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FUELLING INDIA'S

ENERGY DREAMS

Augmenting output from its prolific wells, initiating large scale production drive in OALP blocks, kickstarting shale production... Cairn is firing on all cylinders to contribute 50 percent of India's crude production



NET



CARBON BY 2050

We, at Vedanta, are committed to India's vision of addressing the catastrophic effects of global warming by reducing our carbon emissions to 0 by 2050, or sooner.

We are pledging US\$ 5 billion over the next 10 years to accelerate our transition to net-zero operations.

Our plans include adopting the use of 2.5 gigawatt of Round-The-Clock Renewable Energy to reduce our absolute emissions by 25% by 2030.

By aligning with the Government of India's commitment to decarbonise India's economy, we are all set to usher in a greener tomorrow.

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ACHIEVING ENERGY AATMANIRBHARTA IS THE PRIME GOAL

ANIL AGARWAL, CHAIRMAN

In an exclusive conversation with Fortune India Exchange, Anil Agarwal, one of the leading figures of India Inc and Chairman, Vedanta Group shares his vision and roadmap for making India self-sufficient in energy...

Q India is among the most vulnerable to volatility in crude oil prices. What is your vision to protect India's interests in the backdrop of such volatility?

A In the last two years, the COVID-19 pandemic and now the war in Ukraine have severely threatened the stability of international crude markets. For a growing economy like India, international crude price volatility impacts the domestic market in several ways. We currently import 85% of our crude requirement and domestic demand is only expected to rise as our economy further expands. The government has been cognizant of this growing import burden and taken several steps to ease exploration of new fields. However, there is an additional need to increase production from existing fields by creating a favourable environment for domestic producers and increasing investment opportunities. Our Cairn Oil & Gas business currently contributes 25% to India's domestic crude production and we aim to soon account for 50% of the total output to help India achieve energy aatmanirbharta. Strengthening our domestic capacities is the only feasible



method to shield our country and its people from geopolitical uncertainties and resultant volatility of crude prices.

Q Though the government has voraciously spoken of achieving *aatmanirbharta*, India's oil and gas import dependence has only increased. How do we correct this situation?

A The process of becoming an energy sufficient country will unfold in stages. The government has been cognizant of the challenges and introduced a number of conducive policy measures in NELP, HELP, OALP and DSF. However, pre-NELP blocks – that produce 90% of India's domestic crude – are burdened with the triple whammy of royalty, cess and profit petroleum. Therefore, the government must now look at incentivizing ageing oil blocks to encourage more investment and increase production. As much as 70% of revenue generation goes as levies for pre-NELP blocks, while the cost of running operations takes up another 20-25% of the same. This makes it difficult to invest in capital-intensive technologies that can augment production. Ideally, if the levy structure can be brought down to 40%, we can unlock significant investment in older assets to increase production. Moreover, the hydrocarbon sector plays a vital role in the economic growth of the country and has immense potential to meet future needs. Investments should also be made in technology upgradation. We have immense faith in India's hydrocarbon potential and the correct mix of tax incentive, technology upgradation and investment generation can make the country energy self-sufficient.

Q While FDI flow has increased significantly in India, in recent years the oil and gas sector has received little interest from global players. Even the latest OALP could not draw much foreign interest –

what are your thoughts on unlocking India's hydrocarbon potential?

A As I said, we have immense faith in India's hydrocarbon potential. The government too has declared its intention of tapping into sedimentary basins to unlock hydrocarbon potential and optimize production of crude oil and natural gas in the most efficient manner. To attract more foreign players, we need to expand ease of doing business in the oil and gas sector. Along with exploration, production processes do need simplification and reduction in burden. In the country's hydrocarbon sector, the cost

and more, in other electronic, electrical and automobile segments. I strongly believe similar initiatives for the oil and gas sector could play a vital role in attracting large scale foreign investments.

Q Cairn Oil & Gas has been a key performing vertical for Vedanta Group. Please share your vision on the oil and gas business?

A As India's largest private oil and gas exploration and production company, Cairn Oil & Gas is a key vertical of the Vedanta Group. Currently, we are producing 25% of India's domestic crude and our vision

Cairn Oil & Gas business currently contributes

25%

to India's domestic crude production and we aim to

soon account for 50% of the total output to help India achieve energy *aatmanirbharta*. Strengthening our domestic capacities is the only feasible method to shield our country and its people from geopolitical uncertainties and resultant volatility of crude prices.



structure for unlocking unconventional hydrocarbons is much higher than for conventional counterparts as it requires the application of cutting-edge technologies. Here, we need to find methods to make our domestic sector economically attractive to bring the best of foreign players. It ultimately boils down to creating a more conducive policy environment that prioritizes hydrocarbon expansion. The government has done well to reduce tax burden, introduce production linked incentive schemes

is to ensure 50% contribution in the years to come. We have announced plans to invest USD 4-5 bn in the next 3-4 years – to bring the best technology to the country and produce more from the existing assets. Our future growth will pivot around some strategic levers such as, increasing production from existing blocks through investments and partnerships; expanding production footprint in new OALP regions; exploring unconventional energy sources like shale; thereby increasing our

production capacity to 500 kboepd and double our contribution to domestic crude output.

Q The oil & gas business is often environmentally sensitive. Now as you plan to double production, what is your vision to make growth more sustainable?

A At Vedanta and Cairn Oil and Gas, our business growth complements our emphasis on protecting the environment and empowering local communities. The Vedanta Group has been at the forefront of sustainable practices that align with the Prime Minister's goals of achieving net-zero in tandem with positive economic growth and is focused on being the ESG leader in the natural resources sector. We have reinvigorated our focus on ensuring sustainability in core operations, for which we have also recently announced our ESG roadmap. In line with our commitment to ESG, Cairn aims to achieve net-zero by 2050. Vedanta Cairn have been innovating for a healthier planet with focus on being net water positive, encouraging use of renewable energy, planting two million trees by 2030 and



protecting and enhancing biodiversity throughout the project lifecycle among other initiatives. Cairn's ESG goals include important measures such as positively impacting 30 million lives by 2030 through community upliftment interventions.

Q The local community features prominently across operations of Vedanta Group. What steps is Cairn taking to cater to community interests?

A Local communities in our areas of operations have been key partners in our growth journey. We have been working actively towards improving socio-economic conditions in our

areas of operations and in the process, have transformed the lives of millions of people at the grassroots level. Barmer, Cairn's largest site, witnessed 650% increase in per capita income in the last decade since we began operations in this region. Our flagship project Nand Ghar is changing the way women and child care is being delivered through anganwadis. The Cairn's skill centres, Jeevan Amrit Yojana and others, are providing a plethora of benefits that focus on holistic socio-economic development of our communities".

Q To achieve the grand vision of doubling production and aiding India's *aatmanirbharta* journey, we will require adequate manpower to support the process. What is your recruitment and talent strategy for the years to come?

A At Vedanta Group, our businesses provide direct and indirect employment to around one lakh people. No wonder, people form the fulcrum of our operations and we are committed to ensuring their continuous well-being and development. Our aim is to empower women and we are committed to ensuring gender parity and diversity across all our businesses. Coming to our oil and gas business, it has specialized talent and skill requirements. We recruit the brightest minds and nurture their growth over time. As an organization, our target is to develop an ecosystem of values, culture and passion that motivates people to go beyond and do more. Our talent strategy ties in with our goal of doubling production and achieving energy *aatmanirbharta* for the country. Leaders in our oil and gas business are not just technical subject experts, they demonstrate ownership and the ability to combat challenges with creative thinking. Our strategy rests in not just recruiting the best but also ensuring they remain upgraded with the latest skills to emerge as future leaders. ■

The government has been cognizant of the challenges and introduced a number of conducive policy measures in NELP, HELP, OALP and DSF. However, pre-NELP blocks – that produce 90% of India's domestic crude – are burdened with the triple whammy of royalty, cess and profit petroleum.



ADVANTAGE CAIRN



To integrate its on-field activities with back end management system, Cairn has created best in class technological architecture...

Talk to energy experts in the market today and try to get an assessment from them on Cairn's operational high points. In all probability, there would be a common string in their reply pointing at Cairn's unflinching commitment to deploy the best in technology and sparing no efforts in adopting globally comparable advanced processes.

The company had shown its intrinsic leaning to opt for the best solution for on field operations way back in 2008 when it had set up world's longest continuously heated and insulated pipeline that runs from the fields of Rajasthan to refineries in Gujarat – covering 705 km. The total project cost in laying this pipeline had stood in the vicinity of a staggering Rs 5,000 crore which had stumped the world. And since then the company has introduced a spate of advanced processes which have given a defining edge to its operations. The Mangala field in Rajasthan is home to a full-field Enhanced Oil Recovery (EOR) polymer

project that is among the largest of its kind in the world. Cairn is currently gearing up to introduce a very large scale Alkaline Surfactant Polymer (ASP) which will be executed shortly. Furthermore, the Ravva field which is India's first offshore asset, has seen application of India's first TCP balance under-perforating with multilane compilation technique. This has granted access to multiple reservoirs from the same bore, improving recovery and asset reservoir management.

Cairn also recently achieved a major milestone when it started production from NA #01 facility in Aishwariya Barmer Hills in Rajasthan. It is a tight oil block which has been swiftly pushed to the production stage, thanks to advanced solutions used for the first time in India. It is the largest horizontal well with multi-frac development campaign of 37 wells in the Indian sub-continent which is the key enabler to unlock tight oil. Some of the key technologies deployed in the project included Periscope-HD to

geo-steer wells in the low resistivity contrast zones. Furthermore, broadband precision completion was also applied for the first time in the country to maximize frac efficiency and 446 Frac stages were pumped in a single campaign.

Cairn's operational excellence stems from a larger architectural base wherein all functions have been integrated at the back-end using high-end applications like artificial intelligence, internet of things (IoT) and data analytics. For optimising performance (it includes ensuring highest standards in safety and security of employees), the company has opted for a large scale digitalisation drive.

The exercise to create the basic digital platform began in 2018 with a dedicated project called 'Nirman'. As company officials point out, it had successfully laid the digital roadmap and established a solid foundation. The programme has now graduated to a more advanced stage in the form of project 'Pratham' that is meant to accelerate existing digital projects and also facilitate a set of new functions.

The digitalisation drive has made a world of difference to Cairn's operational efficiency on several fronts. These include cloud based data management and high performance computing in new field development, management of production related challenges to the ageing fields by using data-driven techniques in artificial intelligence (AI) and machine learning, a swift change over to proactive rather than reactive approach in maintenance by using predictive analysis, etc.

Furthermore, the company has initiated a unique digital oilfield called Disha which is a smart interactive reporting system with dashboards (supported by predictive analysis) and helps in reducing unwanted production losses. Simply put, Cairn's technological orientation today comprises best of both the worlds – on field and off field support system – making it perfectly eligible to aim for rapid strides going ahead. ■

WE ARE EXPECTING THREE-FOLD INCREASE IN PRODUCTION

PRACHUR SAH, DEPUTY CEO

In a candid conversation with Fortune India Exchange, Prachur Sah, Deputy CEO, Cairn Oil & Gas explains the broader strategy to touch the halfway mark in India's oil and gas production...

Q Mangala block in Rajasthan has traditionally been the fulcrum of your operations. And now you have an expansive portfolio of blocks across the country. What is the big picture you have to harness this strong asset base in the near to medium run?

A Mangala has been a very prolific asset. Since Vedanta took it over, we have invested very heavily on this asset. In a cumulative sense, we have invested close to eleven billion dollars in the entire spectrum of oil and gas business. The quest for increasing India's production is the topmost priority and we are sparing no efforts to make it happen.

We have planned to invest additional \$5 billion in the next two-three years to significantly increase production and get close to contributing fifty percent of India's oil requirements. We strongly believe that India needs to become self-sufficient in oil and gas. And as the largest private oil producer in the country, we have a very critical role to play.

We are aggressively investing, using most advanced technologies in exploration and collaborating with globally reputed partners. We want to touch fifty percent mark of India's production and take



our output close to 500 thousand barrels per day.

Q That would be quite a jump over your current production base. What is the kind of timeline you are looking at to reach there?

A We are aiming to achieve this target very soon. Currently, we have a total of five producing blocks and four operational blocks. Furthermore, we have acquired significant acreage in OALP, where we are currently drilling. We will be investing heavily in recovery in these OALP blocks. We are soon going to kickstart shale oil discovery which will entail addition of another pillar to our production asset base. This could potentially transform not just our business, but transform oil and gas recovery in India. Like the way, it did in the US twenty years back.

Q This 'Aatmanirbhar' clarion call given by the prime minister - how much has it influenced your grand vision?

A That is a very clear achievement vision for us. We believe the resources that we have can create a significant impact in making India self-sufficient and a five trillion economy. So, 'Aatmanirbhar Bharat' element is

a key driver in our chairman's vision, where he is inspiring all of us to be the leader in production and focus on production increase.

Q Did pandemic led lockdown in 2020 affect your operations in a major way?

A The first wave definitely had an impact resulting in delays in execution of some projects. But subsequently, we developed an effective mechanism to deal with the operational challenges. Our execution partners also joined hands with us in this crisis hour. We brought significant changes in our operational modalities vis-a-vis digital support systems, asset optimization, and collaboration with the vendors. As a result, subsequent waves didn't impact the production. Everything on the ground is now fully up and running and our team has done a fabulous job in managing the third wave.

Q Please provide some details on your shale oil plans?

A It is no secret to anybody that shale oil is usually found close to the established reservoirs and Barmer is a prolific basin. Over the last one year, we have conducted some critical research in our Barmer basin and we believe shale reservoirs are there in its vicinity. We are now getting ready for pilot projects to examine the proposition of their commercial harnessing in the future.

We are venturing out in this direction by joining hands with global technology leaders. They will create the pilot plants and execute this shale discovery drive for us. The rationale behind this collaborative approach is: we don't want to re-invent the wheel. Initially in the US, the failure ratio in shale discovery was quite high since it was new and there were many unforeseen challenges. This obviously resulted in loss of time and other precious resources. But now in the US, shale processing is like any other regular manufacturing process. The point is :



INSPIRING ALL OF US TO BE THE LEADER

'Aatmanirbhar Bharat' element is a key driver in our chairman's vision where he is inspiring all of us to be the leader in production and focus on production increase. And that's the vision we are carrying for him and implementing in all our business.



we are trying to avoid a learning curve here by joining hands with global majors in this sphere who have proven expertise in deploying best technology and solutions in shale discovery.

Q What is happening in Assam fields? You have started producing gas and signed a sales agreement with a public enterprise recently?

A Assam is a promising turf. In Assam, we have OALP blocks as well as a DSF (discovered small field) block. Hazarigaon, a gas block, is now ready to produce and we have signed an agreement with AGCL. We are currently also engaged in other exploration activities in the state.

Q Cairn Oil & Gas has been the most aggressive bidder in the OALP rounds. Can you provide me with an overview of activities in the blocks in your kitty?

A We have a total of fifty-one OALP blocks. We had bagged forty-one in the first round and ten in the subsequent round. Later, we also added two DSF blocks. We have carried out a significant amount of activities in these blocks including seismic and airborne survey across most of them. During Covid period, when seismic survey had become difficult, we introduced airborne survey to get more data.

Subsequently, we also commenced drilling exercise at many places. We have drilled six or seven wells in different blocks resulting in two additional discoveries. We have a big portfolio of OALP blocks – Rajasthan, Gujarat, Assam and also offshore blocks. We are judging their potential and when a specific block signals high output potential, our strategy now is to expeditiously push them to the production stage.

Q To encourage domestic recovery, do you feel the government should announce some fresh incentives?

A The government is very open now. The way they have conducted OALP rounds reflects their progressive approach. However, other measures are important to increase domestic production. The industry needs a fiscal structure which incentivizes production rather than focuses only on revenue. The current levy structure in premier blocks is close to 70 percent. These levies should be brought down to the global benchmark of 30-35 or even 40 percent. At this level, a significant re-investment can happen in these fields and can deliver higher production, which in absolute terms will end up giving higher revenue to the government anywhere. Similarly, there has to be price parity in domestic production and imports. Now that shale discovery is beginning, there should be incentives to make it viable. ■

FUELLING INDIA'S ENERGY DREAMS

Cairn Oil & Gas, country's largest private sector producer of oil & gas, has stepped up efforts to significantly shore up domestic production in the coming years...

During the course of their long and illustrious journey, big corporate entities (usually in leadership positioning in their respective spheres) often discover new inflection points from time to time. For any vibrant company, the pursuit to find new springboards is perpetually imperative to skip to the new growth orbit. But what if the inflection point (of a specific firm) in sight is deeply entrenched with the objectives of the national economy? That is, within a company's epic-scale growth designs, you notice inherent intention to achieve something in the larger interest of the country. The desire to notch such a feat is rare and, therefore, exceptional or extraordinary in many ways.

It would not be an exaggeration to say that Vedanta group owned Cairn Oil & Gas (acquired by the group in 2011) today finds itself



in such a situation. As country's largest private producer of crude, the company is sparing no efforts in shoring up domestic production which is an imperative from the national economy's perspective. India, world's third largest consumer of oil and gas, imports 85 percent of its fossil fuel requirement and in the process shells out a staggering amount which covers a substantial chunk of its annual import bill (country's import of crude oil is estimated to cross \$100 billion in 2021-22). Renewable power undoubtedly has become more prominent than ever before creating the hope that in the long run it will lead the global energy basket. But judicious and pragmatic reliance on an energy mix basket (with a considerable share of oil and gas) is the new global mantra. Nothing surprising, in the 'Aatmanirbhar' (self reliant or self sufficient) clarion call of the current government, the idea of significantly enhancing domestic oil production figures prominently.

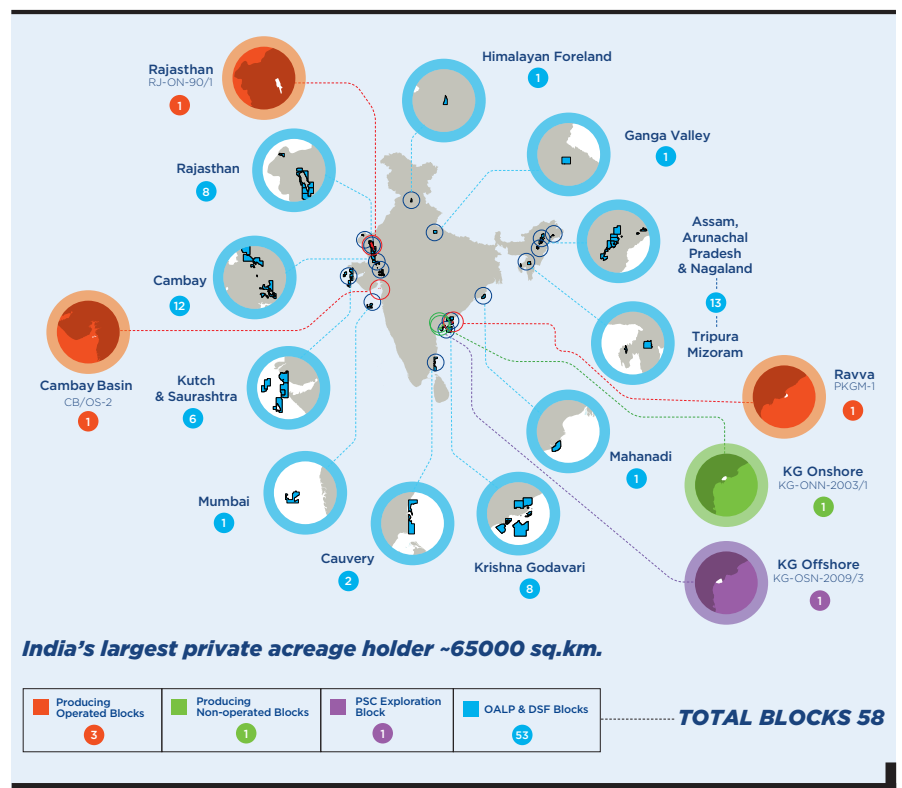
As the country's largest private producer of crude taking care of around one-quarter of the total national production, Cairn is in the thick of things. It has the most expansive portfolio of oil blocks in the country today, applying best of the technological solutions to augment production, and is on the verge of introducing a new avenue of exploration called Shale discovery. The Corona led disruption had led to a serious holding up of the capex plans of many oil and gas firms globally. But Cairn has taken a contrarian route and has drawn quite a war-chest to reach its primary goal of contributing half of the country's production. With best execution partners in tow, the company is keen to make the coming years most eventful in its journey which, in turn, has strong implications for pushing the country in the direction of reducing the import dependency. "The demand for oil in absolute terms will continue to rise for many years and we are committed to

increasing our domestic production in oil and gas by upto 50 per cent," Chairman Anil Agarwal, had told the shareholders at the AGM last year.

The icing on the cake is: while planning the next operational leap, the company is further consolidating its strategy to change the lives of communities around its facilities with defining CSR (corporate social responsibility) programmes. Its social sector driven initiatives are now all set to add a new paradigm with the recent announcement of a dedicated ESG (Environmental, Social and Governance) roadmap.

Cairn's recent report card has some distinction marks.

In February this year, the company announced an oil discovery close to its prolific asset in Barmer. In a stock exchange filing, the firm said it had notified the government and the Directorate General of Hydrocarbons (DGH) of the discovery in exploratory well WM-Basal DD Fan-1 drilled in OALP Block RJ-ONHP-2017/1. The 542 square kilometer block is located in Gudamalani and Chihtan Tehsil of Barmer. "Durga-1 (earlier WM-Basal DD Fan-1) is the second well drilled in the Block RJ-ONHP-2017/1 to a depth



NEW DISCOVERIES & EXPANSIVE PORTFOLIO

Talk to any oil expert and he will tell you that for any active upstream company with a big portfolio of blocks, stumbling on new discoveries (size may vary) is quite imperative. This is important to sustain the momentum and on this front,

of 2,615 meters," the firm said. Earlier in August last year, the company had announced a natural gas discovery in Gujarat which it had won in the open acreage licensing policy in 2018. The block, Jaya, is located in Bharuch district.

These discoveries are reflective of ongoing efforts of the company to gather further momentum in its grand

quest of considerably increasing its output from a diversified set of blocks spread all across the country- from Himalayan Foreland to Kutch & Saurashtra and from Cambay to five states in the north-eastern belt (refer to the graph – Cairn OALP Map). As per a company note, today Cairn Oil & Gas has a world-class resource base comprising 58 blocks including the 41 blocks under the Open Acreage Licensing Policy (OALP) Round I auction, five blocks each under Round

that year and the largest discovery in India since 1974 when Mumbai High was discovered) and laying of world’s longest heated and insulated pipeline in 2008 running for over 600 kms, has been carried forward by Vedanta at a brisk pace.

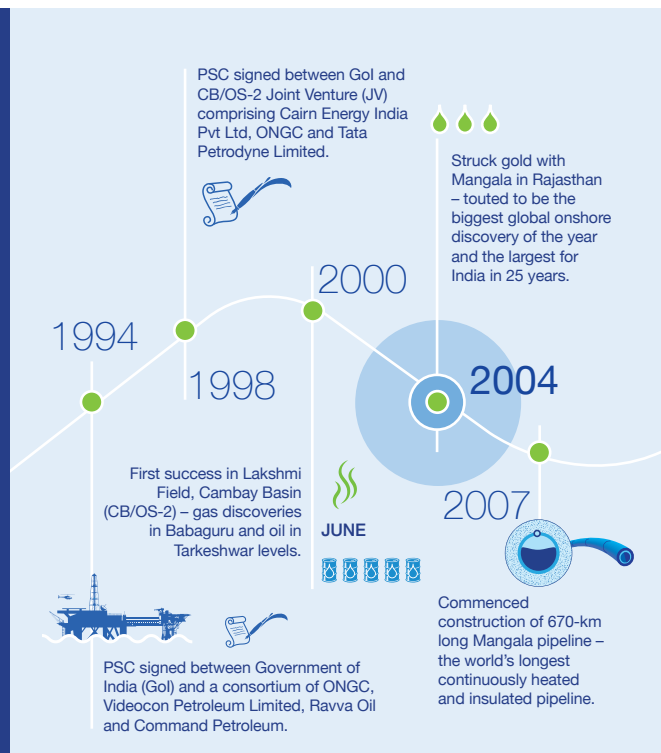
Statistics tell the story. Cairn presently has under its command a staggering 65,000 square kilometers of acreage area (grown up by 13 times in the past two decades) and has made 38 discoveries till date (refer to the graph

189,000 bopd registered in FY 19 before the pandemic. It is, however, important to note here that despite disruptions in 2020 after the pandemic led closure, the company continued production and reported a total of 40,472,491 barrels of crude output during the lockdown. This helped in reducing oil imports by Rs 31,700 crores in FY2020.

And it’s not only oil, Cairn is also closely aligned with the government’s vision of making India a gas-based

JOURNEY OF GROWTH

<p>~65,000 sq km</p> <p>Acreage 13x increase from 5,000 sq km to 65,000 sq km</p>	<p>1,62,104 boepd</p> <p>Average gross operated production in FY 2021</p>
<p>17,695</p> <p>Lives impacted through Nand Ghars in FY 2021</p>	<p>2,34,134</p> <p>Lives impacted during COVID-19</p>
<p>~INR 16,600 crore</p> <p>Crude oil imports reduced in FY 2021</p>	<p>\$ 31.7 billion</p> <p>Total contribution to state and national exchequer till FY 2021</p>
<p>4.03 crore</p> <p>Total lives touched through our community initiatives in FY 2021</p>	<p>44,715</p> <p>Agriculture assistance and animal husbandry</p>
<p>3,111 km</p> <p>Rajasthan field spread across</p>	<p>38</p> <p>Number of discoveries</p>
<p>650% increase</p> <p>in Barmer’s per capita income since coming of Cairn; contribution of 7.11% from Barmer to Rajasthan’s GDP</p>	



II and Round III, and two awarded under the Discovered Small Fields (DSF) Round-II.

Under the stewardship of Vedanta which had bought a controlling stake in Cairn, a global conglomerate, in 2011 by spending a staggering over \$10 billion, Cairn has simply skipped to a new orbit especially in terms of geographical footprint. The baton of excellence and innovation displayed by the parental firm (in the decade prior to Vedanta’s entry) which had resulted in the discovery of Mangala in 2004 (the largest global discovery

– Journey of Growth). “From owning five onshore blocks with proven and probable reserves of about 1.3 bboe, Cairn has expanded its reach to 58 blocks in India with newer onshore and offshore blocks, which add an upside resource of about 5.6 bboe across the states of Andhra Pradesh, Assam, Tamil Nadu, Tripura, Himachal Pradesh, Uttar Pradesh, Arunachal Pradesh, Rajasthan, Maharashtra and Gujarat,” says a company note. Its oil production volume was pegged at 162,000 bopd (FY 21) which marks a marginal decline (due to Corona led disruption) from

economy. The company has developed a production base of 1700 MMSCM of gas and now set the target of growing this capacity by two and a half times - 4700 MMSCM by 2026.

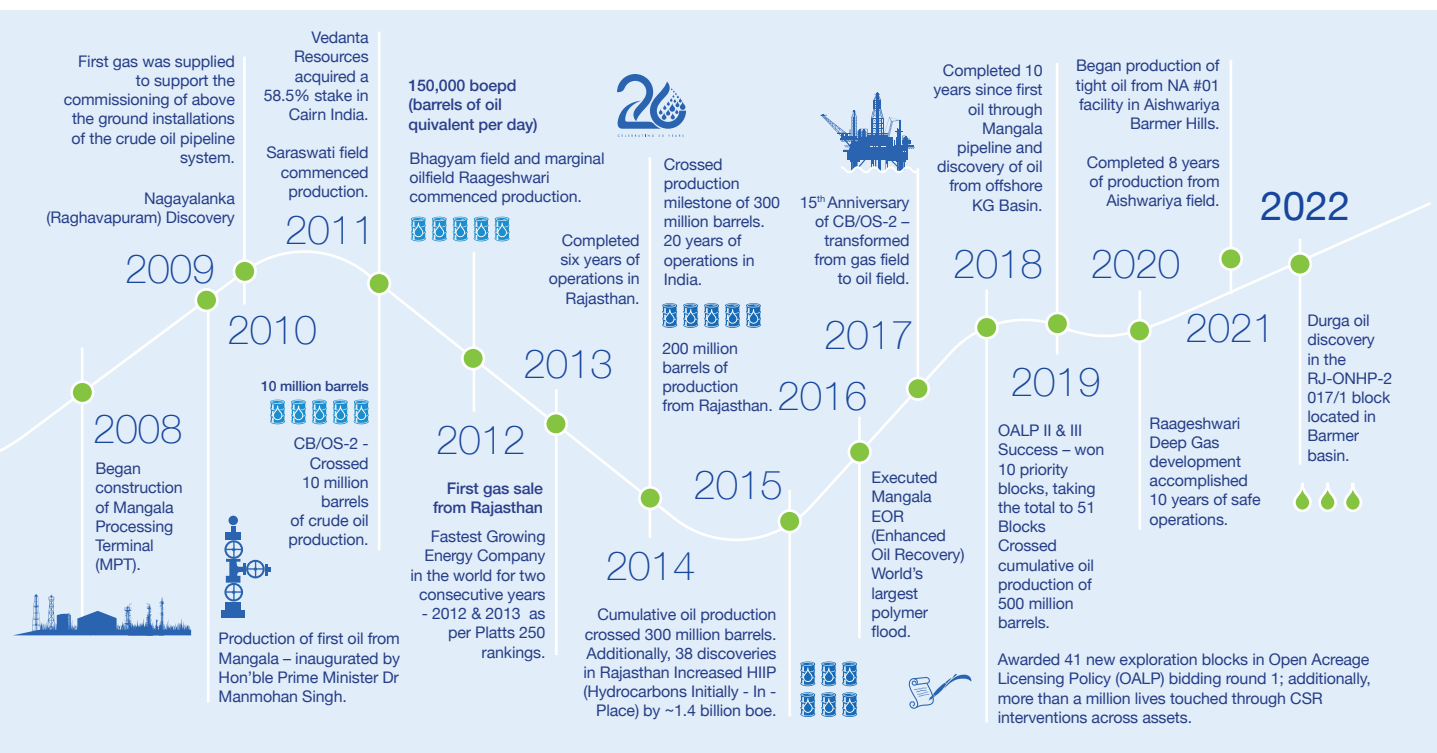
TOP GEAR STRATEGY

Apart from the two discoveries mentioned above, there have been some other positive developments too in the recent past which underline company’s expanding operational wings. For instance, it signed a Gas Sales Agreement (GSA) with Assam Gas Company Ltd (AGCL),

a state run unit involved in natural gas production and distribution. Under this agreement inked last year, AGCL will ensure purchase of 1 lakh SCMD rich gas from Cairn's Hazarigaon Field. 2021 also saw commencement in the production of tight oil from NA #1 facility in Aishwariya Barmer Hills. As per a company statement, "the project is a first in Cairn's tight oil portfolio with a growth potential to contribute 20 percent of the company's vision production."

percent contribution stage to the total domestic crude production, we will have to spend three to five billion dollars in the next few years," he underlines. The proposed investment will be routed in three major directions – in the existing MBA (Mangala, Bhagyam and Aishwariya) fields which have traditionally been prolific but now ageing assets which need intervention by way of ASP (alkali surfactant polymer) flooding technology. It has been kickstarted in

"We have adopted early monetization strategy under which we are fast tracking the exploration schedule. It usually takes 3-5 years for a block to reach to the production stage. Now we are trying to significantly reduce this duration. The 51 OALP blocks that we have, offer several billion barrels of oil equivalent potential. In a cumulative sense, the drilling activities that we have initiated so far cover anything between half a billion to one billion barrels of crude," says Biswanath Ghosh,



Based on recent developments and the formidable base of oil and gas blocks, Cairn is clearly looking at the near run scenario as its moment to go for kill. "We have a total of four operational blocks. We have acquired significant acreage in OALP, where we are currently drilling. In the next two to three years, our intent is to invest heavily in recovery and get success in the new blocks," says Prachur Sah, Deputy CEO, Cairn Oil & Gas. Hitesh Vaid, CFO specifies the investment quantum and its possible breakup. "With our ambition to touch the 50

Mangala and will also be applied in the remaining two fields. "If you look at oil reservoirs particularly in Mangala, we are probably setting the benchmark. And that's through application of technology, tertiary recovery processes. We are continuing with this process and applying for Bhagyam, Aishwariya, and other assets that we have got," says Martyn Smith, COO. The company is likely to spend over one billion dollars in optimising production from these blocks. A major chunk of the proposed investments have also been earmarked for exploration in the OALP blocks.

Head (OALP). Rakesh Agjiwal, Chief Commercial Officer, adds, "Cairn Oil & Gas has planned its growth journey by intensifying exploration activities and improving recoveries from existing fields and has an aggressive investment plan wherein it intends to work with its business partners right from concept designing and detailing to execution and operations."

And then there would be serious investment on shale oil discovery expected to begin later this summer with Cairn commissioning first pilot in Barmer (refer to the story – Adding

New Dimension). The commencement of shale gas production in the near to medium run would mean addition of a new output pillar to Cairn's expanding production base. Harnessing of shale assets in the US (mainly in Texas) has turned world's largest economy from a net importer of oil and gas to exporter in the last 20 years. And with Cairn deciding to initiate it in Barmer closer to its prolific assets (usually found near larger commercial wells), analysts believe this could be a game changer.

PURSUIT OF EXCELLENCE

While on the operational side, Cairn Oil & Gas has gathered all the required constituents to create a grand show, an equally important but rather invisible component to the outside world is the larger support system of technological inputs, digitalization, manpower management, championing supportive policy environment, etc which are in the play to make the critical difference on the performance front. An underlying pursuit of excellence is a major unifying factor for all departments as they uniquely compliment each other in responding to the company's aatmanirbhar goal.

Among the technological applications, Cairn with over 20 years of operational existence has mastered some of the leading solutions like polymer chemical and ASP (alkaline surfactant polymer) applying them for large scale use. And this has surprised the stakeholders in the business as the company has graduated from applying water reserves to pump out oil in the initial phase when Mangala was discovered. "The company has been credibly aggressive in the way it has used technology," Martyn points out.

The technological architecture, however, does not merely comprise deploying processes to optimise oil extraction. It also includes creating a digitalised eco-system at all levels of operations. "The mandate is to help in increasing production by creating

an efficient digital base. We are creating a large-scale AIML (artificial intelligence and machine learning) enabled base and also transitioning to a cloud based data management system in association with Microsoft,"

We are creating a large-scale AIML (artificial intelligence and machine learning) enabled base and also transitioning to a cloud based data management system."

- Sandeep Gupta, Chief Digital & Information Officer



We run a number of programmes (e.g, Lakshaya, Step Up) to sustain a very efficient manpower pool."

- Pushkar Kataria, Chief Human Resource Officer



explains Sandeep Gupta, Chief Digital Officer of the firm.

HR head Pushkar Kataria and his team has a series of programmes to be executed regularly to keep 1400 plus employees flock in fine fettle. Among other things, the list of imperatives for the HR department includes training different layers of the talent pool on a regular basis, set up operational standards across the manpower value chain and ensuring their strict compliance. "We run a number of programmes (e.g. Lakshaya, Step Up) to sustain a very efficient manpower pool. The benchmarks in terms of ensuring productivity can be well gauged from the fact that we have eight employees per 1000 barrel ratio whereas some noted firms have 75 people for the similar ratio of output," says he.

The team dealing with policy implications, has an equally important



The government can make a critical difference by way of extending incentives under HELP and simplified approvals to blocks under previous regimes as well."

- Preet Pal Kahlon, Chief Policy & Regulatory Officer



Cairn Oil & Gas has planned its growth journey by intensifying exploration activities & improving recoveries from existing fields and has an aggressive investment plan wherein it intends to work with its business partners right from concept designing and detailing to execution and operations."

- Rakesh Agiwal, Chief Commercial Officer



role to play. As the largest upstream private player in the country, engaging external agencies including government machinery & stakeholders in healthy discussions on pertinent issues is an ongoing exercise. "India has multiple regimes for Oil & Gas. Policy for oil & gas sector for any country should be a function of whether the country is energy surplus or deficient. If you are deficient, then a progressive policy framework offering more incentives for the upstream entities, can lead to increased production" underlines Ms. Preet Pal Kahlon, Chief Policy & Regulatory Officer. According to her, increasing domestic production of oil & gas is critical for India to achieve its targets

FAR FROM OVER

Ever since M King Hubbert propounded peak oil theory in 1956, the world has been in a perpetual debating mode trying to figure out the possible expiry date of oil and gas reserves. Using different mathematical calculations, Hubbert (a renowned US geologist) had predicted oil production reaching its peak in early 1970's in the US followed by a steady spell of decline.

With fossil fuel resources present in finite quantities, there have been several other theories which have appeared from time to time reiterating 'the end is near' assumption for fossil fuels in the 21st century. However, the demand and supply trends do not exactly point at the beginning of the end game just as yet. Particularly, if you look at the equation from the perspective of main sources of energy to the world where oil and gas continue to dominate the scene. The oil production had touched its peak in 2019 with a record of 99 million barrels per day which was the consecutive 10th year of increased oil production globally. Following Corona, there was a significant dip in 2020 when the production fell to 91 million barrels per day. But a strong reversal is projected now that the world is getting over pandemic shock and daily production is expected to shoot up to 104 million barrels per day by 2026.

Fossil fuels (primarily oil, natural gas and coal) account for an overwhelming 80 percent of energy demand and going by the estimates, the earth still possesses a very large quantity of their reserves which is likely to last for many decades. The total oil reserves in the world is estimated at 1.64 – 1.66 trillion barrels (including oil sands reserves) with the largest proven reserves situated in Venezuela (South America) followed by reserves in the Middle Eastern & North African countries (USGS & EIA). The projection for total gas reserves again is a staggering figure - 7490 trillion cubic feet with the largest reserves located in the Russian Federation, Caspian Sea, Ukraine, Belarus, Tajikistan and Armenia.

Studies suggest that even with best demand conditions, oil is expected to last for at least next 40-50 years while natural gas would be in use for another 50-60 years. Coal, another major fossil fuel, still has over a century left before it becomes extinct. That renewables would ultimately hold the global energy baton in this century is a fact nobody disputes. But it is certainly not going to happen in the near to medium run. Nothing surprising, most of the countries today are talking of relying on a comprehensive energy mix basket (fossil and renewables to supplement each other before the latter take over in the due course) and have set the net zero deadline which is a few decades away from now.



of reduced dependence on imports and becoming a \$5trillion economy. A crucial component to this is to incentivize the current producing blocks for ramping up production through deployment of Enhanced Recovery techniques. She, however, stresses that over the years, thanks to forward-looking policies like introduction of Hydrocarbon Exploration & Licensing Policy (HELP), Ease of Doing Business, etc., many procedural complexities have been sorted in the Upstream oil & gas business. According to her, the initiation of HELP in 2016 has been a progressive step as it has significantly reduced fiscal levies & provisioned for a uniform licensing system that covers all hydrocarbons such as oil, gas & coal bed methane. HELP has also facilitated oil companies to choose blocks under the Open Area Licensing Policy (OALP). Previously it was the government which used to select blocks for fresh exploration. "The government can make a critical difference by way of extending incentives under HELP and simplified approvals to blocks under previous regimes as well.

It is these imperatives we have been highlighting at various forums which can enable our commitment to Aatmanirbhar Bharat and significantly contribute to reducing India's dependence on oil & gas imports," says she. On the policy front, Deputy CEO Prachur is also a leading face within the fraternity strongly advocating the industry specific issues. For instance, he is strongly recommending the shale oil recovery process to be included in the union government's Production Linked Incentive (PLI) scheme to give it a major boost.

In a nutshell, the various integral components of Cairn's Oil & Gas' (the brand name now also exclusively belongs to Vedanta and its Scottish parent will now be known as Capricorn Energy) grand vision of producing India's 50 percent of crude oil in the next three years seems to be in place. And that ensures that every action of the firm will be minutely examined by the market observers going ahead. A company promising to fulfil a national dream is bound to draw more attention. ■

ADDING A REVOLUTIONARY STREAM

Cairn's shale initiative is yet another example of its ability to take bold and innovative steps to make a difference in India's crude production...

This is a story which probably qualifies to be called the most exciting development in the world of oil and gas discovery in the last 20 years. Around the beginning of the century, the US, the world's largest market, was largely dependent on oil and gas imports to

meet its energy requirements. The equation has, however, completely changed now. From a net importer, the country has turned into a net exporter and is consistently strengthening its position as a leading oil and gas producer in the world. In fact, there is no dearth of analysts who would tell

you that one of the key triggers behind the current turbulence in Eastern Europe is to make Russia weak. Russia with 30 percent oil and 40 percent gas supply to Europe is a global energy powerhouse. But with increasing production, the US is now looking to corner a sizeable part of this business.

GLOBAL SCENE

The change in the fortune of the US as an oil and gas producer stems from its ability to aggressively tap shale oil reserves. In 2001, shale gas was accounting a meagre 1 percent of its production which has now gone up close to 30 percent. As per definition, shale oil is a type of unconventional oil (also referred as tight oil) found in shale formations that are hydraulically fractured for the purpose of oil extraction. These are mostly smaller reservoirs found around the established prolific blocks but when harnessed adequately, as is the case in the US, they can contribute significantly.



This unconventional source has emerged as a major panacea for augmenting oil production in the US and other countries and several studies reveal gigantic levels of shale reservoirs around the world. It is estimated that there are at least 8 trillion barrels of oil shale resources around the world. An earlier report of EIA (The US Energy Information Administration) had projected a global shale gas reservoir base of 20,451 trillion cubic feet. Apart from the US; Russia, China, Argentina and Libya are considered to have major shale oil resources. When it comes to shale gas, the major hubs are: China, Argentina, Algeria, Canada and Mexico.

Needless to say, the world at large is rising to the prospect of reaping rich dividends out of this unconventional resource. And in India where shale potential has been more of a talking point in the past, Cairn has now taken upon the responsibility of adding this revolutionary stream to the national production portfolio in a big way. Driven by its objective to significantly bring down India's import dependency, Cairn has made a decisive move in tapping shale resources around its existing prolific block in Rajasthan.

SHALE GAMEPLAN

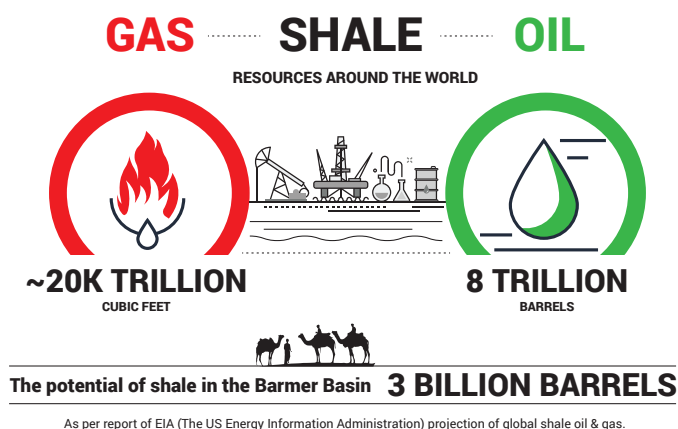
According to Deputy CEO Prachur Sah, as part of its large-scale production augmentation exercise in and around its production fulcrum in Rajasthan, the company has now drawn a specific strategy to harness shale resources. "Over the last one year, we have conducted studies in our Barmer basin and are convinced that the region has shale reservoirs," he says.

A key element of Cairn's shale strategy is collaboration with global technology and services leaders in oil exploration like Halliburton and Baker Hughes to conduct pilot tests. Having partners who happen to be leading global entities in oil and gas discovery including harnessing of new shale assets is expected to be immensely advantageous in the sense that it would

not lead to a time consuming process of inventing the wheels afresh in terms of setting up processes. "They will execute the pilot projects and as soon as any pilot shows signs of success, they will ramp it up further. A lot of projects had failed in the US during the early stages of shale exploration primarily because it was new and there were a lot of lessons learned. We are trying to avoid that learning curve by bringing in companies who are global majors in the domain," he adds. The company is expecting to kickstart its first major

traditionally we have been doing," he underlines. On an overall basis, shale or tight oil discovery is estimated to be a costlier drive since they are smaller pools and often found much deeper than conventional deposits. Meanwhile, the plot for pilots located in the lower Barmer Hill formation belt has been taken on lease.

Cairn top brass is convinced they are kickstarting a stream which will eventually become a defining element in the country's quest to shore up its crude and gas production.



shale pilot in July-August and Sah underlines in next eight months, the company may well be in a position to share some positive pointers. Going by the preliminary estimates, Barmer's shale potential may well be in the vicinity of 3 billion barrels of oil equivalent. "The real question is: how much of this can you actually produce? Typically, if you take a thirty percent success ratio, we are looking at a billion barrels. But even if you extract ten percent, it's huge," he further explains.

According to the CFO Hitesh Vaid, investment in tapping shale potential in the near run is part of the company's capex plan for the coming years and after the results of pilot tests, it will quickly draw a business strategy which is going to be different. "It will be different and more like a factory model of production compared to what

And, therefore, some serious fiscal incentives at the starting phase would make a world of difference. "I think we can be quite competitive in the shale market. The global shale production benchmark is \$50-55/ barrel. With the right incentives, we can deliver at \$40-45/barrel which would be good for the country," Sah says while adding that a big game changer for scaling up Shale activities could be its inclusion in the popular Production Linked Incentive Scheme (PLI).

Market meanwhile, is looking at Cairn's shale moves as yet another example of its ability to take audacious steps to make a difference in India's crude production. An objective that has several game changing dimensions including making Barmer, India's Texas (hub of shale production in the US) in not so distant future. ■

WE'VE CUSHION TO MAKE AGGRESSIVE MOVES

According to Hitesh Vaid, CFO, the company's fresh capex plan will bring in incremental output benefits across its asset class. He also emphasises that the spike in crude prices puts the company in a comfortable position to take more risks...



HITESH VAID, CFO

Q Covid period must have been quite challenging for you in terms of maintaining financial equilibrium with global crude prices nose-diving and disruption in production. How did you deal with that situation?

A Oil prices had become fragile even before Covid crisis. And when you are in the oil business, you know how these cycles impact. In such difficult times, you have to tighten your belts and ensure that you carry your partners and vendors along. This crisis was, however, more serious and uncertain. And a lot of things were done to sustain the work flow as best as we could have and for this, we optimized specific processes. Our large Rajasthan field was a big advantage. They generated sufficient cash flow and helped us to run our business without worrying about financial resources.

Q Conventional wisdom suggests 20-21 was an exceptionally bad year for oil companies in terms of earnings. How would you explain your own specific case?

A In terms of earnings, we still ended up generating positive cash flows. On an average, oil price for the year was around \$43-44/barrel. And our average cost of production is in the range of \$8-9. Of course, there is the issue of a

high taxation structure for domestic production in India which amounts to as much as 70 percent.

Q In a broader sense, what is the kind of investment this company has made in the last five years?

A We have invested close to three billion dollars in the last five years. Five years back we were not producing gas in the Rajasthan field but now our output is more than 150 million cubic feet and our gas business is contributing a volume which is equivalent to around thirty thousand barrels. Now, in the gas business we have invested close to \$750 million and we have already drilled around 42 wells. We are also drilling another 27 gas wells currently. And we also spent heavily in implementing polymer flooding in both Bhagyam and Aishwariya fields.

Our intent is to contribute fifty percent of total domestic production. To reach there, we will have to spend three to five billion dollars. A substantial portion will be used in implementing ASP (alkaline surfactant polymer) in the MBA fields.

Then we invested money in our offshore assets - Rava and Cambay. And our investment drive in the OALP blocks has also picked up momentum and in the recent years, we have spent close to \$150 - \$200 million.

Q And how would you explain your new capex plan which is attached to some big milestones to be achieved in the next three years?

A As you know, our intent is to contribute fifty percent of total domestic production. To reach there, we will have to spend three to five billion dollars. A substantial portion will be used in implementing ASP (alkaline surfactant polymer) in the MBA fields. A large part of it will be used in further augmenting our exploration drive and it has two parts - near Rajasthan block and the OALP blocks. The investment we would need here is in excess of a billion dollars. And there will be shale recovery which we are going to kickstart soon. Furthermore, we will also spend around four to five hundred million dollars on the offshore blocks.

Q Does this recent spike in the crude prices in the international market a major cushion for you now?

A Yes, of course. From our perspective, even if the price band is at a lower level of \$60, we are in a comfortable position in terms of carrying our capex plans forward. In the past when we had started a \$3 billion capex plan in 2017-18, we had told the market our running projects will give us an RoR (rate of return) between 20 percent at the average crude price of \$40. So if the price goes to a high trajectory which is the case now, it gives us the cushion to take more risks. I would also like to mention that one of the key triggers of the recent price hike is the lack of aggressive investment commitments on the part of global oil majors. In the last two years, the annual investment in the oil and gas sector has come down to half of what it used to be in the past. There have been no major discoveries also. ■

GLOBAL PARTNERSHIPS



The massive operational edifice created by Cairn has some unique features. Consider this. On any regular operational day, there are over 10,000 people that work in its fields across the country and in aligned logistical activities. Cutting across the operational spectrum, Cairn Oil & Gas has hundreds of vendors taking care of different legs of its large-scale operations. However, when it comes to the critical functionalities like production, production augmentation, new field exploration, and assessing advanced technological solutions, the company follows a singular policy of 'bonding with the best' in the world. Global entities known for their cutting edge solutions especially for the oil and gas industry are its execution partners. Companies like GE Baker Hughes, Halliburton, Schlumberger, etc. are some leading names in this list.

These partnerships have been in place for quite a while and have further consolidated with Cairn's significant expansion (bagging more blocks) of its operational portfolio over the last decade. "We are a very proud service provider and partner of Cairn. It sets the highest standards in safety and we are collaborating with them in putting those benchmarks in the energy sector in the country," observes Neeraj Sethi, Country Director, Baker Hughes. On the sidelines of the ADIPEC 2021 in Dubai last November, Cairn and Baker Hughes

PARTNERSHIP

Some of the recently signed R&R (reserves and resources) contracts not only ensure payment for our services, but also bigger rewards on successfully meeting the target. These kinds of innovative models play a critical role in keeping partners fully aligned with Cairn's overall vision."

- **Vinay Malhotra, MD (India), Schlumberger**

Schlumberger



HALLIBURTON

Cairn is now going for production from unconventional resources, a domain where we have prominent positioning globally. We are happy to collaborate with them in this project and quite hopeful that this partnership will be fruitful."

- **Ashish Gupta, Business Development Manager, Halliburton Sperry Drilling**



Baker Hughes

We are a very proud service provider and partner of Cairn. It sets the highest standards in safety and we are collaborating with them in putting those benchmarks in the energy sector in the country."

- **Neeraj Sethi, Country Director, Baker Hughes**



forged a new partnership that entails Cairn increasing its recoverable reserve five times over and above its current base of 45mmboe from the Bhagyam field. As per the agreement, the target is to reach close to 250 mmboe mark in the coming years.

Last November, Cairn also announced its ambitious plan of embarking on Shale production in Rajasthan in partnership with Halliburton, one of the world's largest providers of products and services to the energy industry. Cairn and Halliburton will develop pilot drills to explore the potential of

shale in the Barmer basin, currently estimated at 3 billion barrels. "We have been their preferred offshore partner. They are now going for production from unconventional resources, a domain where we have prominent positioning globally. We are happy to collaborate with them in this project and quite hopeful that this partnership will be fruitful," Ashish Gupta, Business Development Manager, Halliburton Sperry Drilling comments. Halliburton, meanwhile, is also partnering in another major production augmentation project. The two firms have agreed to collaborate and pursue the target of increasing recoverable reserves from offshore assets to 300 mmboe – a 10-fold increase from the present base of 30 mmboe. The offshore assets include Ravva, off the coast of Andhra Pradesh, Cambay, on the western coast, and several newly acquired OALP blocks.

In February, Cairn's fold of leading global partners further expanded with the entry of Petrofac, a leading provider of services to the global energy industry. Petrofac has bagged two new contracts valued close to \$100 million. This is the first major Operations and Maintenance (O&M) contract for Petrofac in India under which the latter will supply expertise at the Ravva Oil and Gas field in the Krishna Godavari Basin, in coastal Andhra Pradesh. Furthermore, Cairn has also awarded a EPC contract to Petrofac to fast track production and add new wells at Raageshwari Deep Gas (RDG) Field, in Barmer, Rajasthan.

Cairn's partners vouch that among other things, it's offering of innovative business models comprising attractive incentives and rewards are turning out to be a major draw for the collaborators. "Some of the recently signed R&R (reserves and resources) contracts not only ensure payment for our services, but also bigger rewards on successfully meeting the target. These kinds of innovative models play a critical role in keeping partners fully aligned with Cairn's overall vision," says Vinay Malhotra, MD (India), Schlumberger. ■

CAIRN HAS A HUGE ASSET BASE



MARTYN SMITH, COO

Martyn Smith, a seasoned oil and gas global leader, has recently joined Cairn as COO. The former head of the reservoir development wing of British Petroleum has spearheaded operations in several countries across four continents and firmly believes Cairn has laid a formidable foundation...

Q I know, these are early days for you as you have joined recently. But from your early assessment, what is your take on Cairn's operational strength?

A Cairn has a strong asset base and huge footprint especially in Rajasthan. In addition, we also operate facilities offshore the west and east coasts of India too. We have a successful history of operations, we understand the basins and rocks, and we have a good understanding of the facilities we have. The key is to make the best use of investments and get the most recovery from our reservoirs. If you look at our oil reservoirs at Mangala for example, we are setting an industry benchmark for efficient extraction. The application of technology and 'tertiary recovery' processes goes beyond Mangala to our other operated fields in the MBA area. In our gas assets, we continue to harvest the resources through good reservoir management practices, to steward reserves into production today and for tomorrow.

The Barmer basin in Rajasthan is our backyard, and we understand the area better than anyone. Our experiences there are the stepping-stones to further growth in the region.

Q The company today is clearly driven by the objective of significantly augmenting its production in the near to medium run? Where do you precisely see the scope when you look at its assets?

A There is a clear scope to optimise production in our brownfield assets. We will have to ensure that resources used there are utilised optimally. The use of data science is critical and the entire digital opportunity is tremendous.

Another critical area is unconventional reservoirs. The reservoirs here are quite tight and you have to work hard to get oil and gas. There are solutions around the world in terms of fracking, flooding and stimulating these wells. There are a lot of technologies available in markets like America. Argentina probably is a better example where conditions are somewhat similar to India. We will have to deploy some of those solutions, if the shale opportunity turns out to be as large as we think it is.

Q In specific terms, where do you place Cairn vis-a-vis other leading companies in terms of harnessing technology?

A In polymer, in the tertiary recovery system (washing the rocks with

chemicals to extract oil), Cairn is unquestionably leading the way in the world. Our experience in Rajasthan is second to none and some of the drilling technologies that we are starting to use in offshore fields are best in class. In the use of seismic technology in offshore fields, some companies are ahead of us. But that is primarily because of our predominant onshore setting.

On the digital side, there is a huge area of growth in front of us. In Cairn, we should be looking at the next level of our digital journey and plan something like creating digital twins of our facilities. You can almost role play your digital plants before you actually do it physically. This dilutes the possibility of dangerous operational components getting out of hand.

Q Are you anticipating some unique challenges here, something you may not have faced anywhere else?

A Working in Egypt or Iraq, I experienced the challenge of alignment between plans, technology and capability. Organizational capability to deliver is absolutely key, even if you have the other components in place. I really don't feel that about Cairn. I have been surprised and pleased about the capability of the people we have. The intellectual capital of the company is ahead of the curve.

Any company in the oil and gas industry often gets worried by the issue of resources. You may have ambition. But if you have a specific growth agenda, the investment is going to shoot up. In the case of Cairn, I believe the investment commitment is there. And I am absolutely convinced about the manpower capability and the knowledge base. It is all about bringing all of them together. ■



Vedanta Group has been at the forefront of sustainable practices that align with the Prime Minister's goals of achieving net-zero in tandem with positive economic growth

MISSION NET ZERO

Any observer who has minutely watched the growth journey of Vedanta group is likely to vouch this assumption. Firstly, when it comes to business operations and growth, it runs in the basic DNA of the group firms to go for extraordinary scale and top positioning in their respective spheres. And secondly, again in an extraordinary way, the Vedanta owned entities leave no stone unturned to give a massive facelift to their operational social settings. Irrespective of the oddities, the group companies including Cairn Oil & Gas have painstakingly moved ahead on this path with the same degree of commitment as they exhibit in meeting their business goals. The kind of transformation which Cairn has brought in Barmer in the past two decades with its slew of social initiatives is believed to have now emerged as a benchmark of what corporates can deliver to their surrounding communities.

BASIC FRAMEWORK

Continuing with this spirit of growing with the uttermost sense of social and national responsibility, Cairn Oil & Gas has now added a new paradigm to its approach. Responding to the larger climate change imperatives, the company has once again set afoot a pioneering step by recently announcing a well defined ESG (environmental, social and corporate governance) programme with the firm commitment of achieving net-zero carbon by 2050. "Vedanta Group has been at the forefront of sustainable practices that align with the Prime Minister's goals of achieving net-zero in tandem with positive economic growth. Our oil and gas business is today well-poised to meet India's energy needs and growth aspirations. Guided by the philosophy of 'Zero Harm, Zero Waste, Zero Discharge', we have formulated robust ESG targets for our operations which will help India's energy sector become more efficient

and enable the country's journey towards aatmanirbharta," Vedanta Founder and Chairman Anil Agarwal commented.

The company is all set to aggressively invest in the next few years to achieve its key business goal of producing half of India's crude. And with a well defined ESG programme and net zero target, the company has created the path to make its future moves sustainably. "This announcement is a reiteration of our commitment to delivering growth responsibly and sustainably. In line with PM's vision of net-zero carbon emission by 2070, Cairn stands tall with our country's energy aspirations," said Prachur Sah, Cairn Deputy CEO.

The broader ESG programme now becomes the cornerstone of Cairn's environmental and social initiatives. It also tends to further strengthen Cairn's strong responsible leadership positioning in Health, Environment and Safety (HSE). With investments in restoring local ecosystems and strict adherence to HSE guidelines, Cairn ensures a holistic well-being of the environment it operates in and for the people it works with.

ACTION PLANNED

In a broader sense, through its ESG programme, Cairn will be attempting to bring in innovative practices to create a healthier planet by focusing on both people and resources. For instance, it would aim to create 1 million sustainable livelihood opportunities by 2030 and educate a huge bunch of 9 million students using digital tools. On the social sector front, there would be simultaneous focus to make a difference to the lives of a massive 20 million women and children through



right nutrition and support of an improved health care system. The other clear direct focus area would be environment wherein the company would promote sustaining net water positive impact, use of renewable energy to support its own operations and planting of trees running into millions around its key functional hubs.

ground stations at every 18 Kms. Four of those stations are now completely on Solar Panels. On the route of its underground pipeline, there are above ground stations at every 20 km. Two of those stations are now completely working on solar panels. The company, driven by its dedicated ESG policy, has now set a plan to enhance the

to store water from the rainfall in the district. Incidentally, western Rajasthan has received a good amount of rainfall in the last couple of years and consolidation of water storage projects at this stage could be quite significant from the utility perspective. Furthermore, there is a large stretch of barren land with the forest department



CAIRN ESG PURPOSE

Transforming Responsibly for Securing India's Energy Future



TRANSFORMING THE PLANET

By committing to Net Zero Carbon and Net Water Positivity along with protecting & enhancing biodiversity.



TRANSFORMING COMMUNITIES

By providing nutrition and healthcare, education, and sustainable livelihood opportunities.



TRANSFORMING THE WORKPLACE

By promoting diversity, inclusivity and gender parity with constant focus on health and safety of all our employees and business partners.

Furthermore, in its own operations, it would promote gender parity, diversity and inclusivity while adhering to world class standards on the health and safety of its employees and business partners.

Considering the inevitability of operational scale building in the coming years and the corresponding need to initiate measures to offset surge in carbon emission, Cairn has already begun adopting new practices on a large scale. For instance, it is weighing options to maximise the contribution of renewable sources for its own energy needs. And as part of the process, it has started using solar panels in the Saraswati Block having 100KWp capacity and also installed Solar rooftop in its MPT base camp of 530KWp. On the route of underground pipeline, there are above

quantum of renewable energy usage in its operations. Today, it is drawing around 40 MW from the grid, mostly supported by thermal sources. But it intends to completely source its energy requirements from renewable agencies and will shortly sign contracts with solar and wind producers. This critical switch over is expected to unfold in the next two years.

Water conservation has been a major focus area for Cairn in the past. It is credited with creating scores of khadins and nadis, water storage structures, around Barmer. Now with a new ESG programme in place which will provide a new direction to its sustainability efforts, more emphasis is expected on this project. A senior company official confirms that Cairn social sector team will be embarking on creating several new structures

and Cairn officials have now joined hands with them to execute a large scale plantation drive (two million trees), as a carbon offset tool in and around key operational blocks of Barmer and Ravva. On a cumulative basis, the company with new social sector and environment centric programmes, is targeting to touch nearly 30 million lives by 2030 (the current volume of beneficiaries of its programmes is estimated at 6.7 million).

Cairn Oil & Gas is among few corporate entities in the country which have been in the forefront of declaring a full-fledged net zero plan. Reliance Industries (RIL), Tata Consultancy Services (TCS), HDFC Bank, Mahindra & Mahindra, ITC, Adani, and government run Indian Railways are other major business enterprises which have set afoot a similar plan. ■

WE ARE CLOSELY ALIGNING WITH GRASSROOT INSTITUTIONS

According to Harmeet Sehra, Head (CSR), the social portfolio of the company has a host of projects making an immense impact on the ground today ...

Q Making deep impact with its path-breaking social initiatives has been a hallmark of Cairn Oil & Gas for quite long. And now the umbrella ESG programme has also been initiated. How do you integrate your previous programmes?

A We have done a lot of homework on the ESG roadmap which, among other things, is also linked with the sustainable development goals (SDG). And sustainability is also the key element of every CSR work we are doing.

We have converged into three goals as main objectives of our ESG drive and accordingly segmented our activities in six projects. We would be focusing more on women empowerment, natural resource management, skill set development and livelihood.

Q Your e-kaksha project launched during Covid lockdown had helped a humongous amount of school going students. How would you explain the overall impact of this programme?

A When Covid crisis began, we realised it will have a major emotional impact on children. We realised that if they do not go to school for more than a year, it may have a serious bearing on their future growth. While searching for solutions, we stumbled on the idea of converting classroom teaching in a digitised format. We approached the Ministry of Education with this idea and eventually created 15-30 minutes of video on each chapter of the syllabus used for class 6 to 12. We have also made these videos available on youtube.

Today we have all the syllabus covered digitally (including Urdu and Sindhi) and is accessed by children across 33 districts in government schools. We have



**HARMEET SEHRA,
HEAD (CSR)**

also created a dedicated mobile app.

Our e-kaksha initiative has received an overwhelming response, not only from students in Rajasthan but all across India. The platform has made a huge impact with 7,11,000 student subscribers and 11,70,08,618 views till date. Using this route, we have put nearly 9,545 video learning modules in the public domain. For the benefit of school children in the state, Doordarshan Rajasthan are now also showing these video modules made by us.

Q Encouraging livelihood at the local community level has been one of your major thrust areas. Your dairy development project in Barmer is an example of this. Please share some details...

A Yes, it is becoming big. Earlier local middlemen used to buy milk from dairy farmers at Rs 10-12 litre which was quite low. But we intervened by setting up chilling plants and connected them with dairy companies like Saras and Amul in Gujarat. The programme now has more than 5623 dairy farmers across 61 villages producing average of 21900 litre of milk per day. About 60 milk federations are involved in this programme which is

resulting in a commendable Rs 2.8 crore worth of business every month.

Q Your NandGhar initiative is undoubtedly the most popular CSR programme run by Vedanta group. How do you intend to scale it up?

A We have 49 Nandghars as of now and intent to scale up to 125 additional units by next year. Nandghars is giving us an opportunity to provide a diverse set of services to the targeted beneficiaries – education, nutrition and also health. We are also supporting adolescent girls and helping in water conservation projects (rain water harvesting) in schools in the interiors of Barmer. We are constructing borewells which will help communities as well as animals.

We have major plans to scale up our NandGhar units and the company has just committed another 25,000 units in Rajasthan. An MoU was recently signed between Anil Agarwal foundation and Rajasthan government and we intend to set them in the next two years.

Q In the government's scheme of things, anganwadi and local self help groups are the major pillars of social development today. How are you aligning with them for your social projects?

A We are establishing direct links with anganwadi workers and self help groups (SHGs). Through our dairy and natural resource management projects, we are connected with SHGs which we plan to further expand in the coming years. With anganwadi workers, we have been giving them the training through nandghars which are part of the local anganwadi centers. We also have similar engagement with anganwadi workers around our sites in Gujarat and Assam. ■



Cairn has touched more than six million lives till date through its social sector programmes making a critical difference to its focused social constituents.

TRANSFORMATIVE TRIGGER

For any old timer in Barmer, Cairn today is probably not just the name of a major corporate entity which is conducting a large-scale operation in their backyard. It simply means much more than that. To many, it means a transformative force that has triggered all round development in and around a non-descript, sleepy town nestled in the middle of the Thar desert. And much of this has happened in the last 10-15 years. A popular feeling among a section of people here is that the discovery of 'Mangala' has been quite 'mangal' (read: auspicious) for the desert town.

Today's Barmer has all the trappings of a bustling tier- two location with its vastly improved infrastructure and commercial hubs. The gradually enhanced commercial activities of Cairn Oil & Gas (which has clear imprints over the entire town) have given a major facelift to the town, something which the locals vouch for in no uncertain terms.

The icing on the cake is: these changes are not cosmetic which have merely polished the surface layer. Cairn's contribution to Barmer, other locations in Rajasthan and elsewhere in the country (where it has operational presence) in terms of significantly improving the social life in its surroundings goes much deeper. In fact, its diversified portfolio of social initiatives comprising education, water



preservation, employment generation, upskilling, engagement with local social stakeholders, etc clearly puts it in a different league as a responsible corporate citizen. Corporate Social Responsibility (CSR) activities may have been made mandatory by the government in 2014 but what Cairn is doing stems from its basic DNA structure guided by self-chosen goal of improving the Human Development Index (HDI) in its operational areas.

The company has touched more than six million lives till date through its social sector programmes making a critical difference to its focused social constituents. The metamorphosis Barmer has witnessed is a clear testimony of the kind of impact Cairn's diverse CSR portfolio is capable of

creating. After 2010, the per capita income of Barmer has shot up by a staggering 650 percent and this has elevated Barmer's position to the number two slot in per capita ranking after Jaipur. This unquestionably reflects that Cairn's CSR drive has a clear bottom up approach where it is empowering (economically and socially) stakeholders at the grassroot level. Something it is trying to emulate at other places as its geographical footprint expands.

If you closely examine the broad nature of its diverse CSR programmes, you are unlikely to miss the point that many of them are quintessentially on the lines of the grand social sector schemes run by the central government. These include epic-scale

programmes like Integrated Child Development Services (ICDS), Poshan and also some of the basic beneficial schemes for adolescent girls. Cairn's growing collaborative engagement with local self-help groups and anganwadi workers, the leading local agents of social changes, is a case in the point that the company and CSR programmes are effectively creating a direct bridge with a huge mass of potential beneficiaries.

Here is a quick glance of some of its noted programmes and the kind of impact they have made:



E-KAKSHA PROJECT

E-Kaksha Project, launched at the peak of Corona to help millions of students staying connected with their regular studies in the online mode, is the flagship CSR programme of Cairn today. Unveiled by the state Chief Minister Ashok Gehlot in October 2020, the programme had resulted from a tripartite agreement involving State Education Department and Mission Gyan with an intent to provide free and quality education for students of Class 6th to 12th. The project provides home-based learning opportunities for students across Rajasthan and other parts of the country.

Initiated as the first ever digital offering covering all 33 districts of Rajasthan, the programme has made

a huge impact with 7,11,000 student subscribers and 11,70,08,618 views till the end of February this year. The programme is believed to have significantly contributed in creating the foundation of large scale online learning in the country at the school level. This was the key panacea, stakeholders had resorted to deal with Covid closure and its impact on students. The New Education Policy, meanwhile, has now paved the way for the inclusion of online modules in a major way at every level of education. Cairn's E-Kaksha programme, therefore, is slated to go a long way.

DAIRY DEVELOPMENT PROJECT

With its key focus to encourage livelihood opportunities in its surroundings, Cairn Oil & Gas had earlier introduced a dedicated dairy development project which has significantly grown in size now. Helping the producer members of this programme at all levels of the process value chain (maintaining quality standards, linking directly with buyers like Amul), the project has made a significant impact in the region. It has more than 5623 farmers across 61 villages producing an average of 21900 litre of milk per day.

According to a project assessment report, the project has led to a major increase in the average income to

the tune of Rs 12,500/per month. The programme also entails engagement with more than 61 small dairy cooperatives in the region. Out of them, 15 units are in the self-sustainable mode. Quite interestingly, about 31 women self-help groups (SHGs) comprising 363 members are also part of this programme.

These women are trained in allied activities and linked with leading financial institutions for soft loans. Furthermore, to ensure improvement in milk productivity, both quantitative and qualitative, the company has also distributed Napie grass and fodder beet to over 1700 dairy farmers.

PROJECT NANDGHAR

For many social sector analysts who have been closely monitoring defining CSR projects, project NandGhar is the first major project which had underlined Vedanta's strong intention of being a social catalyst and differentiator. It is closely linked with the government's Integrated Child Development Services (ICDS) which tends to provide holistic development services – education and health being the key cornerstones - to children in the age group of three to six years. These are also centers of women empowerment. Cairn is currently operating 49 NandGhars in Barmer, Rajasthan.

The volume of beneficiaries of this programme is quite huge and it is also known for helping adolescent girls by providing them training in maintaining menstrual health and hygiene. Known for the hot cooked meals offered to the beneficiaries in these centers apart from primary education, NandGhars are also encouraging the Ministry of Women and Child Development scheme of Poshan Vatika – creating nutri gardens within the center for growing nutritious fruits and vegetables.

ANGANWADI PROJECT

Recognising Anganwadis as the fulcrum of grassroot development,

Cairn has significantly enhanced its engagement with these units in the recent past. The broader intention is to strengthen the efficacy of the government’s Integrated Child Development Services (ICDS) programme. The company’s CSR wing had earlier conducted a baseline study and based on the analysis, it has drawn

government departments for their specific needs. The field coordinators also conduct door to door awareness campaigns about different government schemes and their eligibility criteria. The project is estimated to have helped over 13,000 locals since its inception.

Apart from these, Cairn’s expansive CSR basket has a host of other

Cairn’s ability to rise to every occasion when the local community is in trouble, once again became evident during the worst phase of Corona period when it initiated a dedicated Sanjeevini programme.

a three-pronged strategy to make its engagement with anganwadis more fruitful. These are: creating access to state-of-the-art Anganwadi centres with all basic facilities, providing need-based support services to ensure holistic development of children and carrying out IEC activities to create a sense of ownership among all.

As part of its CSR activity, the company has helped in refurbishing 11 Anganwadis supported by smart Anganwadi workers (AWWs). The project has a beneficiary pool of nearly 1,800 anganwadi workers. This engagement is expected to grow manifold in the coming years with the government recently announcing a major programme to create a substantial volume of smart anganwadis in the country.

COMMUNITY HELPDESK PROJECT

Cairn has now also initiated a major community development programme in and around its operational base in Gujarat. It is setting up a community help desk to assist the locals to avail benefits of various government schemes. Putting up dedicated staff to run these CHDs, the company has opened six centers so far. These centers are located at Trent, Hansalpur, Kankravadi, Vani, and Rehmalpur.

The staff at the center helps the local people by coordinating with different

pioneering programmes. For instance, its Barmer Unnati programme, supporting more than 6,000 rural families, helps in increasing the income of the farming communities by introducing and promoting new crops and technologies in the region. Among other things, it has also resulted in creating local infrastructure for water storage for agrarian and other purposes. Since the inception of this programme, 1304 wadis, 800 khadin, 90 rain water harvesting hubs and 28 nadi have been created. Furthermore, Cairn’s water ATM project (small RO plant centers currently 124 in number), are making immense contributions in providing safe drinking water to the locals. Because of the high mineral quotient in the under-ground water, the incidence of stunting is still high in Barmer.

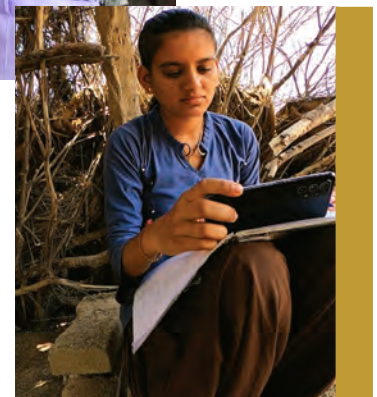
Meanwhile, Cairn’s ability to rise to every occasion when the local



The Sanjeevini programme entailed helping out the local administration and communities with various relief activities at large scale.



E-Kaksha Project is the flagship CSR programme of Cairn. It was launched at the peak of Corona to help millions of students staying connected with their regular studies in the online mode



community is in trouble, once again became evident during the worst phase of Corona period when it initiated a dedicated Sanjeevini programme. The programme entailed helping out the local administration and communities (in Rajasthan and in other states like Gujarat, Andhra Pradesh and Assam where Cairn has an operational presence) with various relief activities at large scale. These included medical help to Corona patients, sanitization, vaccination, etc. ■



Transforming lives, building a bright future.

Modernizing the Anganwadi network to pave way for a new India, through infrastructural facilities like, e-learning and BaLA design for education, 24x7 solar electricity, water purifiers and clean toilets. That's our goal.



An initiative by Anil Agarwal Foundation



<https://nandghar.org.in/>

Desh Ki Zarooraton Ke Liye

Nand Ghar: Model Anganwadi project with Ministry of Women and Child Development

How did Barmer, in Rajasthan, increase its per capita income by 650%*?

Crude oil exploration can
create many more thriving
economic hubs in India.



**DESH KI ZAROORATON KE LIYE
ATMANIRBHAR BHARAT KE LIYE**

*Source (August, 2019) : <https://timesofindia.indiatimes.com/city/jaipur/barmers-per-capita-income-has-risen-by-650-in-10yrs/articleshow/70900748.cms>