5.5 The Omani EOR Market and Submarkets Forecast 2013-2023

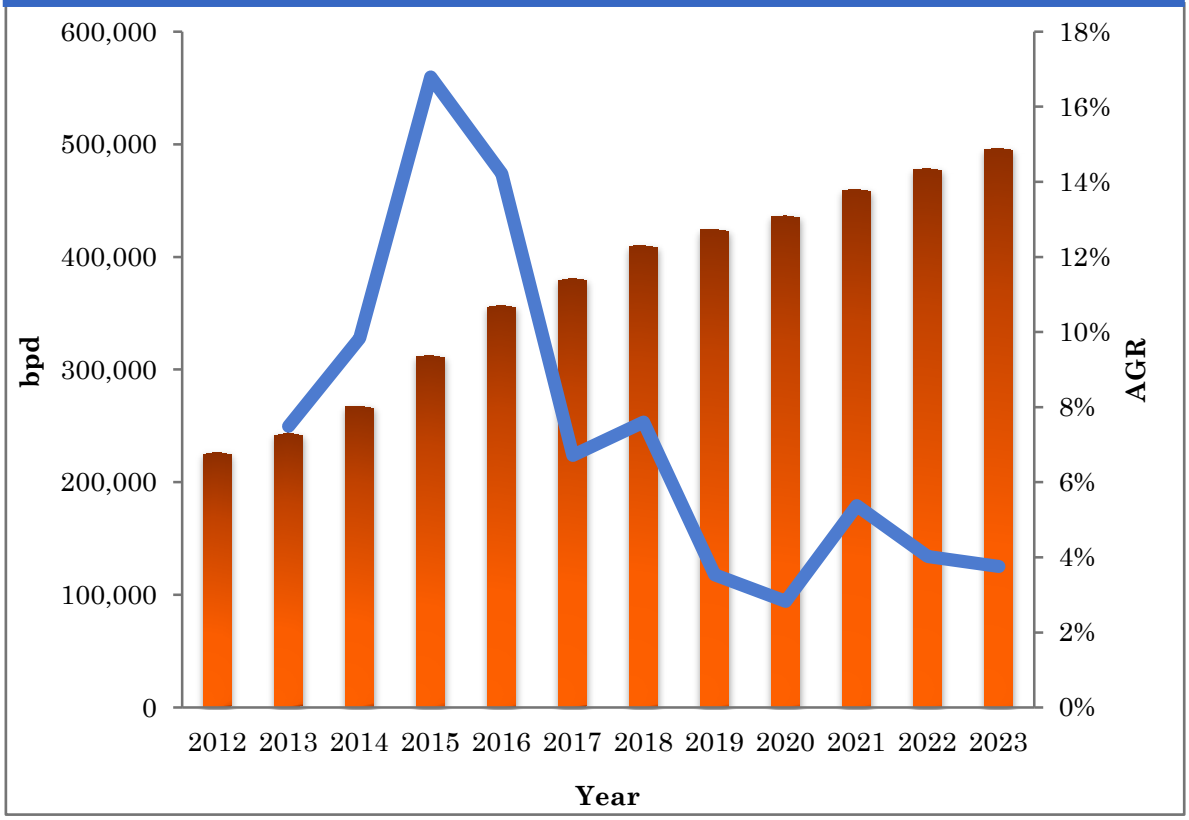
The Omani EOR market is calculated to see production of 244,000 bpd in 2013, visiongain forecasts. This will have increased to 410,500 bpd in 2018 and to 497,000 bpd in 2023. The market will see a CAGR of 11.0% in the first half of the forecast period from 2013-2018 and a CAGR of 3.9% in the second half of the forecast period from 2018 to 2023, to produce an overall CAGR of 7.4%. Table 5.18, and Figures 5.22 and 5.23 show visiongain's production forecast for the Omani EOR market.

Table 5.18 Omani EOR Market Forecast 2013-2023 (bpd, AGR %, CAGR %, Cumulative)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2013-23
bpd	**227,000**	**244,000**	**268,000**	**313,000**	**357,500**	**381,500**	**410,500**	**425,000**	**437,000**	**460,500**	**479,000**	**497,000**	**4.273m**
AGR (%)		7.5	9.8	16.8	14.2	6.7	7.6	3.5	2.8	5.4	4.0	3.8	
CAGR (%) 2013-18					**11.0**		2018-23				**3.9**		
CAGR (%) 2013-23							**7.4**						

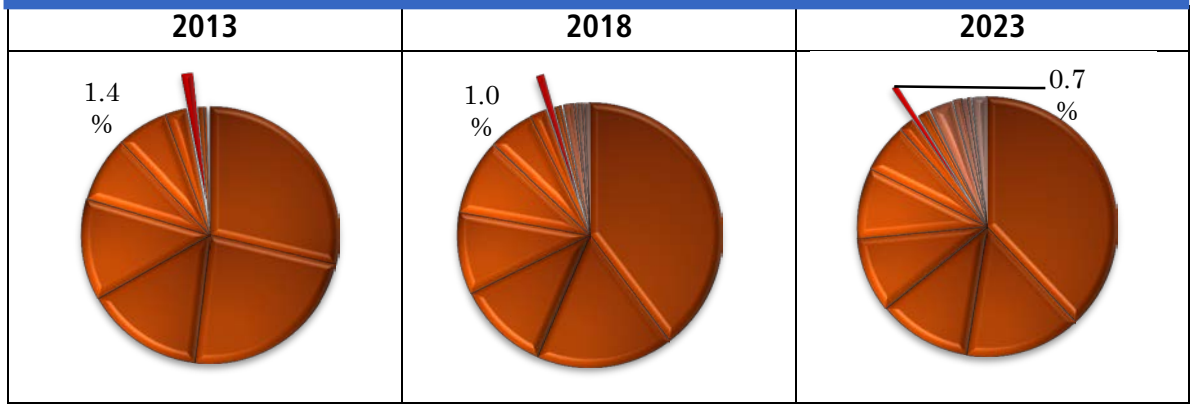
Source: *Visiongain 2013*

Figure 5.22 Omani EOR Market Forecast 2013-2023 (bpd, AGR %)



Source: *Visiongain 2013*

Figure 5.32 Mexican EOR Market Share Forecast 2013, 2018 and 2023 (% Share)



Source: *Visiongain 2013*

Table 5.28, Table 5.29 and Figure 5.33 show visiongain's production forecast for the Mexican EOR submarkets over the next ten years.

Table 5.28 Mexican EOR Submarket Forecast (Thermal, Gas and Chemical) 2013-2023 (bpd, AGR %)

Thermal												
Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Production (bpd)	100	100	100	150	150	700	700	2,000	2,000	3,000	3,500	3,500
AGR (%)		0.0	0.0	50.0	0.0	366.7	0.0	185.7	0.0	50.0	16.7	0.0
Gas												
Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Production (bpd)	40,000	40,000	42,000	42,000	42,500	44,000	42,000	41,500	39,500	37,000	36,000	33,500
AGR (%)		0.0	5.0	0.0	1.2	3.5	-4.5	-1.2	-4.8	-6.3	-2.7	-6.9
Chemical												
Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Production (bpd)	50	70	70	85	125	500	1,250	1,850	2,300	3,600	3,800	4,000
AGR (%)		0.0	0.0	21.4	47.1	300.0	150.0	48.0	24.3	56.5	5.6	5.3

Source: *Visiongain 2013*

Table 5.29 Mexican EOR Submarkets CAGR (%) Forecast (Thermal, Gas and Chemical) 2013-2013, 2013-2018 and 2018-2023

	2013-2023	2013-2018	2018-2023
Thermal	**42.7**	**47.6**	**38.0**
Gas	**-1.8**	**1.0**	**-4.4**
Chemical	**49.9**	**78.0**	**26.2**

Source: *Visiongain 2013*

7. Expert Opinion

7.1 Solvay

David Sorin is Vice President of EOR at chemical company Solvay. Together with FP Energies nouvelles and Beicip-Franlab, Solvay is a member of the Chemical EOR Alliance, which delivers integrated chemical EOR solutions. Visiongain spoke to Mr. Sorin in April 2013 and thanks him for his contribution to the report.

7.1.1 Solvay's Involvement in the EOR Market

Visiongain: How is Solvay involved in the EOR market?

David Sorin: Solvay's involvement in the enhanced oil recovery market is primarily through its Novecare Global Business Unit, which specialises in surfactants and specialty polymers. Solvay has pioneered the use of robotics to formulate optimised chemicals for EOR applications: these unique capabilities have led to the development of differentiated surfactant technologies for harsh reservoir conditions, notably carbonate and high temperature / high salinity reservoirs.

In 2010, we created the "Chemical EOR Alliance", a partnership with the French Institute of Petroleum (now IFP Energies nouvelles) and its subsidiary Beicip-Franlab, to promote and deliver integrated chemical EOR projects. This Alliance relies on a team of about 60 dedicated engineers, scientists and technicians to deliver a full suite of services, encompassing laboratory design, reservoir engineering, numerical simulation, on-site support as well as chemicals scale-up and logistics.

Visiongain: Which companies have you worked with thus far?

David Sorin: Most projects are covered by Non-Disclosure Agreements. However, there have been public mentions of our work at GDF Suez in Germany, Maurel & Prom in Gabon, Pluspetrol in Argentina, PDO in Oman and Petronas in Malaysia. In the past 20 years, the member companies of the Chemical EOR Alliance have conducted over 30 chemical EOR studies and pilots around the world.

7.2 Enhance Energy

Susan Cole is President and CEO of Enhance Energy, the Canadian company behind the development of the largest carbon capture project for use in enhanced oil operations in the world. The Alberta Carbon Trunk Line (ACTL) project has been uniquely designed to take advantage of the considerable CO_2 emissions from the oil sands and other Albertan industries, using this to boost the production of oil from maturing fields in the south, greatly reducing the carbon footprint of the oil sands industry. Visiongain spoke with Susan Cole in April 2013 and is very grateful for her insightful comments.

7.2.1 Enhance Energy's Involvement in the EOR Market

Visiongain: Can you tell us a little bit about Enhance Energy and your involvement in the EOR market?

Susan Cole: Enhance Energy is a company focused on both enhanced oil recovery and CO_2 storage. We were formed back in 2006, coming off of my own role as manager of the Weyburn CO_2 miscible flood in Saskatchewan. We started Enhance Energy with the mindset that there was a huge opportunity in Alberta for enhanced oil recovery linked to the environmental aspect of storing CO_2.

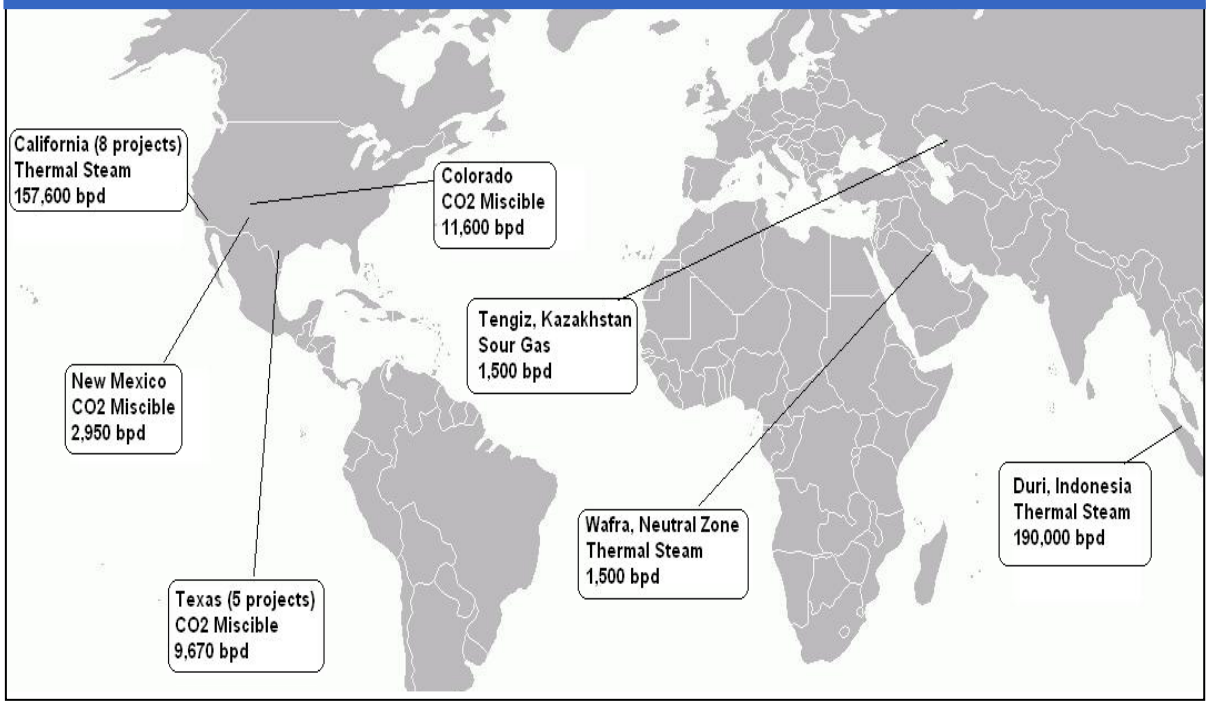
7.2.2 The Rationale Behind the Alberta Carbon Trunk Line Project

Visiongain: You are involved with the Alberta Carbon Trunk Line (ACTL) project. What were the main factors behind the decision to go ahead with the project?

Susan Cole: We have the experience of the Weyburn project in our past and are ready for the opportunity to take what we have done in Saskatchewan to Alberta, and the opportunity there is actually far greater in terms of the potential for enhanced oil recovery. The only reason we haven't seen more EOR in Alberta is because there is a lack of CO_2. So when we started the ACTL project, really our impetus came from our background of doing enhanced oil recovery. We saw the potential of taking CO_2 from where it is being produced in Alberta and moving it to where we can actually use it. So when we first started the project it wasn't necessarily about reducing emissions, but more about using CO_2, which can be seen as a waste product, and giving it a value.

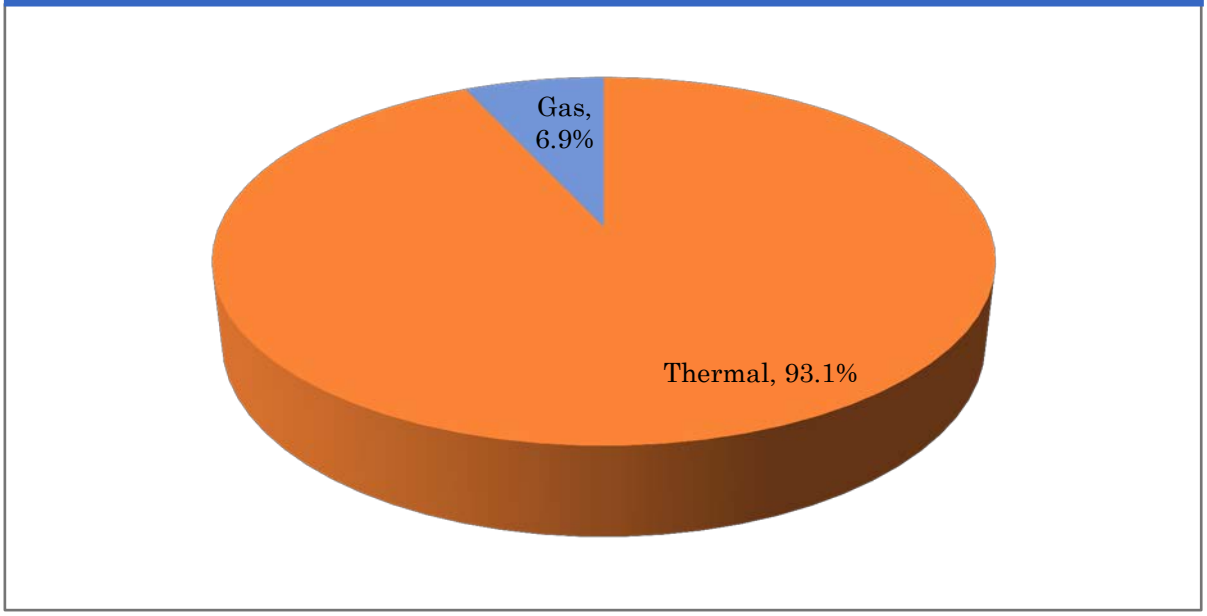
ACTL is one of two projects being supported by the Alberta government and by the Canadian government to build large carbon capture and storage projects. The ACTL will have the capacity to transport and store close to 15 megatonnes of CO_2 per year.

Figure 8.4 Location, Type and Production (bpd) of Chevron Corporation's EOR Operations



Source: *Visiongain 2013*

Figure 8.5 Chevron Corporation's EOR Production Split (%) Thermal and Gas



Source: *Visiongain 2013*