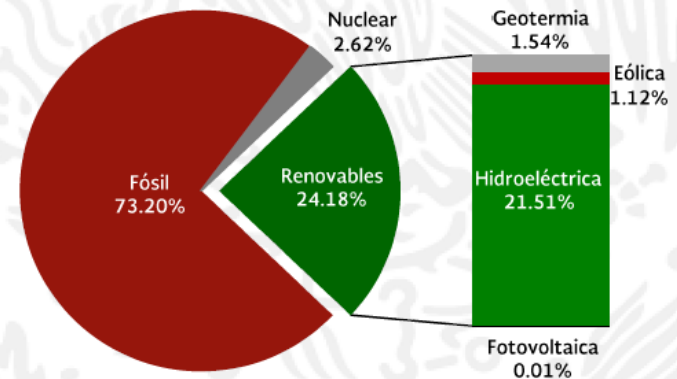


Installed Capacity and Electricity Generation

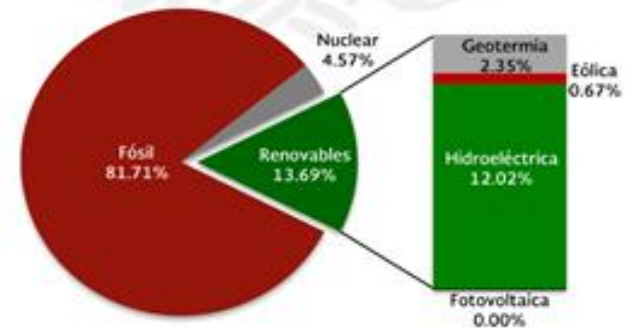
Tipo de Central	Capacidad (MW)	Generación (GWh)
Vapor	11,698.60	47,166.78
Ciclo combinado	19,760.19	126,583.38
Turbogas	2,064.41	3,842.15
Combustión interna	259.22	1,498.99
Dual	2,778.36	15,583.72
Carboeléctrica	2,600.00	16,044.40
Geotermoeléctrica	1,400.00	6,069.72
Nucleoeléctrica	823.40	11,799.87
Eólica	597.60	1,813.89
Hidroeléctrica	11,508.77	27,444.13
Fotovoltaica	6.00	13.09
Total	53,496.55	257,860.12

Balance Nacional de Energía 2013, SENER

Installed Capacity

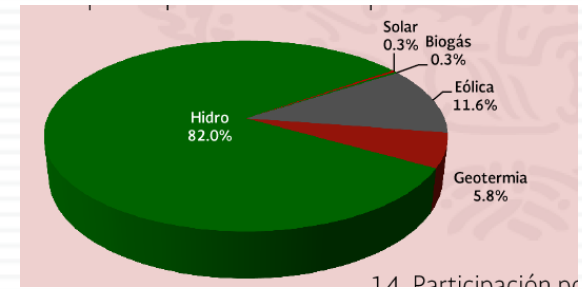


Electricity Generation

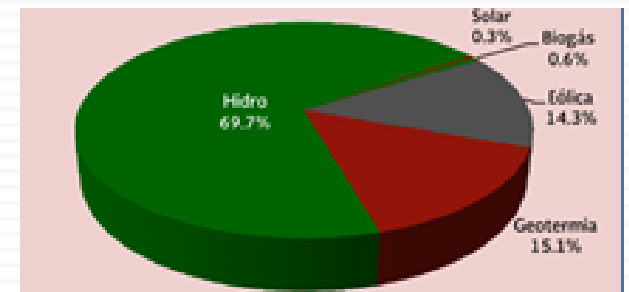


Renewable Installed and Generation

Renewable Installed Capacity

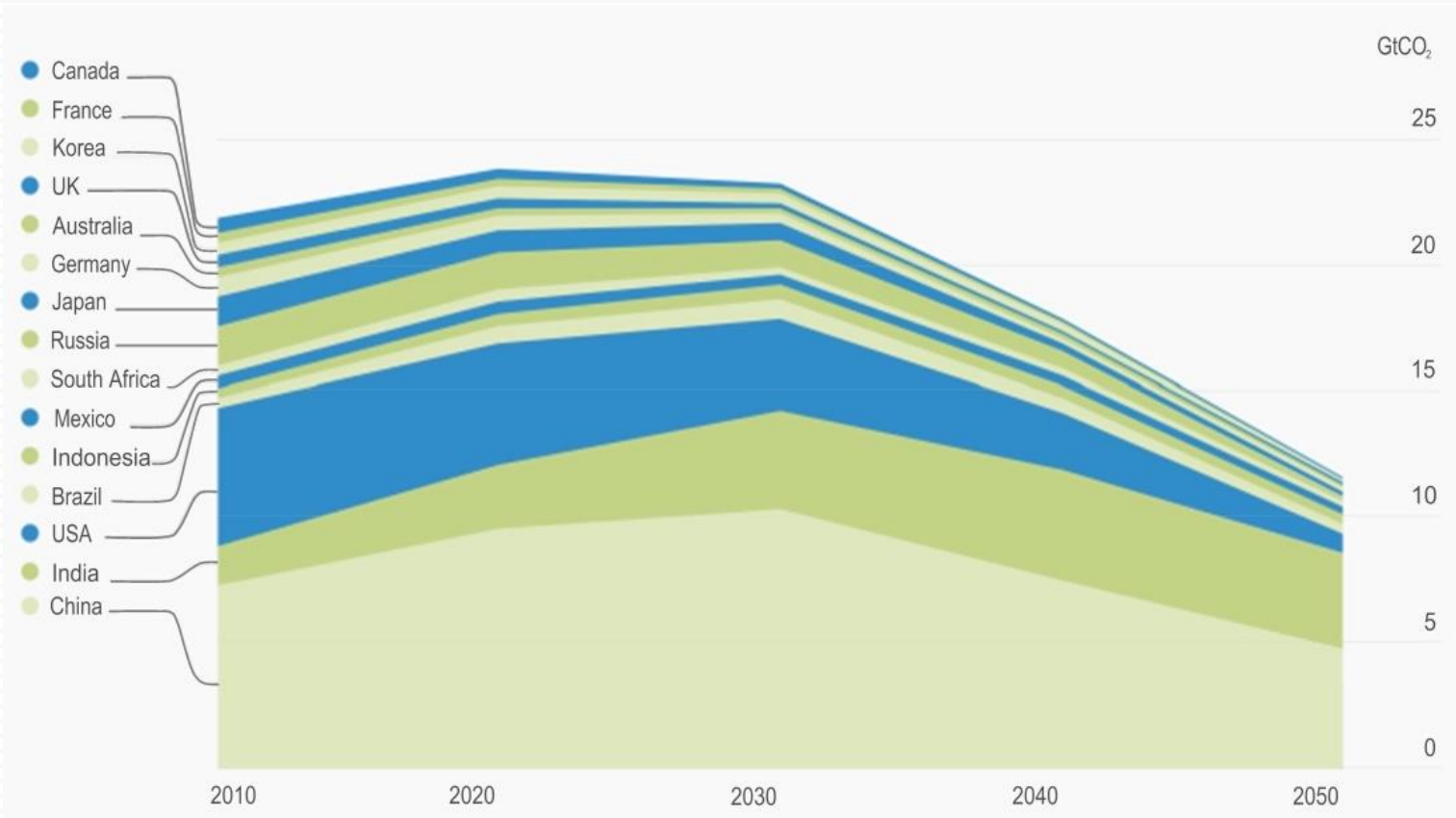


Renewable Generation

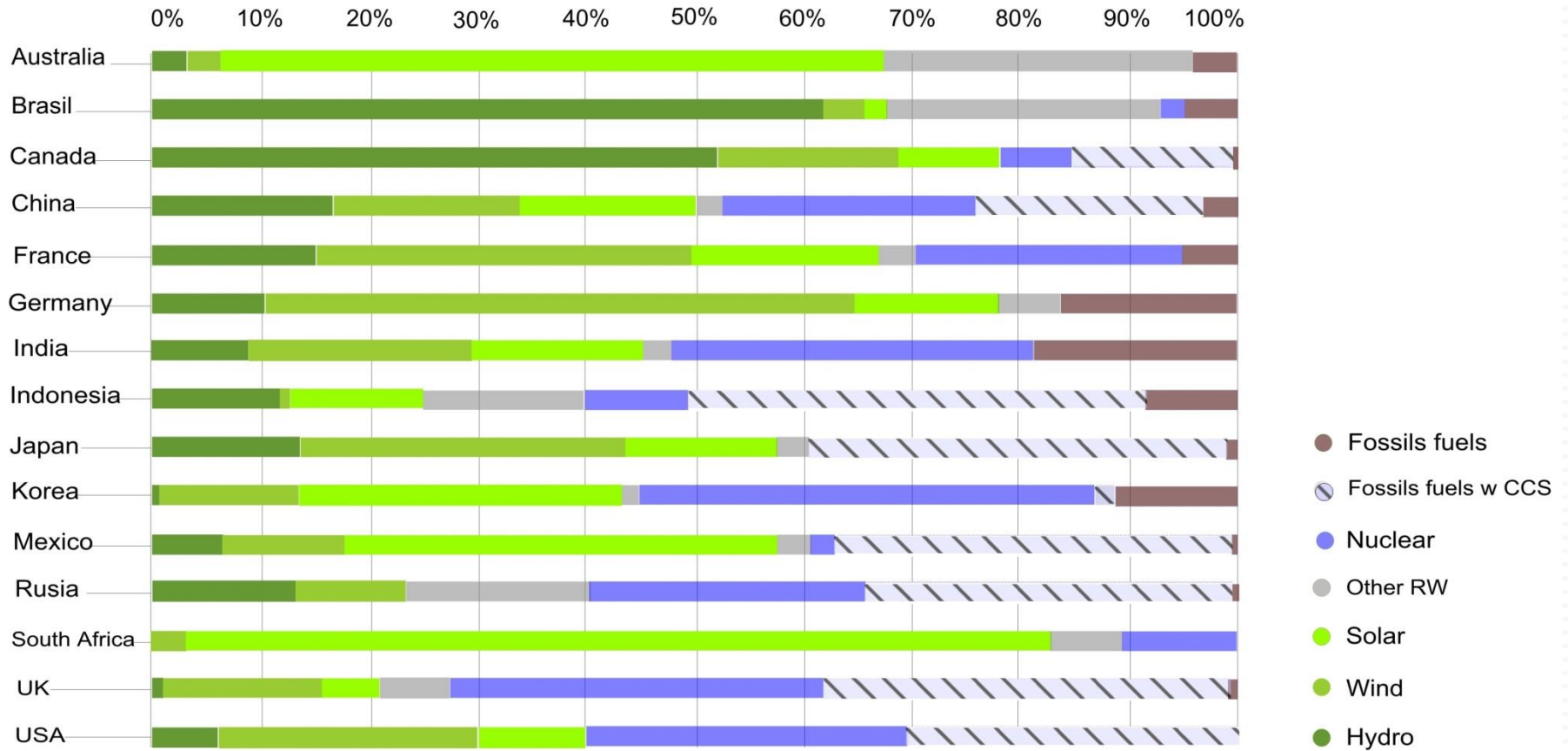


	Capacidad instalada (MW)	Capacidad instalada (%)	Generación bruta (GWh)	Generación bruta (%)	Generación bruta como porcentaje del SEN(%)
Biogás	43.8	0.3%	261.0	0.6%	0.09%
Autoabastecimiento	22.93	0.2%	132.18	0.2%	0.04%
Cogeneración	20.86	0.2%	128.84	0.2%	0.04%
Geotermia	823.4	5.8%	6,069.72	15.1%	2.04%
CFE	823.4	5.8%	6,069.72	11.2%	2.04%
Hidro	11,632.87	82.0%	28,110.96	69.7%	9.47%
CFE	11,508.77	81.2%	27,430.03	76.3%	9.24%
Autoabastecimiento	124.1	0.9%	680.93	1.3%	0.23%
Sol	39.8	0.3%	108.79	0.3%	0.04%
CFE	6	0.0%	13.09	0.0%	0.004%
Autoabastecimiento	3.8	0.0%	9.7	0.0%	0.003%
Pequeño productor	30	0.2%	86	0.2%	0.029%
Viento	1,638.05	11.6%	5,755.14	14.3%	1.94%
CFE	86.75	0.6%	189.55	0.4%	0.06%
Autoabastecimiento	1,035.45	7.3%	3,866.49	7.1%	1.30%
P.I.E.	510.85	3.6%	1,677.20	3.1%	0.56%
Pequeño productor	5	0.0%	21.9	0.0%	0.01%
Total Renovables	14,177.91	100.0%	40,305.63	100.0%	13.57%

Energy related CO₂ emissions reduction trajectories in the 15 DDP's



Electricity generation mix in 2050



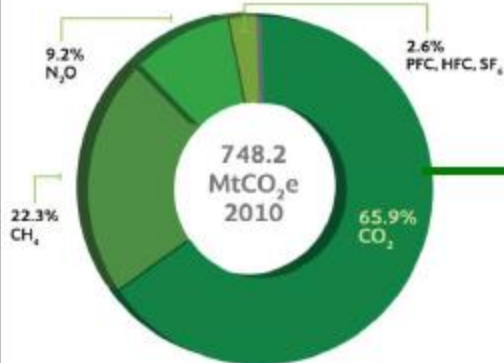
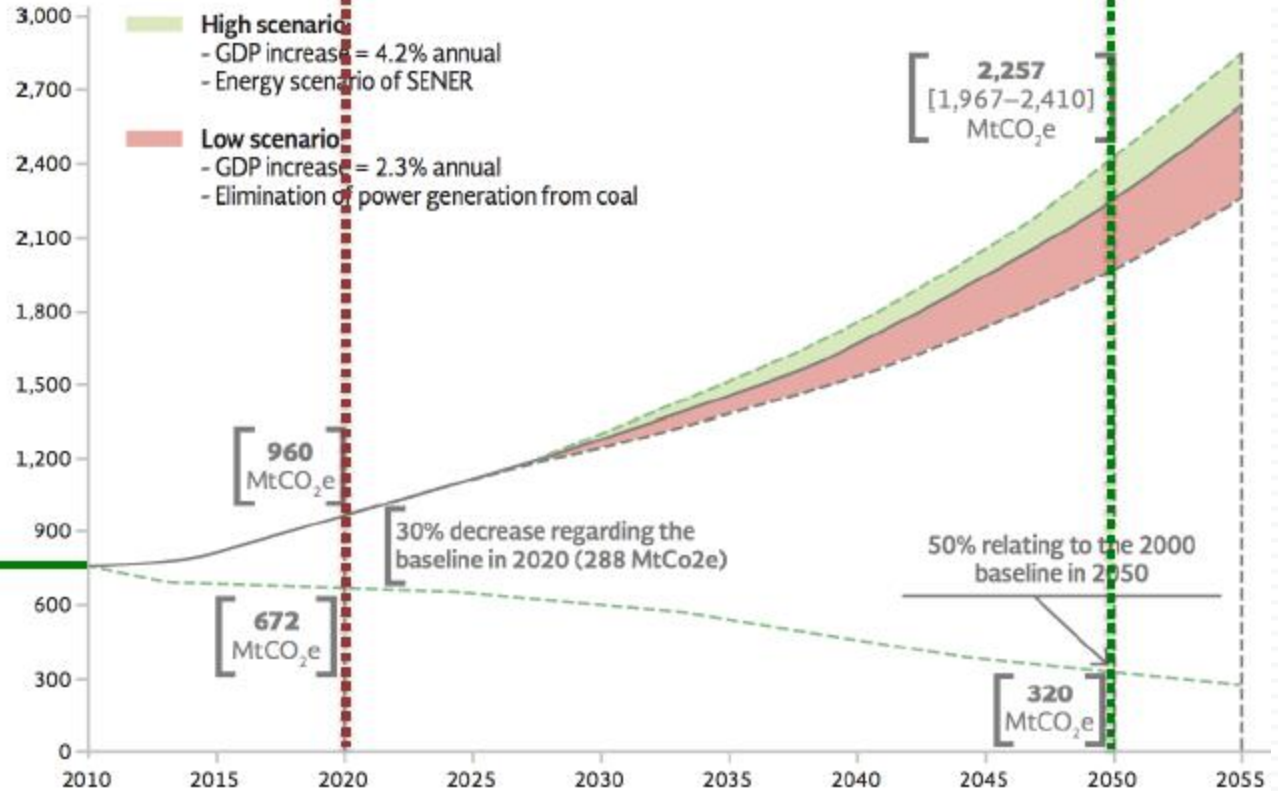
IDDRI. Sustainable Development Solutions Network. Interim 2014 Report.

Mitigation Targets

-30% in 2030

-50% in 2050

GHG emissions (MtCO₂e)
Million metric tons of carbon dioxide equivalent



- ✓ Companies may pay tax through Offsets (CDM, other UN approved)
- ✓ Effective starting January 1st 2014



Objectives

- **To design the official roadmap for CCUS, from incubation to commercial scale**
- **To establish a systemic and orderly basis for CCUS resources management and assimilation of technological knowledge**
- **To promote economic and regulatory incentives for technology implementation**
- **To promote emissions and carbon markets in which Mexico can participate**
- **To coordinate research activities on CO₂ regulation, capture, transport, use and storage**

Roadmap Stages

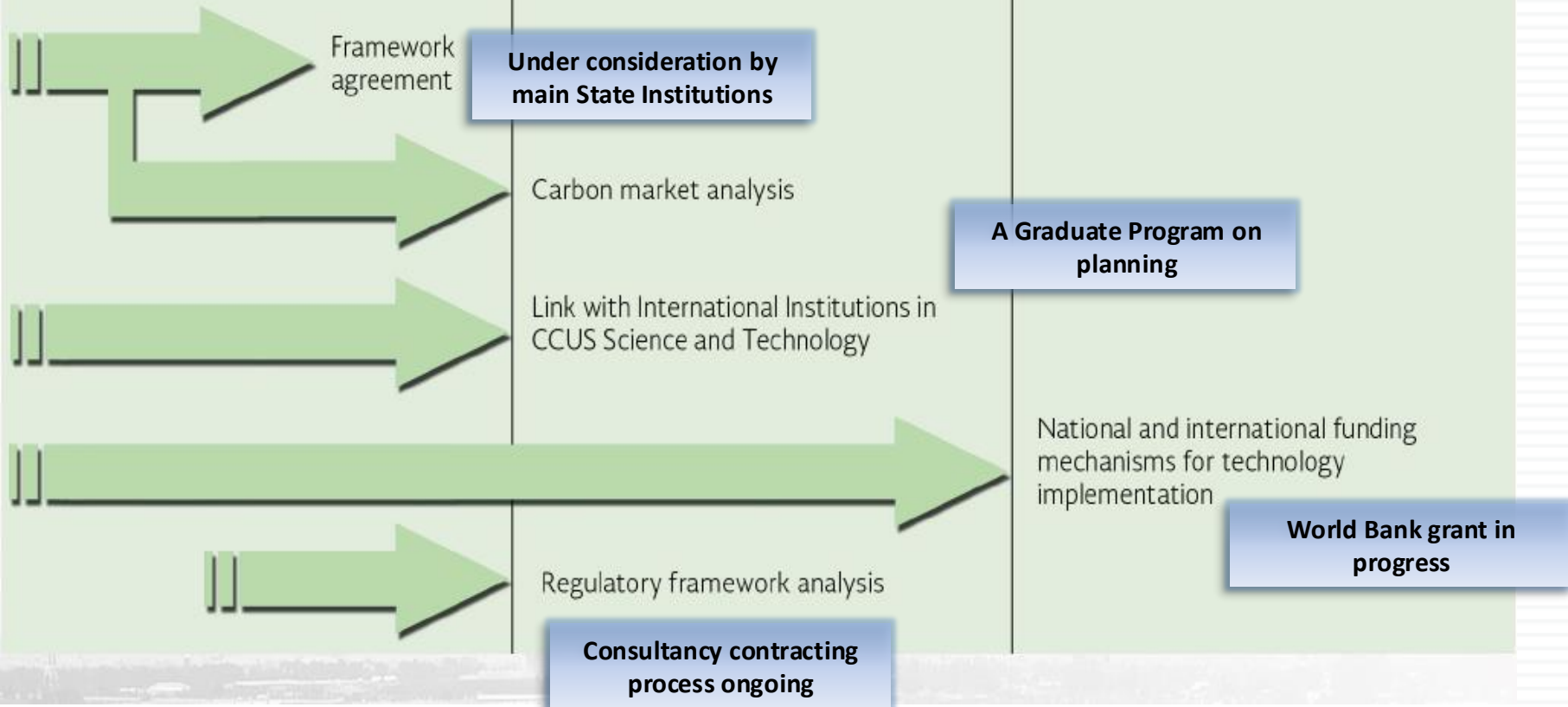
- **Incubation**
- **Public Policy**
- **Planning**
- **Pilot Projects**
- **Demonstrative Projects**
- **Commercial Scale Deployment**

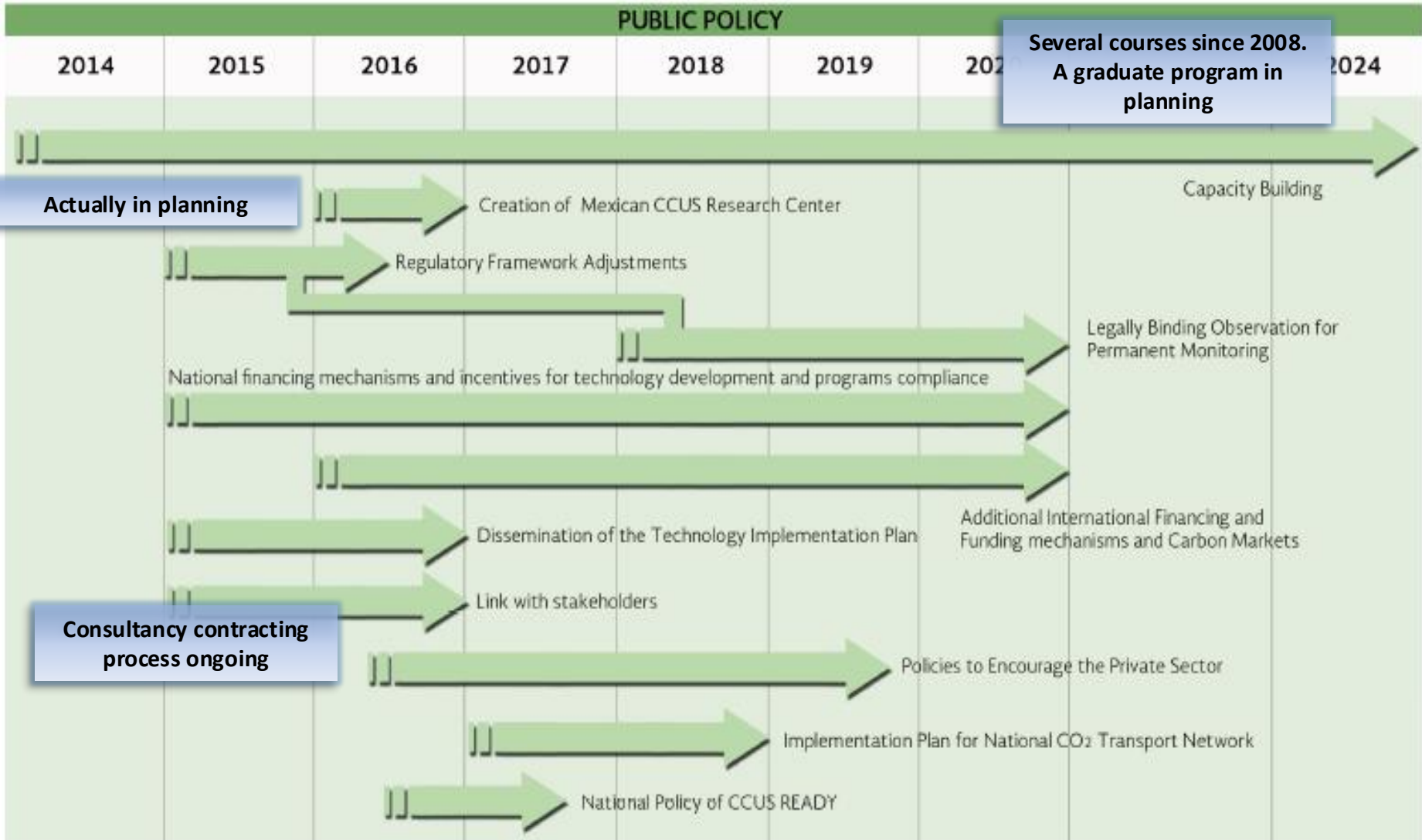
INCUBATION

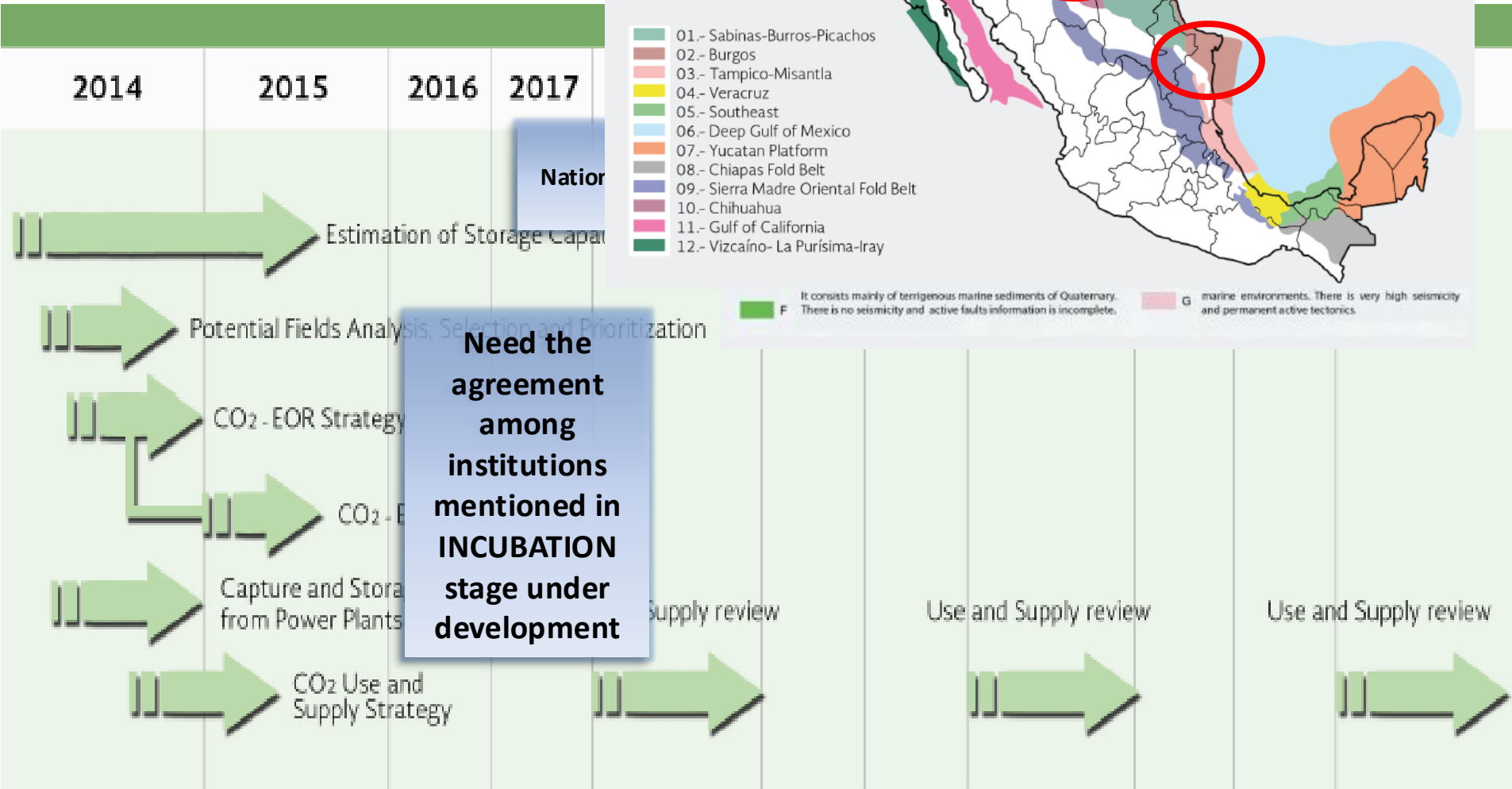
2014

2015

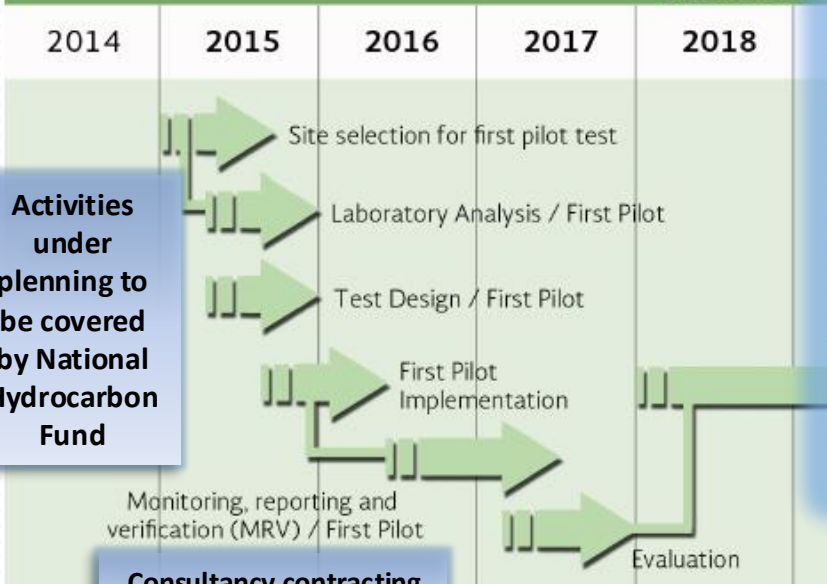
2016







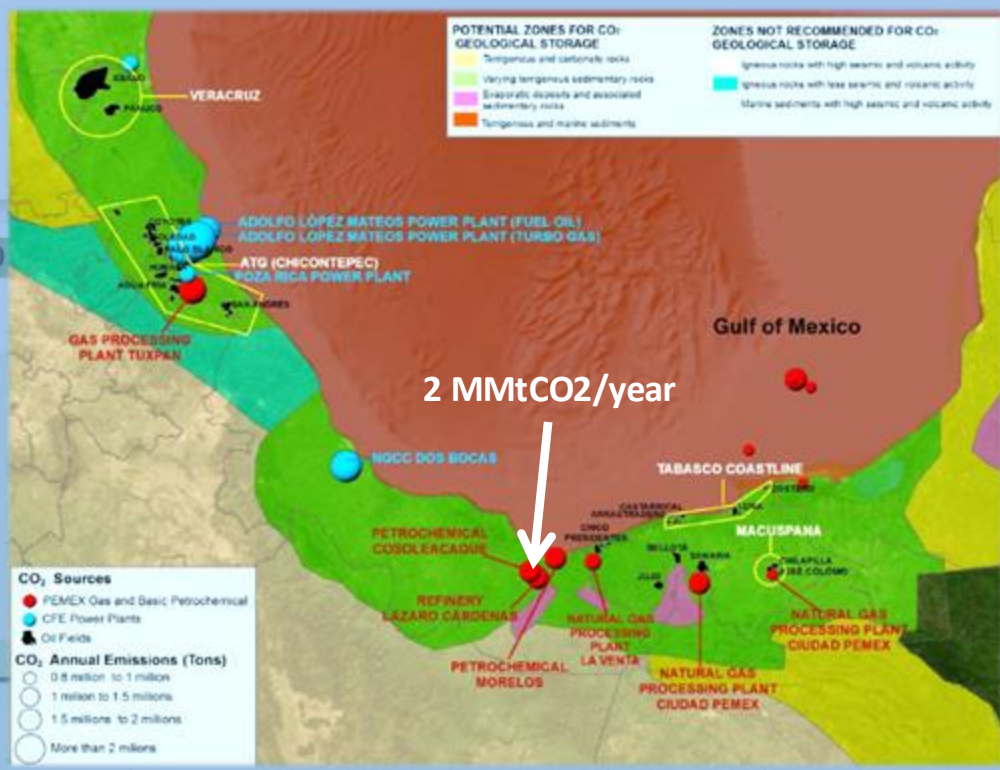
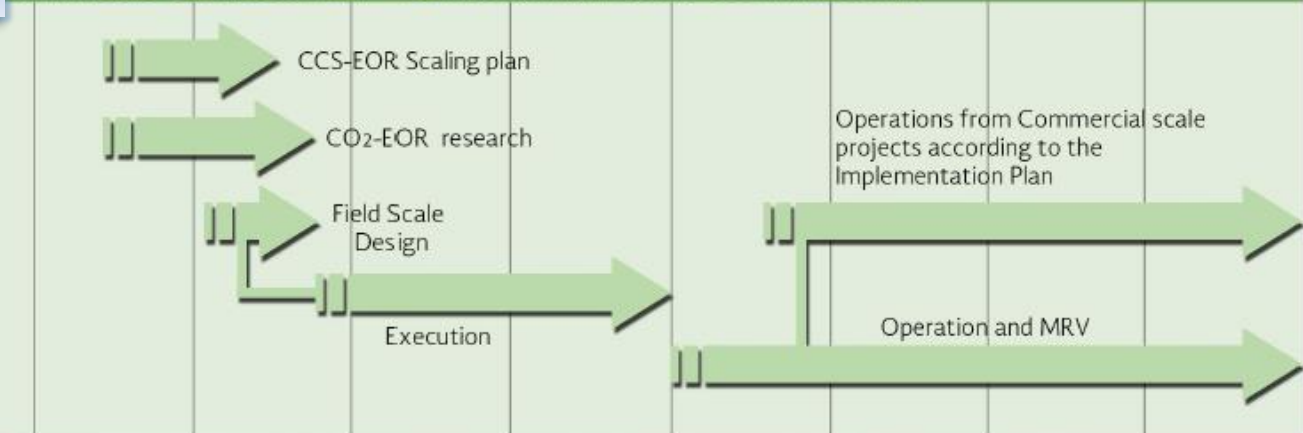
ENHANCED



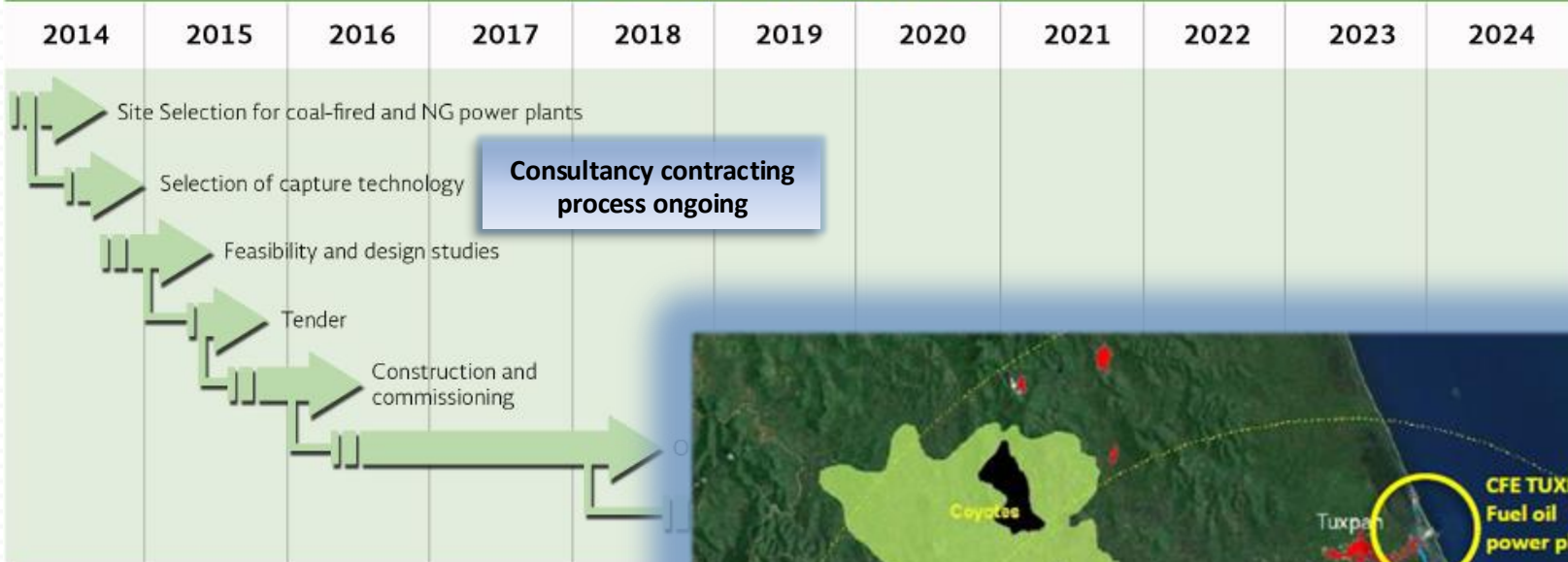
Activities under planning to be covered by National Hydrocarbon Fund

Consultancy contracting process ongoing

ENHANCED OIL RECOVERY - DEMONSTRATION / COMMERCIAL



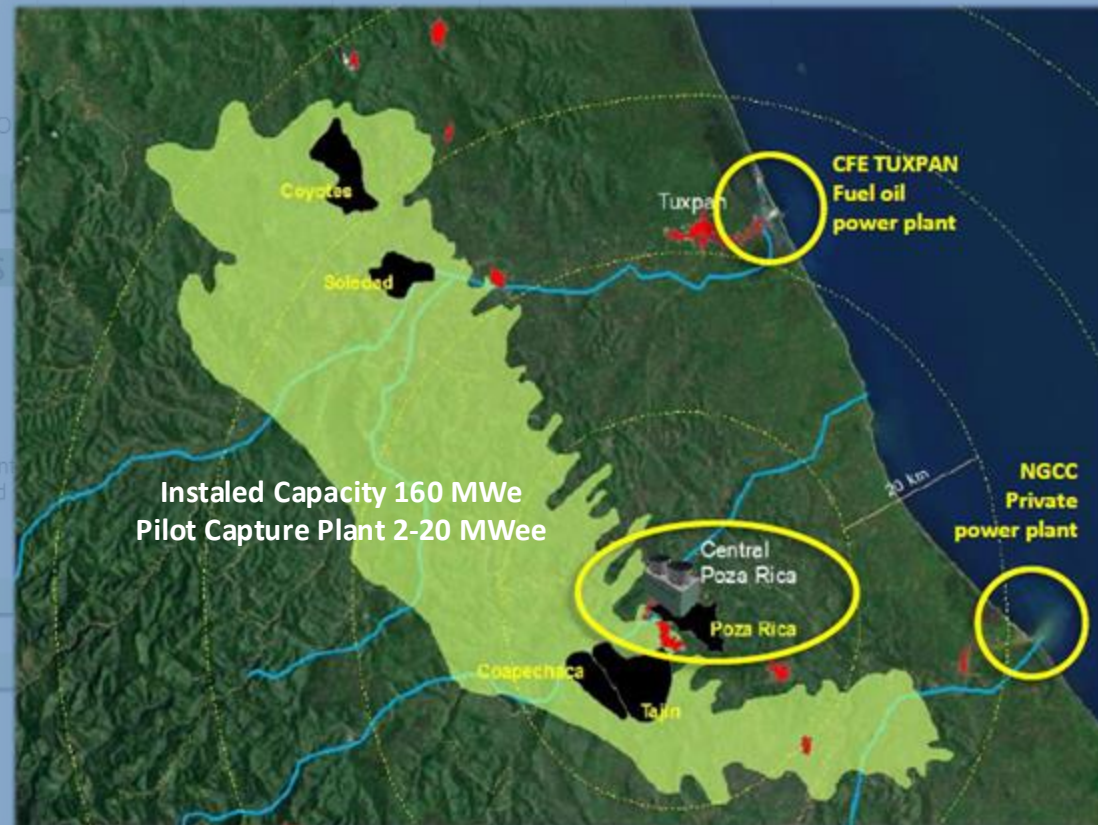
POWER PLANTS - PILOT PROJECT



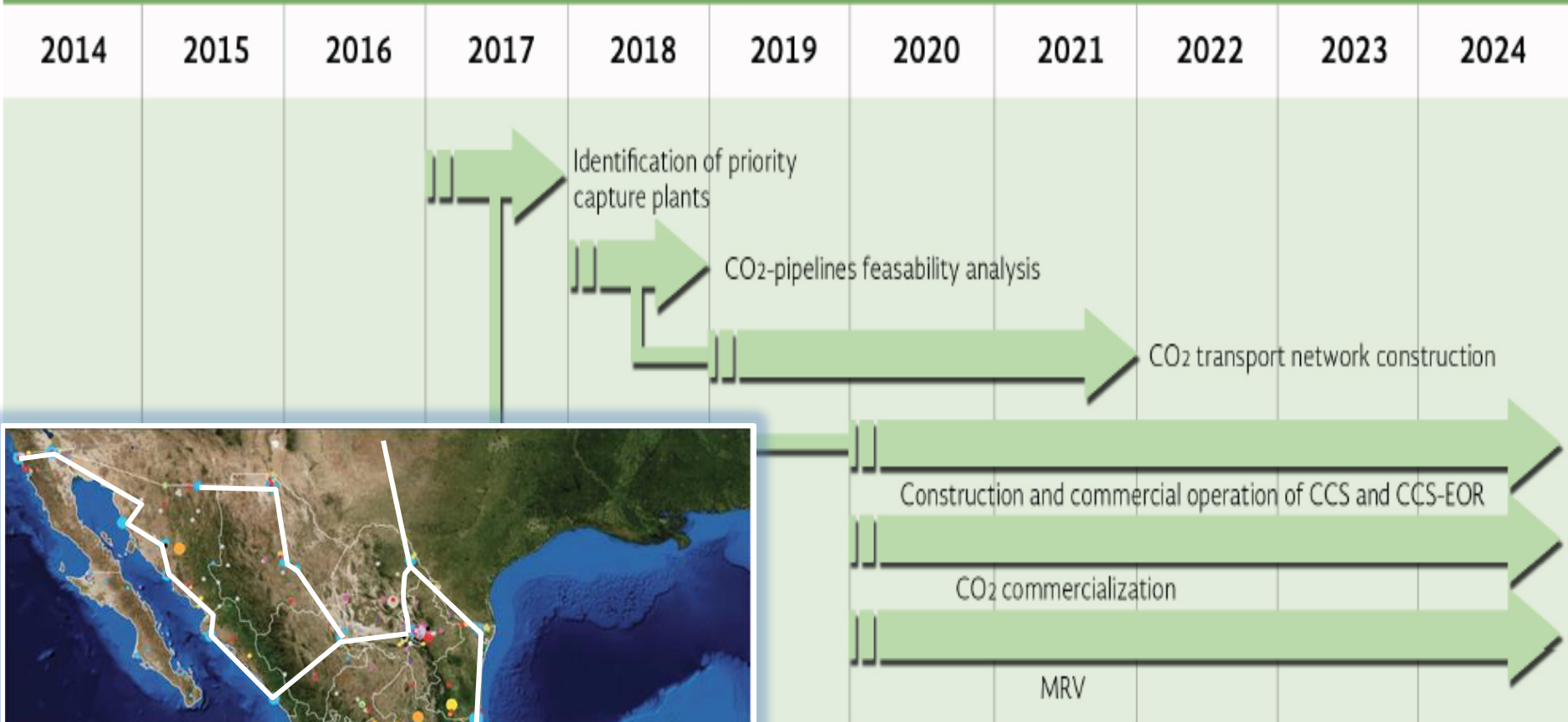
POWER PLANTS

Environment studies and licenses

Public communication and involvement



COMMERCIAL SCALE



Thank you

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<http://www.sener.gob.mx/res/gef/CCUS%20Technology%20Roadmap%20in%20Mexico/MRTPUBLICA.pdf>

[English:](#)

<http://www.sener.gob.mx/res/gef/CCUS%20Technology%20Roadmap%20in%20Mexico/MRTPUBLICAINGLES%20v2.0.pdf>