SPECIAL

WPC YP MAGAZINE
Published to mark the 23rd World Petroleum Congress

LEADING TO A SUSTAINABLE ENERGY FUTURE:

WHO IF NOT US? WHEN IF NOT NOW?
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Editor-in-Chief, Certification Engineer, Technip Energies, WPC YPC Representative, Russia

BY SHAMUS HARDIE
Editor-in-Chief, Market Analyst, Inter Pipeline, WPC Canada Member, Canada

As we head towards the third year of the global pandemic, many things continue to evolve on the road to the 23rd World Petroleum Congress in Houston. One of the constants, though, has been the determination and collaboration amongst our editing team of Young Professionals, who spanned seven time zones and represent nine nationalities, to deliver this year’s YP Magazine. This remarkable group has assembled a variety of fascinating articles for your interest, featuring perspectives from international authors representing almost 20 countries.

Based on the three main pillars of WPC Houston YP Program: leadership, technologies and sustainability, the overarching themes throughout this year’s magazine include WPC Young Professional highlights, multi-stakeholder engagement, industry leadership, bridging generations, and transforming technologies.

Within each of these sections are insightful and inspiring pieces, which touch on current issues faced by those in the early stages of their careers and others further along, sharing advice and knowledge for us students and young professionals.

Some of the standout articles in this year’s magazine cover advancements in diversity and inclusion initiatives, the value of mentorships and lessons learned from industry veterans, building trust and cooperation through remote work, and the importance of emerging technologies that address issues of sustainability and a low-carbon future, among many more great pieces.

On behalf of the World Petroleum Council’s Young Professional Magazine editing team, we once again hope you enjoy this compilation of articles as much as we did putting them together. We look forward to seeing you in Houston!
Dear industry young professionals, students, friends and readers,

It is our pleasure to welcome you to the 6th edition of the WPC YP Magazine. This magazine offers a platform where students, young professionals and industry leaders share their views on key topics shaping the energy industry. It also provides the WPC Young Professionals Committee with the opportunity to highlight the outcome of their key activities.

What a cycle it has been! Certainly the longest cycle in WPC history after the postponement of the 23rd World Petroleum Congress due to the global pandemic. Since the last Congress in Istanbul, we have seen an acceleration of industry transformations to fight against climate change and meet the needs of a growing population.

Every day, our industry, corporate, and individual responsibilities are questioned. Every day, we also observe progress, led by innovations in alternative energy sources and energy efficiency. This Congress, focusing on innovative energy solutions and bringing together global decision-makers, occurs at a critical moment for our future.

We both joined the WPC and its YP Committee now almost a decade ago and have experienced multiple transformations. From a flourishing industry driven by the strong demand for oil and gas back in 2012, to dwindling oil prices a few years later under the shale revolution, to the current need for reinvention towards sustainable and affordable energies.

This reinvention is also guided by other forces such as the evolution of technologies, the shift in both investors’ and customers’ expectations, and the entrance of new players. Our industry, as it transitions on a path to net-zero, will surely be even more different a decade from now.

And in this transition, young professionals and students can play a central role. The decisions made today will affect our generation and our children. It is therefore our responsibility to also embrace this challenge and be catalysts of the change we aspire to see. Energy moves the world, young leaders’ build-up the future. Let us do it together! Who if not us? When, if not now?

As Chair and Vice-Chair of the WPC YP Committee, we tried to contribute by providing our generation with the platforms to be heard, to champion new ideas, to promote a realistic image of our industry across generations and boundaries. After four years, and while a lot remains to be done, we can only thank you all for great encounters, the lessons learnt and the life-changing experiences.

We wish you all an amazing experience at the 23rd World Petroleum Congress in Houston and look forward to continuing working together!
Welcome Message from WPC President

BY TOR FJÆRAN
President, World Petroleum Council

These are thrilling times to be a part of the energy industry, an industry delivering the energy and products the world needs.

The world is experiencing an energy transition towards decarbonised societies.

For the World Petroleum Council (WPC) it is important to create arenas for discussion of the issues framing this transition, addressing how to deliver the energy and its products to the world, and to find answers to the question of: what will the energy future look like?

• Fundamental to the entire transformation of energy is innovation, and people are fundamental in finding and developing the right solutions
• Climate change is the main global driver
• Politics are driving the process and regulating the steps
• Access to capital is needed to make it happen
• Environmental impact is about not harming the planet earth
• Social impact is vital for companies to earn a licence to operate

• Perception of the industry is fundamental to attracting the best brains
These are the issues WPC has identified in its research with members and stakeholders to be the key ones in framing the global energy agenda of today and tomorrow.

All are interdependent and interlinked parameters for succeeding in the energy transition – being more energy efficient, decarbonising the production of energy and its products, which implies reducing the amount of fossil fuels in the energy mix.

We have listened to our National Committees, our Young Professionals, and many other key stakeholders for their perspectives of the transformation.

The countries and regions across the world are different and their energy-related challenges and opportunities are somewhat unique and country-specific.

However, all are fully aligned that these issues are the important ones for us to address going forward.

In the future energy mix, oil and gas will continue to be vital into supplying the world with enough energy for decades to come, but an increasing share will come from renewable sources. Our industry must do its utmost to reduce the carbon footprint from our operations and from our products.

And involving coming generations at an early stage in their education is very important for attracting young talents to our industry.

It is extremely valuable to address this in a scientific, educational, societal, and business context bringing across balanced information and understanding about our entire industry and its opportunities and challenges going forward.

So, I call upon you: Continue to be vocal and active, continue to challenge and push innovation which will be fundamental to success.

I am looking forward to a Congress that showcases an industry that moves forward together, cooperating in developing and implementing the solutions we all need for a low carbon future.
Welcome Message from the Chairman/23rd WPC Organizing Committee – US

BY JEFF SHELLEBARGER
Chairman, 23rd World Petroleum Congress Organizing Committee

As Chairman of the 23rd WPC Organizing Committee, I am pleased to welcome all WPC Young Professionals to Houston from December 5-9, 2021, for the 23rd World Petroleum Congress.

The 23rd WPC will bring our industry together during a time of unprecedented change for timely and meaningful conversation around the future of energy across the world.

The Young Professionals program featured at the Congress under the premise - Leading to a sustainable future: Who if not us? When, if not now? - will convene young leaders in our industry to address social responsibility, energy transition and the sharing of innovative solutions that will enable a sustainable energy future.

Located in the heart of the exhibition floor, the Young Professionals Stand sponsored by Hess Corporation will serve as the hub for the YP program, networking lounge and social activities. A designated amphitheater will feature interactive sessions including roundtables, panels, and real-world case studies that showcase what is driving the international, interdisciplinary, and intergenerational exchange of experience, perspectives, and ideas so critical to the continued innovation and development of our industry.

Away from the exhibition floor and Congress program sessions, the city of Houston has much to offer. Our venue, the George R. Brown Convention Center, is within walking distance of numerous restaurants, parks, art installations, nightlife, entertainment venues and hotels.

The Congress will be a unique opportunity for each of you to gain insights from industry leaders and engage with energy industry professionals from around the world. On behalf of the 23rd World Petroleum Congress Organizing Committee, I look forward to hosting you in Houston this December.

Sincerely,
Jeff Shellebarger
Chairman, 23rd World Petroleum Congress Organizing Committee

“THE CONGRESS WILL BE A UNIQUE OPPORTUNITY FOR EACH OF YOU TO GAIN INSIGHTS FROM INDUSTRY LEADERS AND ENGAGE WITH ENERGY INDUSTRY PROFESSIONALS FROM AROUND THE WORLD.”
Expectations from the 23rd WPC YP Houston Program

BY DAVID LANKFORD-BRAVO
Geoscientist, BP, WPC YPC Representative, USA

BY EULER REYES
Business Analyst Consultant, EOG Resources through Euler Morse LLC, WPC YPC Representative, USA

It is once again time for us to meet at the 23rd World Petroleum Congress to explore the current state of our industry and share perspectives, best practices, and ideas for what the future might look like.

We have begun crossing some of the Bridges to Our Energy Future that we collectively looked across when we last met in Istanbul, Turkey for the 22nd World Petroleum Congress in 2017. Now we welcome you to our home in Houston, Texas, the energy capital of the world, where we are looking for Innovative Energy Solutions to society’s challenges and defining how we will Lead to a Sustainable Energy Future.

While today’s world may look quite different than it did in 2017, years before the current pandemic brought our offices to our homes, our overall goals have remained the same: to bring safe, reliable, and accessible energy to the world.

Although the sources of the energy we provide may change as the world diversifies and new investments increasingly become focused on alternative sources of energy, our industry will still continue to serve as the foundation for the futures of the global economy and society as we head towards a carbon neutral society. It is people, our people, who are the essential wellspring of talent, creativity, and purpose needed to lead the world to a sustainable energy future.

The 23rd World Petroleum Congress’ Young Professionals Program is an intergenerational and interdisciplinary call to action for us to do just that with its theme of Leading to a Sustainable Energy Future: Who if not us? When, if not now? Our program builds on the dynamic sessions we engaged in at the 6th Future Leaders’ Forum in St. Petersburg, Russia in 2019, where we asked rising young leaders and industry decision makers to discuss the impacts of new technologies and policies on our energy future.

Our three pillars, industry leadership, sustainable solutions, and transforming technologies serve to guide our program in exploring the prismatic relationships between societal needs, cultural identities, technology, policy, and finance in today’s industry. This program has been created through the dedicated work of a multinational team of young professionals working remotely across the world to create an interdisciplinary and intergenerational platform to discuss the future of our industry.

This year’s Young Professional Program is hosted by a team of young professionals from the US, who have been preparing diligently to welcome everyone from across our country and the world. We are all ecstatic to invite you to join us at the Youth Stand in the exhibition hall of the 23rd World Petroleum Congress to discuss how we can work together to address our climate, society, and energy-related challenges; because who will do so, if not us? When will it happen, if not now? ■
Especially in this time of energy transition—where we want to reduce carbon dioxide emissions and avoid climate change—the industry needs Young Professionals to be dynamic, full of fresh ideas, and agile. It is important for the oil and gas industry to quickly integrate thinking on how to make research into their structures to make the world more “green” into their structures. Therefore, young specialists, knowledgeable in new and emerging topics, can help.

We are the generation that has to live with the changed environment. We have the opportunity to help shape this new future. We are the Future Leaders.

In these complex times my motto is: Live your passion and stand behind it! We live in a time where everything is possible.

Within this section you can expect great Highlights from the network of the Young Professionals of the World Petroleum Council (WPC). For example, you will find the report of the 6th Youth Forum of the WPC – Future Leaders Forum (FLF) and the results of the 2021 Global WPC Youth Survey “Talent Attraction and Retention – How to Unlock New Opportunities for the Oil & Gas Industry”. If you want to know why Young Professionals decided to launch their own Local YPC, and what their plans are for the future, look at the section “Catching up with Local YPs”.

Enjoy reading these articles and let yourself be carried away by the many exciting topics they touch on.
The 6th WPC Youth Forum – Future Leaders Forum (FLF) was held in St. Petersburg from June 23-28, 2019. It engaged 1,345 participants from 62 countries – young professionals, students, industry leaders, scientists and governmental officials – in discussions on how to reinforce leadership, spur innovation, and foster sustainability within the oil and gas industry.

The World Petroleum Council, aware of the importance of providing young professionals and students with the significant role they deserve, launched the 1st WPC Youth Forum in China in 2004. The St Petersburg edition was the latest in this valuable series.

Organised as a conference “made by students and young professionals for students and young professionals”, the Forum has become one of the largest international platforms for young energy professionals. Here they can learn about the industry’s visions and insights through high-level sessions, share their expertise in technical papers, nurture discussions in roundtables and forums, master their skills and competencies in the case studies, network with their peers and enjoy an outstanding programme of cultural and sporting activities. For our industry, the Forum is also a powerful tool to build the next generation of leaders that are ready to take on new challenges and establish innovative solutions.

The existence of the Youth Forum was made possible by the leadership and support of the World Petroleum Council, the Russian Organising Committee and the Mining University, and a strong staff of volunteers.

Ensuring global diversity is always key for the WPC Young Professionals Committee when developing the programme. National representatives, including those from Canada, Hungary, Iran, France, Russia, Spain, Saudi Arabia, and the United States, played a crucial role in developing and executing the Forum’s technical programme. The Forum Programme Committee achieved a unique composition of speakers – with over 230 international panellists from the leading oil and gas companies, universities, associations and governmental bodies.

For the Russian National Committee of the World Petroleum Council, the closing ceremony in Konstantinovsky Palace was an important milestone, but not the end of the journey. The Russian National Youth Committee continues to develop important initiatives for students and young professionals. These include educational projects such as EnerGenious”, a local mentoring programme, the “Golden Legacy of the WPC” Scholarship a series of webinars. The “EnerGenious” project aims to share knowledge about the oil and gas industry with school students in order to attract the best talent. EnerGenious provided six students with scholarships to the best oil and gas universities in Russia, with a further 12 receiving internships at the country’s largest companies.

After more than a year of restricted travel and interactions, we look forward to the next Youth Forum continuing this unforgettable journey and inspiring experience.

Opening Ceremony of the FLF
2021 GLOBAL WPC YOUTH SURVEY

Talent Attraction and Retention - How to Unlock New Opportunities for the Oil & Gas Industry?

BY OLGA FEDOROVA SIDOROVA
WPC YPC Spain Representative

BY TAMARA SERES CLAIIVAZ
WPC YPC Serbia Representative

Acknowledged contributors:
Zaid Al Khateeb, WPC YPC Kuwait, Alaa Al Zarafi, WPC YPC Oman, Adi Akheramka, WPC YPC USA & Ivan Kurchatov, WPC YPC Russia with the support of BCG

The Young Professionals of today are the future leaders of tomorrow. For industries to flourish, it is critical for them to successfully attract and retain the best young talent and address challenges ahead.

Since 2008, the WPC has surveyed the perception of students and young professionals (up to the age of 35 with some input from the 36+ industry participants) on the global oil and gas industry. The 2021 edition of the WPC Youth Survey is focused on ‘Youth Perception of the Oil & Gas Industry: Attracting and Retaining Talent’. This survey provides insights to decision makers to understand the main levers industry has to attract and retain young people around the world, as well as highlighting any significant regional, generational, and gender differences.

Key Findings
This year’s online survey reached over 5,600 respondents from 112 countries. The young respondents’ profiles were evenly distributed by age groups and followed the same patterns as seniors in the industry. Broken down by discipline and gender, respondents were dominated by engineers – 74% of respondents – and despite strong participation from young women, men still represented 64% of respondents.

Recruitment, Attraction & Retention
Looking at the recruitment process, this year’s surveys result show new channels, such as online recruitment websites, have overtaken traditional methods such as university job fairs and professional network. These results highlight the importance of online presence for companies and the impact of the global pandemic on recruitment processes.

The industry’s ability to compete for high quality talent in a fast-changing world will depend on the young genera-
“THE NUMBER OF RESPONDENTS INTERESTED IN REMAINING IN THE INDUSTRY FOR OVER 10 YEARS HAS DECREASED BY ~12%.”

Top reason you find working in the industry attractive

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<th>2021</th>
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<tr>
<td>Career growth opportunities</td>
<td>Opportunity to work in a global/multicultural environment</td>
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<tr>
<td>Income earning potential</td>
<td>Strong interest in field</td>
</tr>
<tr>
<td>Strong interest in field</td>
<td>Opportunity to work in high-tech environment</td>
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What are the greatest challenges you face in your career today?

- Promotion opportunities
- Increasing workload
- Speed of promotion
- Work-life balance
- Future job security
- Lack of career path visibility

Industry Perceptions

As the energy transition accelerates, the future of work in oil and gas positions becomes critical on the agenda of the industry. That is why we further investigated the perception of students as the future workforce of the industry and young industry insiders on the positioning of oil and gas in the changing energy landscape and which has provided key insights.
There is an overall positive perception of the industry and its role such as that oil and gas demand will continue to grow in the next 20 years (79%), the industry is investing sufficiently in alternative/renewable energies (62%), and upskilling/reskilling industry talent with renewable energy competences (62%). However, an increasing share believe that the sector will not be a key energy source in the next 40 years according to almost 40% of respondents and the majority of respondents (57%) agree that energy transition is making the industry obsolete. On a positive note, 85% agree that oil and gas will play a key role as a solution provider for climate change mitigation activities.

In conclusion whilst the overall response for the industry outlook is positive, this year’s survey highlights that students and young professionals strongly believe that the industry is able to do much more to reduce carbon emission and should play a stronger role in leading the energy transition, without which the industry may fail to attract and retain the future leaders of tomorrow.

We look forward to further discussing these and many more insights with you during 23rd WPC Congress in Houston, Texas and you can read the full article on the WPC webpage.

Pandemic impact
In this year’s surveys we wanted to include new questions regarding the impact of the pandemic since it has had such a significant impact globally on the way we work and the challenges ahead.

It is interesting to see that respondents currently employed were generally happy (82%) with the way companies handled the pandemic and were agile in their response.

Whilst there is strong majority that has found working from home productive and that would ideally prefer to continue to work remotely a few days a week, students and younger professionals confirm that they prefer working a full office week.

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**Energy transition and renewables - Do you think...**

- O&G will play a key role as a solution provider for climate change mitigation activities
- O&G will have to significantly reduce their carbon footprint
- The energy transition is making the O&G industry obsolete

**Work arrangement preference by age group**

- Remote/Home all week
- Remote/Home few days
- Changing arrangement
- Office all week
- None of the above

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"THE MAJORITY OF STUDENTS BELIEVE THAT COVID-19 WILL ENDANGER THEIR FUTURE EMPLOYMENT OPPORTUNITIES, WHILE YPS ARE MORE OPTIMISTIC ABOUT THEIR FUTURE WORKPLACE SECURITY."
Since the WPC Mentoring Programme was established in 2010, various teams have worked to support young professionals and students in the oil and gas industry by promoting dialogue related to research advancements, best practices, and other topical themes such as workplace diversity and sustainability. To facilitate these conversations, the WPC Mentoring Programme was started with the goal of connecting young professionals and students with industry leaders.

With the energy industry changing at an unprecedented rate, we recognise that this generation will be faced with challenges like none other, and that mentorships will therefore be instrumental for their professional growth. In order to innovate and adapt through the energy transition, individuals will require more than just technical skills— they will require leadership abilities and a myriad of other interpersonal skills. This makes mentorships more crucial now than ever.

Over the last decade, the WPC has supported young professionals navigating their careers with guidance from leaders across the industry who are at the forefront of their fields. These mentors have shared their ideas on the transition of the oil and gas industry, provided a range of perspectives and considerations, and instilled a sense of confidence to young professionals to help them make important career decisions.

How does the Program work?

Through the WPC Mentoring Programme, groups of young professionals get to routinely interact with their mentor to seek advice and gain knowledge on professional subjects. This wisdom is valuable for students and young professionals as they face challenges in their careers, such as understanding job descriptions, valuing continued education, taking part in research work, and developing networking skills. Other advice from industry leaders during these regular mentorship sessions can positively influence young professionals’ career progressions and better enable them to make informed decisions.

As sustainability concerns continue to rise and the global energy system evolves, the next generation of oil and gas industry employees will not only have to master their core subjects, but also understand other interdisciplinary subjects. Our Programme provides a comprehensive experience that addresses these issues, including improvement of technical knowledge and building leadership qualities. Additionally, the exchange of research papers, articles, and books between mentors and mentees has also helped develop a better understanding of the issues facing the industry.

Enhanced professional performance can be achieved when curious people come together to discuss ideas and motivate each other to keep an open mind. The WPC Mentoring Programme is a platform for young professionals to stimulate their interests, while guided by an industry leader, with the aim of preparing and empowering the next generation of leaders.
YPC NETWORK DEVELOPMENT PROGRAM

How to Energize YPC for the Next Cycle Globally

BY ALI RAHNESHIN
WPC YPC Representative, Iran

The WPC Young Professionals Committee (YPC) launched the National Committee (NC) YP Network Development during the 22nd Congress (2017, Istanbul). The goal was to increase the global footprint of Young Professionals representing the WPC’s National Committees, as well as to identify and share best practices with local students and other young professionals.

This initiative aims to boost the development of local networks of students and young professionals through 4 main actions:

1. Benchmark existing YP NCs (e.g. legacy, number of members, major projects)
2. Centralise best practices (e.g. successful events, effective mentoring programmes)
3. Build guidelines to support the existing and future NCs in their development
4. Engage with countries without active NCs to identify potential development opportunities

Following a survey of all existing YP NCs, the team multiplied efforts to support the extension and development of our footprint (workshops, individual meetings, reports and website).

This initiative was proven successful in multiple ways. The footprint has extended from 24 countries in 2017 to 28 in 2021 (despite the pandemic challenges), with now 43 Young Professional members. This led to more country YP representatives being involved in WPC YP Projects (see Catching Up with Local YPs for more info).

Going forward, the WPC continues to support further development of local initiatives to energise students and young professionals globally! We welcome new members and feel free to reach out to the WPC YP Committee for more details! 

BY ALI RAHNESHIN
WPC YPC Representative, Iran

KPI
Analytical investigation on TPCs to find problems and propose solutions

Teams & structure

NCND WEBSITE
A general set of Q&A are described in 3 sections presumably

Q&A
Complementary discussion on the topics

SURVEY
Provides an overview of the TPCs

EXECUTION
Implementing the planned activities through former stages

Communications
Financials
Negotiation & Consulting
CATCHING UP WITH LOCAL YPS

3 Facts You have Always Been Curious to Know About:

Q: When and why did you decide to launch the Local YPC?
Q: What are the main initiatives/projects you are proud of?
Q: What are your plans for the future?

EMIL ALKHASLI
WPC YPC Representative, Azerbaijan

Local Azerbaijani YPs became well recognised following the participation of the Azerbaijani delegation at the 20th WPC in Doha 2011. However, our first ties with the WPC YC go back to 2009. After participating in events organised by the WPC Young Professionals Committee, we shared our experiences with fellow students that were interested in supporting YPC activities. This inspired us to launch the SOCAR Summer School, which enables future leaders in the petroleum industry to be creative and ambitious.

Another highlight was the training on environmental technologies in the petroleum industry, which consisted of a technical component and an innovation competition. Experiencing these ideas made us proud that the future generation had such great potential for sustainable energy management.

During the pandemic, we discussed the application of green energy technologies in the petroleum industry. Furthermore, we are planning to announce an essay competition on carbon capture and de-carbonization technologies in Azerbaijan. The main goal is to encourage young engineers to get familiar with modern technologies and to think creatively in pursuit of innovative and effective solutions.

ERFAN HASHEMI-NASAB
Process & Sustainability Consultant, BST Company, Young Professionals Cmte. Vice Chair, WPC Iran Member, Iran

The Iran YP Committee was launched in 2011 to give students and young professionals a productive space to interact, bring together members of various energy sectors, and facilitate dialogue through the planning of useful programmes and other exciting projects. It is one of the largest extended YPC in the WPC with 900 members.

One of our major goals over the years has been to introduce and spread WPC values and information through networks at WPC events, as well as our active involvement on the WPC YPC CONNECT LinkedIn group, National Committee Network Development, and the Mentorship Programme. In addition, our YPC was proud to host the Iran YP Awards and support the WPC Health, Safety and Environment (HSE) Expert Workshop, which was developed in 2021 as the first virtual Expert Workshop, enabling the sharing of extraordinary experiences within a diverse range of professionals.

In the upcoming years, we are determined to make more contributions and evolve initiatives by working with more local and international members. This will allow us to maintain an active participation in the WPC calendar, and grow and expand our presence.
The Youth Committee of the Russian National Committee (RNC) was launched in 2011 with the purpose of involving young people in local projects and international WPC activities. Today we are a team of 16 young professionals, researchers, and students motivated to shape the global energy future, exchange experience and knowledge in the oil and gas industry, and strengthen international cooperation.

Among the recent RNC YPC initiatives, the 6th WPC Youth Forum: Future Leaders Forum held in St. Petersburg in June 2019 was a particular highlight. The Forum brought together 1,345 participants from 62 countries, providing a large international platform for the professional interaction of young specialists in the oil and gas industry.

We are planning to actively implement a comprehensive Future Leaders programme that includes a number of projects aimed at identifying and supporting talented youth, as well as promoting career growth, in the foreseeable future.

I learned about the existence of the Chinese National Committee YPC (CNC YPC) three years ago at the 22nd WPC in Istanbul. However, the CNC had just completed its general election at that time and so I have only now been able to join for the next cycle. Going forward I have set a goal for myself to represent the CNC YPC with enthusiasm, and to connect with international academics.

Through the CNC YPC, I am proud of the participation in seminars with professors from universities in China and experts in the oil and gas industry. It is a wonderful chance to communicate with professionals and ask complex questions.

In the future, the CNC YPC plans to organise industry youth forums enabling young petroleum workers and students to participate in various activities with the WPC, encounter innovative technologies, broaden their horizons and establish international contacts. Finally, we are aiming to double the circulation of our Youth Technical Exchange both domestically and internationally and continue to make youth contributions to the oil and gas industry.

Oman’s National Young Professional Committee (YPC) was inspired by other international young professionals involved with the WPC and is supported by the Ministry of Energy and Minerals. Our YPC was launched in October 2018 to accelerate experience and knowledge exchange, offer professional networking in a social setting, bridge the generation gap, and ultimately prepare the industry’s future leaders. Oman’s YPs are determined to be leaders in the oil and gas sector through the next phase of the energy transition, ensuring its sustainability.

In 2019, we held a Petro-Olympics competition that included a quiz covering both technical and non-technical aspects related to the industry, featuring 16 teams from various oil and gas companies in Oman. To support the WPC efforts in promoting for the 6th WPC Youth Forum: Future Leaders Forum (FLF), we decided that the first-place prize was a fully covered trip to FLF.

Our National YPC will continue organising events like the Petro-Olympics, and plans to regularly publish its own magazine to support emerging young professionals and future leaders in Oman. Through our national YPC we are able to provide an open platform for all YPs to interact with, and learn more about, the energy industry and find ways to add value.
CATCHING UP WITH LOCAL YPS

3 Facts You have Always Been Curious to Know About:

Q: When and why did you decide to launch the Local YPC?
Q: What are the main initiatives/projects you are proud of?
Q: What are your plans for the future?

RYAN HENKELMAN
WPC YPC Representative, Canada

My involvement with the WPC Canada YP began after attending the 4th WPC Youth Forum in Calgary back in 2013. Since then, we have built on the success of this Forum to engage with the local industry and young professionals on topical issues.

We have organized seven consecutive annual Ignite Talks, which feature brief presentations from business leaders, academics, start-up founders and government. Our Ingenuity in Energy panels were also launched as a way to spotlight individuals challenging the status quo and reshaping the future of the industry. This event is in its third year and has continued to gain momentum locally.

Looking ahead, our YPC is planning to apply lessons learned from the 2019 6th WPC Youth Forum in St. Petersburg, towards future contributions with WPC, including support for the 23rd WPC Congress in Houston and bringing the following 24th WPC Congress to Calgary in 2023. Following the completion of my education in 2021, I look forward to returning to the energy industry to share my experiences and inspire more young people.

OLGA FEDOROVA SIDOROVA
WPC YPC Representative, Spain

The Spanish Youth Committee was launched in 2015 with the support of the Spanish WPC National Committee. The main objective was to create a meeting place for young professionals in the Spanish energy sector, bridging the generation gap by increasing communication and joint participation in WPC activities, as well as improving the international networking of young professionals across the industry.

The Spanish Youth Committee has organised diverse activities throughout the years on a regular basis, such as participation in official WPC events, facilitating meetings between senior and youth members, and providing workshops and networking events. Due to the pandemic this year, all activities were held as digital webinars. We are especially proud of our Oil & Gas Youth Awards held every two years, allowing the author of the top young professional publication selected by the Youth Committee to attend the WPC Congress.

We are looking forward to the WPC Congress in Houston and to relaunching our activities for the next cycle. We are always keen to expand our YP Committee with additional Young Professionals from Spain.
The oil and gas industry is facing an enormous transformation as it deals with the energy transition, government policies, and disruptive digital technologies. These challenges can be viewed as opportunities for leaders to test their skills and promote new ways of doing business. Through the articles in this section, you will find several examples of industry leadership presenting different perspectives.

With an energy environment still affected by the pandemic, it is important to highlight what the petroleum industry has done to overcome the crisis and emerge stronger. In an ever-increasingly competitive business, start-ups have emerged as the perfect example of innovation and creativity, something for which the industry has been known. In this section, there are two articles expanding on that topic: the first one is on diversity and inclusion, the second on net-zero emissions. It is a shared responsibility for all of us to transform the industry with diversity, equity, inclusion and with the aim of developing a more sustainable future.

And what about you? What do you think is key for leading the industry? I invite you to reflect on this statement and discuss with your colleagues in Houston.
“DESPITE ALL THE NEGATIVE EFFECTS CAUSED BY THIS CRISIS, PEOPLE AND COMPANIES INCREASED IN RESILIENCY AND REACHED NEW LEVELS OF TEAM COLLABORATION.”
Women in Oil & Gas: Change is Underway

BY ULRIKE VON LONSKI
COO, WPC

BY REBECCA HOOD
PARTNER, BCG

BY CLAIRE GAUTHIER-WATSON
PRINCIPAL, BCG

Diversity and inclusion is leading the oil and gas industry to take new and dynamic approaches to talent development and career management.

It is no secret that women are underrepresented in leadership and on the operational side of the oil and gas business. The challenge is to attract young women and retain female talent throughout their careers, which is a crucial component in the oil and gas sector’s diversity and inclusion strategy.

The latest Untapped Reserves report, a strategic partnership between the World Petroleum Council (WPC) and the Boston Consulting Group (BCG), illustrates the industry’s diversity challenge. The report finds a stagnation in the overall share of women represented, with female employees remaining at ~22% since the first report was released in 2017. Gender barriers are also still seen as a major challenge by young women entering the industry.

Modernising career management

Modernising the oil and gas industry’s concept of career management is crucial in a challenging environment, particularly to attract the most qualified and capable individuals from across the spectrum.

Externally, the goal is to attract the world’s top talent. Yet, as new graduates appear less inclined to join the oil industry, the employee value proposition must be even stronger. Most graduates can be enticed by the promise of new capabilities, dynamic career paths, and participation in new business lines, especially new energies, new concepts, and digital services.

Internally, individuals are asked to do more and perform better given the industry’s cost pressures. At the same time, new types of career paths are emerging. For example, more companies are expanding careers to capture talent from different parts of the business and grooming these people for leadership positions.

Today, promotions no longer rest solely on pure “technical” knowledge and capabilities but also on value chain business understanding and softer skills.

In the company analysis of the Untapped Reserves 2.0 study, we observed that progressive companies empower women by promoting them to Business Unit top management roles, even without a technical background, based on their performance and leadership qualities. This puts them on a path to the top and enables companies to benefit from a broader talent pool when senior management opportunities become available.

Female diversification is clearly an opportunity to modernise career management and invest in talent development, while ensuring that performance remains the key decision driver, protecting diversity and inclusion’s credibility and benefits.

To learn more about improving gender balance in oil and gas, please read the full Untapped Reserves 2.0 report at www.untappedreserves.com

1. WPC Youth Survey, 2021
Leadership in North America’s ClimateTech Incubation

BY MAZIAR ZAREA
Senior Research Analyst & Consultant – Upstream, IHS Markit

The largest ClimateTech startup incubator in North America opened its doors this past Earth Day to lead the way for a clean energy transition. This day is a landmark for the many partner organizations and Greentown Labs with their commitments to the causes of both climate action and innovation. Greentown Labs was founded in 2011 in Cambridge, Massachusetts, by founders from four enterprising climate technology companies with a common mission; to solve the climate crisis through entrepreneurship and collaboration.

The initial founding partnership between Promethean Power Systems, Altaeros, Coincident, and OSCOMP Systems has now grown to over 400 companies supported in the past ten years; comprising $1.5 billion dollars raised in funding, more than 7,800 jobs created, and an estimated $1.56 billion dollars in measurable economic impact.

This relationship with Houston is not accidental, as it is home to many of the world’s largest oil and gas companies with extensive experience in hard sciences, technical revolutions through research and development, and capital to scale-up and accelerate through the energy transition. This industry partnership is extremely important to allow small companies with brilliant ideas to rewrite convention, challenge norms, and develop technology to provide solutions to our most complicated environmental and climate problems.

The ClimateTech community wants to change the way people engage with, think about, and use energy. Every aspect of how we construct our buildings, travel around cities, grow food, and manage our water can be connected back to energy and our dedication to meaningful change through technological innovation.

How is Greentown Labs making difference?

They have provided a 40,000 square-foot incubator facility in the heart of the brand-new Houston Innovation District, offering a prototyping lab, offices, community collaboration spaces, and co-working amenities for all founders aiming to work toward the shared goal of a sustainable future.

Greentown Labs Houston has captured 40 different startups in six different sectors; agricultural technology (Agtech) and water, buildings, electricity, manufacturing, platform solutions and transportation. With proper support from corporate partners, lawmakers, and private citizens, these stakeholders will drive progress and results.

Getting involved is extremely important and easy – whether you have your own idea, either as a startup member or looking to join one that is already established, anyone can apply to be a part of something greater.

Offering access to resources with their partner companies, the investor program, and unique business tools, Greentown Labs will allow you to make a difference as a part of a supportive community, with more information available at greentownlabs.com. We can all embrace a more sustainable future through revolutionary innovations.
Breaking Down Boundaries of Cultural Differences and Conflicts to Lead and Create Equality in the Oil & Gas Industry

Diversity, equity and inclusion are key to breaking down cultural barriers. To achieve strategic ambitions for oil and gas companies, we need to change and move in step with society. The better our workforce reflects its customers, partners, and the countries in which we operate, the better positioned we will be able to accomplish our goals.

A fully inclusive workplace—one that accepts and values the strengths, skills, and creativity of all employees—is vital for both employees and the business to flourish. Diversity is incredibly important to increasing team performance, according to advisory firm Gartner, but diverse teams that are also inclusive perform 1.4x better than diverse teams that are not actively inclusive. They contribute to a company that is stronger, with a wealth of experience and views that will help it innovate, solve problems, and find new growth opportunities. I fully subscribe to that view; having worked in and led diverse teams myself in various places around the world. Yet we can still do more; this is a journey that the industry has been on for some time, but we need to move faster, lean in, and take action to ensure we all contribute to a better and more equal world.

When building teams, we recruit for experience, but also use various lenses, like gender, age, and race to ensure diversity of thought. This helps us to create a culture in which we truly challenge ourselves, mitigate biases, and think differently to arrive at different outcomes. This is especially important with the changing energy landscape in mind. The energy transition will present challenges that are varied and complex, and the solutions required will need different thinking than what we currently use.

There are additional steps that can contribute to a diverse and inclusive (D&I) workplace. This can include identifying and maintaining a diverse talent pipeline or succession planning with D&I at the forefront, as well as equal pay and benefits, workplace accessibility, and education and training.

Inclusion and inclusive behaviors are at the heart of effective collaboration and can unleash the best in everyone. We should challenge ourselves to go beyond trying to achieve metrics and develop the culture and behaviors that promote inclusion and belonging. As leaders, respecting each other’s differences, empowering diverse groups to contribute, and trying to understand how all employees perceive and respond to their organization’s ways of doing things helps build a culture of trust and respect. It is essential to communicate openly and transparently, modeling the behaviors we want to see and strengthening team engagement with psychological safety, active listening and asking and acting upon feedback.

Diversity, equity, and inclusion is not optional, and it is not just a tick of a box. It needs to be at the core of our business, the same as safety. Valuing people for who they are and creating a corporate culture where everyone feels they can bring their whole self to work, fosters a strong sense of belonging for all employees and breaks down the boundaries of cultural differences and conflicts.

In summary, challenge yourself; think about that one team or that one time that stands out for you, when you really felt inspired by diverse and inclusive behavior around you. What can you do to make that the future norm?
Pioneering the Path Towards a Low Carbon Future - Oil & Gas Leading the Way

By Julien Perez  
Vice President Strategy and Policy, Oil and Gas Climate Initiative

In September 2021, the Oil and Gas Climate Initiative (OGCI) celebrated its 7th anniversary. The initiative was announced to the world at the UN Climate Summit of 2014 and then, in October 2015, the founding CEOs declared their collective support for an effective climate change agreement to be reached at the upcoming United Nations Conference of Parties (COP) in Paris. It was a monumental moment for the oil and gas industry and paved the way forward for OGCI’s leadership role on the path towards a low carbon future for the oil and gas industry.

So, what does pioneering the path towards a low carbon future look like today? Seven years and several COPs later I am proud to be the Vice President for Strategy and Policy for a thriving OGCI. The initiative now has 12 members who account for around 30pc of the industry and remains CEO-led. OGCI members continue to play an important role in accelerating the energy system transition required to urgently tackle the climate challenge. Every day we work together to increase the speed, scale, and impact of our actions as the world aims for net-zero emissions as early as possible.

We focus on areas where we assist the market and our members’ activities. We look where the industry brings a unique combination of skills, especially in scaling solutions in difficult to abate segments of the economy, and where a short-term impact on emissions can be achieved. Our focus on delivery, whilst retaining high ambition, has resulted in significant progress in several areas.

In September 2018, OGCI set an ambition to reduce, by 2025, the average methane intensity of its aggregated upstream gas and oil operations to 0.20pc. Our membership responded, dropping absolute methane emissions by more than 20pc over a two-year period. Additionally, just over four years ago, OGCI created the Climate Investments fund with a mandate to invest in technologies and projects that could reduce harmful emissions. At the time, Climate Investments was unique in measuring itself by impact rather than by only financial return. Today the fund has more than 20 investments that are financially supported and doing well, with many companies achieving commercial and impact milestones.

Carbon Capture Utilization and Storage (CCUS) is a crucial technology for enabling a net-zero future and an area where the industry brings a unique skill set. As a coalition, OGCI has been able to go further than any individual company. In 2019 the CCUS Kickstarter was launched to help standardize CCUS by stimulating a commercially viable industry that provides safe, permanent storage options at a low cost and in multiple countries. In 2020 we advanced four CCUS industrial hubs that are on course to be operational before 2025.

These OGCI initiatives show what is possible but we know that more needs to be done across value chains, societies and governments. All of us who work in the energy industry need to be more ambitious and more willing to take the action required to achieve a low carbon future.
The 23rd World Petroleum Congress stresses the role and significance of innovation. This section will focus on both aspects from multiple, interconnected perspectives. In the first article, Basilio discusses the various opportunities and challenges, noting that the next industrial revolution extends beyond digitalization to creating a sustainable civilization. Roy further highlights the role of technology towards achieving net zero with a special focus on digital technologies.

Digital technologies can support high-fidelity reporting, tracking, and crediting of produced emissions and implemented abatements. Abatements would include decarbonization, sequestration and energy substitution. The conversion of carbon dioxide into products represents a potential sequestration route.

Akah et al. highlight various efforts and innovations to achieve such conversion. Under energy substitution, the greater adoption of renewables represents the main route. The last article, by Gutiérrez-Antonio, discusses the missing elements and necessary innovations for producing aviation biofuels.

Although oil and gas will continue to have a dominant role within the world’s energy mix, the transition towards a net-zero future is an imperative that we should—if we have not already done so—fully embrace. As we focus on innovative energy solutions for the 23rd WPC, the transforming technologies covered in this section remain at the forefront of our industry.
The oil and gas industry has historically experienced severe economic cycles promoted mainly by geopolitical and macroeconomic aspects. Exceptionally in 2020, the entire world faced what will be historically recorded as one of the greatest global challenges of our century. The unprecedented pandemic led to a record drop in oil prices and brought deep structural changes in the way we deal with technology and our relationship with work. From a civilization point of view, aspects such as environmental, social, and governance (ESG) and the energy transition have become more evident than ever, allowing for a deep reflection on the paths we want to build for the next generations. As a result of this reflection, an inevitable philosophical question arises for a restless thinker: What is the real revolution we are going through?

Obviously, everyone can have their own convictions about what is happening. Some might say that we are already in the fifth industrial revolution. Others may understand that we are in an energy revolution. Or more broadly, we can view the current scenario as a civilization revolution. However, some common beliefs can be considered as the three strong pillars of this exciting revolution we are experiencing: timing, accountability, and sustainability.

Recent observations and projections about global warming have brought a sense of urgency never seen before in society regarding the climate effects potentially caused by carbon emissions. We are facing a course of environmental changes that could severely impact our way of life on earth. These scientific projections, combined with the feeling of preserving life brought by the pandemic, are fostering an understanding in society about the need for immediate and urgent changes. When, if not now?

Thanks to the evolutionary thinking that is getting stronger in society, strengthened by the youthful positioning from the new generations, we are observing a growing movement of accountability on the changes needed to build a more evolved society. It has been a refreshing experience to see my three-year-old daughter commenting that “the planet will be sad” when she watches someone making an environmentally questionable action, like throwing garbage on the floor. Who, if not us?

On the other hand, the adoption of ESG policies has become an increasingly common and prolific practice in companies of various sizes and segments, strengthening a global sense of sustainability throughout society, but not only in companies with activities potentially harmful to the environment or society.

At the end of this short article, we continue asking questions and seeking an answer to the philosophical question posed in the title. However, regardless of the stamp we are going to give to the current technological, environmental, and energy revolution, the philosophical pillars discussed have been part of the change, which brings a mighty hope for a more technologically advanced and sustainable civilization in the near future.
The critical role of digital technologies for Net Zero

BY SANDEEP ROY
Associate Vice President, Infosys

The industrial revolution, fuelled primarily by hydrocarbon-based energy, led to economic prosperity. This came at the cost of escalating anthropogenic emissions of greenhouse gases. We can no longer continue with an energy system that solely depends on hydrocarbons. Transitioning to a low-carbon future is an imperative that the world has aligned to under the Paris Climate Accord, but there are massive innovation gaps, as highlighted in International Energy Agency’s (IEA’s) latest report. Innovation cycles need to be drastically compressed to achieve in 30 what was previously done over centuries. Technology powered by exponential growth in computing capabilities provides us with tools to achieve that rapid innovation at scale.

To understand how technology will help, we need to consider three key elements: data, digital capabilities, and domain.

Data is foundational. We cannot mitigate what we cannot measure accurately with fidelity. While there have been great improvements in how companies measure emissions, there are large gaps in areas such as scope three emissions. The use of real-time data to make decisions and meet emissions objectives is just emerging. As carbon pricing and trading come under universal regulatory frameworks, the ability to track provenance of renewable energy certificates (RECs) and carbon offsets will be critical. This will require universal data and exchange standards that can work across industry sectors. The Open Footprint initiative is one such step to achieve a common data platform to facilitate cross-industry exchange.

Domain knowledge will accelerate innovation. The energy industry today is organized along distinct silos that produce, transport, and consume energy. These distinctions are getting increasingly blurred as integrated energy systems emerge. We will need deep expertise not only in oil, gas, and utilities but in adjacent industries (e.g., automotive and high tech). Imagine an integrated system at a regional or national scale that optimizes the uptake of renewable power from thousands of home solar roofs, commercial renewables and gas-powered grid electricity, not only to charge electric vehicles (EVs) and power homes at the right times, but to increase the overall grid resilience.

The energy industry has a vast talent pool that needs to be refocused. We already see some of this, where expertise in subsurface and reservoir engineering is advancing solutions in carbon capture, utilisation, and storage (CCUS). Digital talent that sees the industry as the problem needs to be convinced that the energy industry is where their talents will make the most difference.

Digital technologies for innovations at earth scale. We need to combine the data foundation and domain knowledge with digital technologies to create a seamless digital fabric that scales at global levels. Large-scale methane mitigation for industrial facilities can be achieved through creative integration of industrial Internet of Things, computer vision, satellite imagery, and robotics solutions. As the provenance of renewable energy and its credits become critical for audit, blockchain can potentially create trustworthy systems.

Digital technologies are the catalyst that will help us innovate at scale, and we need an ecosystem of energy providers, technology majors and start-ups, academia, and policy makers to come together to solve this generational challenge.
Crude oil refiners continue to face a major challenge of declining future demand for transportation fuels. Stricter environmental regulations, aimed at reducing carbon emissions, led to greater vehicle fuel efficiency and higher demand for electric vehicles. Moreover, current market analysis forecasts that petrochemicals will outpace transportation fuels by 2030 to be the major driver of growth in world oil demand (see Figure 1). Such a structural shift in oil use away from transport fuels and the increasing share of crude oil feedstock in petrochemicals production pressured refineries to either change their configuration and operating conditions or adopt new approaches. One of these approaches is the direct conversion of crude to chemicals (C2C).

C2C allows the direct and optimized conversion of crude oil to high-value chemicals instead of traditional transportation fuels by removing or streamlining some conventional refining processes. This paradigm technological shift yields chemicals that are less expensive to produce while reducing the carbon footprint associated with the use of crude oil. C2C can also extend petrochemical production beyond world-scale petrochemical plants to refineries, increasing their profitability from a barrel of crude oil.

Implementation of C2C is capital-intensive. Thus, the success of C2C depends on technological innovation and research breakthroughs that can economically address the associated challenges. Such challenges include the nature of crude oil and the presence of heavy hydrocarbons and other contaminants leading to rapid coke formation and equipment fouling. To process heavy feeds, the crude oil may have to be pre-conditioned via multiple upgrading techniques to reject the heavy fraction and contaminants. The rejected part can be used as fuel to bring heat to the process or further upgraded in a separate process and recycled. In addition, processing much heavier feedstocks poses a number of challenges for catalyst development, including those related to maximising olefins production from catalytic cracking of heavier feedstock/fraction.

By converting crude oil directly to chemicals, several energy-intensive refinery processes can be optimized or even eliminated. This can result in major cost savings, and an increased operational efficiency for the production of highly valued chemicals, providing a valuable opportunity for future growth and long-term value creation to the petrochemical industry. The implementation of the C2C technology is also expected to lead to greater carbon efficiency and carbon emission reductions for petrochemicals producers, especially when combined with carbon-capture technologies.

With the current changes in the market dynamics resulting from the energy transition, C2C technologies are expected to play a crucial role in the refinery of the future. In addition, future refineries would also need to have some degree of integration with petrochemicals to meet the growing demand. Such integration can realize the following benefits: (a) optimization of resources through shared process streams and utilities; (b) operational synergy through exchange of intermediate streams; and (c) increased flexibility to use different and optimized feed streams based on petrochemical and refinery demand.

In a nutshell, C2C presents a host of opportunities for the sustainable production of petrochemicals and the maximum value creation from oil for refiners.
Until 2019, the aviation industry was one of the most dynamic in the transport sector, with forecasts indicating that its annual growth rate will be 4.8% per cent until 2036. This rapid growth rate could increase its carbon dioxide emissions to about 10-30% per cent of the total worldwide emissions. But the pandemic has changed the world as we knew it. In particular, the aviation sector has been strongly affected. To guarantee the sustainable recovery and development of the aviation sector, renewable aviation fuel has been identified as the most promising alternative.

Renewable aviation fuel, or bio-jet- fuel, is produced from any type of biomass through different conversion pathways. More than 215,000 commercial flights using bio-jet -fuel have taken place worldwide. This supports the good performance of such biofuels. Regardless of the type of biomass used, renewable aviation fuel complies with the specifications of the American Society for Testing and Materials (ASTM). Therefore, the production of bio-jet- fuel is technically feasible. Moreover, studies of bio-jet -fuel supply chain stress the importance of implementation at local or regional levels. This is since transportation costs can make bio-jet- fuel production projects non-viable. Thus, the main challenge is producing this biofuel at costs, competitive with conventional jet- fuel. Some of the missing elements necessary to address this main challenge are discussed below.

The implementation of policies can help establish the aviation biofuel industry; however, this alternative cannot be sustained indefinitely. Therefore, the long-term solution is to render the production of renewable aviation fuel economically viable. In this context, some approaches are promising. One approach is the use of waste materials to produce bio-jet- fuel. These waste materials usually represent a pollution problem that can be solved by recycling them into renewable jet fuel. On the other hand, the reduction in operating expenditure can help produce biojet fuel at competitive costs. This reduction can be achieved through energy integration and process intensification strategies.

In energy integration, the available energy within the process is used to cool or heat other process streams. To implement these energy exchanges, more equipment—mainly heat exchangers—is needed. Therefore, the inversion costs are increased. However, in the long term, a considerable decrease in operation costs is achieved. The other strategy is process intensification, which relies on the use of equipment with highly effective heat and mass transfers due to their disruptive designs or the combination of two or more units. The application of this technique increases capital costs but lowers operation costs while yielding safer processes and lower footprints. Finally, another approach is the conversion of residual biomass in a biorefinery scheme, where biojet fuel is produced along with chemicals, bienergy, and other value-added products. The generation of several products with different market values can increase the profitability of the process and reduce the biofuel cost. It is also useful to apply energy integration and process intensification strategies in these biorefineries.

Therefore, the complete conversion of residual biomass to produce renewable aviation fuel through advanced and efficient technologies is the missing element towards a sustainable energy portfolio. The destination is known. The flight plan is set. We’re ready for take-off!
The oil and gas industry is undergoing significant transformation and rethinking its approaches, purposes, and processes. The pace towards a low-carbon future is accelerating, and the impact of pandemic-challenges has ensured that this transition will only speed up in response to the urgency of climate action.

In order to adapt to these changing conditions, the oil and gas sector needs to find new ways to foster universal access to energy, all while reducing its carbon footprint from operations and products through new technical solutions and data-driven approaches. This will enables oil and gas businesses to consider new investment opportunities, including renewable and unconventional energy sources, as well as other innovative energy solutions.

In addition to technical adaptations, social factors, such as transparency and compliance, human rights, suppliers’ engagement, diversity and inclusion, are becoming crucial drivers for an industry that needs to attract and retain the best talent.

A unique way to respond to these global changes is to approach it in a multi-stakeholder way, bringing together governments, businesses, non-government organisations (NGOs), communities, and startups. Together, we can build an efficient ecosystem and co-design game-changing solutions that will allow the oil and gas industry to be more sustainable over the long run and address evolving social and environmental challenges.
Accelerating the Path Towards Sustainability Throughout the Oil & Gas Industry Value Chain

BY PABLO FERRAGUT
Senior Manager, Arpel; Member of the 23rd WPC Sustainability Working Group

It is likely that you have read or heard about the transformations of the energy sector and the high level of uncertainty we are experiencing. Even though we can take this as partially true, let me say that I think I can reveal the end of this movie (spoiler alert!).

The world has gone through several energy transitions since the Industrial Revolution. However, there is a critical difference between the latest evolution and previous ones as the transition of our generation has a deliberate purpose, a clear and widely known objective: to create an energy (and economic) system that is both sustainable and low-carbon, resilient, while assuring quality access to energy for all.

Therefore, we can say that the uncertainty level is high because we do not know exactly which technologies will finally reach the commercial phase, how fast they will manage to scale and spread, and because we cannot know beforehand how governments will foster this transformation. However, we do know in advance the lighthouse towards which we are heading, the arriving point where this entire process is driving us to.

I am not going to discuss in this space the role of oil and gas in this energy transformation process, since much has been written in this respect and I am not focusing on this in the article. I will only say that the oil we will produce and consume needs to be the best possible oil. In other words, it must be the oil that generates the lowest greenhouse gas emissions throughout the value chain, aligns with the United Nations’ Sustainable Development Goals (SDGs), and continues to create value for society. In addition, the transition must be just and equitable. This means that it must consider who may be affected and how, an issue that is especially relevant in regions such as Latin America and the Caribbean, due to their high levels of poverty and inequality, and their economies’ dependence on the production of oil, gas and other raw materials.

What does this mean for oil & gas companies?
Simply put, it means that they must be committed to the fight against climate change, embrace the energy transition, foster digitalization and Industry 4.0, and include all the dimensions of sustainability in their management strategy; considering the SDGs, ESG performance, transparency and compliance, human rights, gender equality, diversity, and inclusion. It does not seem to be an easy plan, but it is the only feasible one. Resorting to technical cooperation, ARPEL is promoting this agenda and supporting the companies of this sector in Latin America and the Caribbean, so as to make progress in each one of these topics.

What does this mean for a young professional?
It means that the transformation of the oil and gas industry, which will probably be deeper than many others in the energy sector, will require enthusiastic, well-trained and skillful professionals, ready to challenge the status quo and seek creative solutions for problems we have not yet come to fully understand. There is no doubt that climate change and the ongoing energy transition will be two of the most relevant issues of our generation, and this is precisely what makes them so exciting to be a part of.
Over the past few years, several major players in the oil and gas sector have taken a keen interest in renewable energy. These companies have increased investments in renewable energy due to increasing uncertainty over their traditional role in an ever-changing energy landscape. In fact, risks related to decreased petroleum demand, sustained price volatility, and growing corporate sustainability pressures could turn current investments into stranded assets, questioning the long-term economic viability of some companies. Redeploying companies’ capital from their core business activities towards low-carbon projects appears to be one solution to remain solvent, while also contributing to global climate change mitigation. 

While the oil and gas industry is quite diverse, there is no unique strategy that would make sense for all players. That is the reason why when choosing new investment opportunities, each company sets up its own strategy based on a geography, current asset mix, as well as national policies including carbon tax system and access to the grid. Thus, while some market players invest in a mix of solar, on and offshore wind projects, others develop or acquire assets in carbon capture and storage, electric vehicle charging infrastructure, and explore production of sources of clean energy, such as hydrogen, biomethane and other biofuels.

Despite the amount of capital committed to green energy projects, companies’ investments outside their traditional business areas typically represent less than 2% of total capital expenditures. One of the major investment challenges is that expected economic returns from oil and gas still remain significantly more profitable than those from renewables, which explains why capital continues to flow towards certain fossil fuel projects. To curtail this trend, more radical approaches are required other than relying on government policy measures such as carbon taxes alone. Markets will need to adapt and encourage the development of newer sustainable technologies.

Decarbonization of the world economy has moved from something on the horizon to an immediate priority. Even during pandemic, environmental groups continue to keep pressure on oil and gas companies, arguing that once the economic activity recovers again, new investments should be directed into sustainable renewable energy jobs. Being a proactive market player in carbon reduction is not just a question of mitigating climate change and managing a company’s reputation, but also largely depends on sustaining its own long-term economic viability in the dynamic energy sector. Those oil and gas companies that succeed in shifting their business models will do so by diversifying their asset portfolio and incorporating clean energy technologies.
How Can the Oil & Gas Industry Foster Universal Access to Energy

BY BRIMA M BALUWA KOROMA
Executive Chairman, Petroleum Regulatory Agency

The oil and gas industry is one of the largest and most complex industries that affects people’s lives throughout the world every day. Large proportions of petroleum products are used for energy consumption.

The Sustainable Development Goal (SDG7) is a campaign force for everyone to have access to modern energy services, both electricity and modern cooking technologies by 2030. And this campaign is linked to many other goals because of the direct and indirect benefits that energy access provides for combating poverty.

“Universal Access to Energy” means people require a combination of energy to meet their basic needs for a decent life, including availability, reliability, sustainability and affordability. “Energy poverty” does not necessarily mean no energy services, as people may still have access to energy sources such as open flames, charcoal stoves, or simply firewood. They may use candles or kerosene lanterns or even have sporadic access to electricity at home, yet they will be “energy poor” because they are forced to use sources of energy that are unreliable, unhealthy or unsafe, or prohibitively costly.

While energy access is positively correlated with other development goals, energy poverty can have a negative multiplier effect on other sources of deprivation, undermining other humanitarian efforts. Oil and gas companies can therefore contribute to the Universal Access to Energy by understanding, appreciating and deliberately prioritizing them, this will mean aligning their operations with the SDG7 aspirations.

The oil and gas industry is still critical in the generation of global energy. And one of the biggest ironies associated with the oil and gas sector is that often the resources it develops are found in countries that are energy poor. There are many complex reasons for this, but as the oil and gas sector confronts the challenges presented by universal access to energy they are morally bound to play a leading role.

The following are steps that the oil and gas sector should be taking today in all countries where they operate:

• Policy shift for host nations: Oil and gas companies should have a deliberate policy shift towards support for Universal Access to Energy.
• Business objective: The oil and gas industry is increasingly expected to have a key role in addressing some of the world development challenges, including energy poverty. Moreover, there is a growing business case for the oil and gas industry to get involved in addressing energy poverty.
• Community based initiatives: Establishing sustainable community-based utilities for decentralized power generation and taking a more decisive role in the policy arena. Driving the boundaries further through the engagement in innovative partnerships with governments, donors, communities and directing social investment funds not only towards gas-based projects, but taking a more decisive role in the policy arena.
• Improving current practice: Oil and gas companies are well established in developing countries and should be able to leverage their comparative advantage in their existing host countries and use their ability to influence key policy makers in those countries; use their commercial skill to bring together, and finance, complex value chains and bring balance sheet support towards Universal Access to Energy initiatives.
• Contribution of oil giants: As the European majors and some of the mid-caps contemplate becoming integrated energy companies, these oil giants have sufficient capacity, experience and knowledge in how to develop, finance and operate big complex capital projects in developing countries to foster Universal Access to Energy, particularly in those developing countries.
Latest trends in business and a drive for new solutions have inspired oil and gas companies to use an open-innovation approach, particularly where internal resources are insufficient to overcome challenges on their own. Crowdsourcing is a model that has shown great potential and is gaining momentum. It encourages participants, including those not linked to the oil and gas industry, to provide unique and simple solutions to problems. To enable connections in response to particular needs, new websites such as InnoCentive, Kaggle, and OpenIDEO were created. Here, businesses can share their problems and researchers compete to tackle them by providing the best solutions. The oil and gas industry can also be part of these successes and share how they benefited from introducing opening to the global talent pool.

As a result of Exxon Valdez oil spill in 1989, more than 120,000 liters of oil were trapped in the coastline of Alaska and surrounding seas. To find a solution that would deal with the aftermath of this event, the Oil Spill Recovery Institute created a challenge in 2007. The objective was to find a method to separate oil from water on recovery barges, which had solidified and turned into a viscous mass after coming in contact with ice. Ultimately, a vibration technique, used in the construction industry to keep the concrete liquefied during large projects, was chosen. By inserting metal pipes attached to the equipment into the oil, the oil was kept in a fluid transferable state and allowed to pump it easily from the barges [3].

Another successful application of an open innovation model was a competition created by Statoil and C-CORE. In order to ensure the highest level of safety and efficiency of its operations, Statoil was interested in potentially using machine learning to more accurately detect and assess risks from icebergs as early as possible. The challenge was to build an algorithm to automatically classify an object seen in a satellite image, either as a ship or an iceberg. At the end of the contest, almost 44,000 solution proposals were submitted and three were selected for future implementation [5].

Among many other success stories, there are such as:
- Reduction of fresh water in shale oil and gas production by GE and Statoil [1],
- Automated car identification during refueling by PKN Orlen [4].

Leading crowdsourcing platform InnoCentive indicates following benefits of its crowdsourcing challenges [2, 6]:
- 78% challenge success rate,
- a proven open innovation ROI of 182% in under 2 months,
- open innovation as a 10x cheaper and 4x faster method than traditional ones.

Despite progress in recent years, there are still plenty of opportunities for development and further improvement in the industry. Challenges that affect oil and gas companies due to their complex and interdisciplinary characteristics require an innovative and collaborative approach to find creative solutions. An answer to those problems could be crowdsourcing – a concept that enables a supportive environment, favourable to the acceleration of new technologies.
Editors Introduction

One of the topics that is always interesting, significant and never loses relevance is the next generation.

In order to have a global vision of the current state and overview of the energy sector, we gave an opportunity to three generations to share experience, visions and perspectives on such issues as future career prospects among the young generation in the energy sector.

We carried out very interesting interviews where participants shared their views on climate change impacts, future sustainability, operational integrity and the role of remote working during the pandemic period.

Any career path is a long way with ups and downs, and many challenges. We selected a successful illustration of Pearl of Wisdom with essential lessons learned, advice that will be an excellent inspiration.
How can you develop yourself professionally to increase your competitiveness in the industry?

I just turned 75 years old. Looking at the path of life passed, I can say that my pursuits in oil science turned out to be accidental. I was preparing myself to be an artist or pianist, but instead ended up becoming a petroleum engineer and professor. While there was no systematic approach in deciding what and where to study I chose the I.M. Gubkin Institute, and I have been most fortunate to have teachers throughout my life that were famous scientists and professors from Russia, the United States, and Norway.

In my experience as an educator myself, one particularly important skill I would highlight is the ability to explain complex things in simple and understandable language. Capturing and maintaining a listener’s interest in lectures is a gift that not everyone possesses! But this, too, can be learned. Qualities that define an excellent teacher and communicator include professional knowledge, a passion for the subject, and respect for their audience.

After graduating from the I.M. Gubkin Institute, I pursued a doctorate at the graduate school in the Department of Oil Field Development. In 1976, I graduated from the Moscow State University with a degree in mathematics. I achieved such an extensive education, guided by my desire to become the same as my teachers. This was followed by professional business trips around the country and a year in the United States as a Visiting Scholar at Stanford University.

My time as a teacher in the United States was followed by time spent in Hungary, then a trip to Norway to lecture for one semester that ended up lasting 10 years. After almost a decade at (what was then) Statoil, I taught at the University of Stavanger and then returned to Gubkin University, where I still work, doing what I love – giving lectures to students and conducting scientific work.

Now let’s get back to the original question: if I were a young professional again, what would need to be done to improve my professional competence? I think my story already answers that...
BRIDGING GENERATIONS:

If I Were a Young Professional

BY BALA WUNTI
Group General Manager, National Petroleum Investment Management Services

Which career paths in the industry would you have chosen if you were not in your current role and why?

The pursuit for clean energy is guided by an increasing threat to global climate, arising from reliance on conventional energy resources to meet the growing energy demands of modern society. The world has witnessed how climate change is unfolding and it will require all disciplines to find the right innovation and technology needed to reduce our carbon footprint.

If I were to go back in time and start a new career path, I would choose engineering and focus on Machine Learning and Robotic Process Automation to develop technology that will deliver clean and affordable energy. This is because the demand for cleaner energy requires sustained innovations and fresh ideas. Today, new sets of opportunities such as big data, high-speed internet, and digital technology are shaping energy transition efforts. Specializing in the engineering field would enable me to be more innovative and to be part of mitigating climate change.

“...CLIMATE CHANGE IS UNFOLDING AND IT WILL REQUIRE ALL DISCIPLINES TO FIND THE RIGHT INNOVATION AND TECHNOLOGY NEEDED TO REDUCE OUR CARBON FOOTPRINT.”
BRIDGING GENERATIONS:

If I Were a Young Professional

BY SHOLPAN ALTYBAYEVA
HR General Manager, Chevron, Kazakhstan

What is your vision for the future of the global oil and gas industry? Do you feel it will still be an appealing sector for young professionals to join?

As Chevron’s CEO Mike Wirth stated, global energy demand will increase by more than 30% over the next 20 years due to population growth. Energy enables the progress that lifts people out of poverty and creates economic, social, and individual opportunity. Therefore, we are going to need all sources of energy to meet the rising demand, and Kazakhstan’s role as an energy exporter moving towards decarbonization will be crucial.

The oil industry in Kazakhstan has been and remains attractive for job-seekers mostly due to the earning capacity and the public profile of the industry. Nowadays, however, a good and stable salary is not enough: the new generation wants to work in a highly technological, socially responsible company, with ample opportunities for professional growth and self-realization, which companies need to ensure they provide.

Many companies in our sector are now looking to deliver the right opportunities for young professionals joining the industry. Chevron, for example, is focused on higher returns, lower carbon output, continuous learning, and personal development. To increase the appeal to the next generation, Chevron empowers employees at all levels to participate in decision-making, provides them with skill development programs, training and education, which creates a chance to grow personally and professionally along with the industry.

In Kazakhstan we see more than 100 applications per position. Hundreds of students apply for internships every year across all Chevron divisions, including those in Kazakhstan, which is a testament to the high appeal of the industry to young professionals. However, we should not stop there, and must be adaptable to incoming changes and continue to assess the needs of both current employees and jobseekers to remain a viable employer in the years to come.

“...THE NEW GENERATION WANTS TO WORK IN A HIGHLY TECHNOLOGICAL, SOCIALLY RESPONSIBLE COMPANY, WITH AMPLE OPPORTUNITIES FOR PROFESSIONAL GROWTH AND SELF-REALIZATION, WHICH COMPANIES NEED TO ENSURE THEY PROVIDE.”
What would you do to reshape the global energy system towards a more sustainable future?

The power of Artificial Intelligence (AI) can be used to accomplish great innovations and advancements these days, while also supporting the oil and gas industry to become more climate friendly. As mankind has evolved, the oil and gas industry has powered the world with its non-stop operations, often taking place in risky and highly dangerous environments.

As times change, so, too, do the expectations of this industry. We need to plan ahead by introducing AI, Neural Network applications, and Machine Learning (ML) because of their immense power to play with data and provide our engineers with the most optimised methods. Additionally, optimisation techniques have to push this industry to continue to be a world leader by making assets last longer with fewer challenges.

Climate enthusiasts have been focused on the oil and gas industry for disturbing the balance of nature and carbon emissions. Deep Learning, AI, and ML methods can be fed with inputs which are more concerned with providing more-environmentally friendly solutions.

If I were currently a CEO at an oil and gas company, now is the time that I would introduce these advanced tools and implement them in operations to reduce carbon emissions and guide the world towards a more sustainable future. My vision would be to introduce such work methods which can prove that this industry can supply the world with energy for a very long time.
How do you see work environments in oil and gas changing after the events of the last year? What are the pros and cons of implementing remote working on a permanent basis?

Remote working is an inevitable result of the last year of the pandemic, and the application of related technologies has increased to meet the business demands for higher agility and resilience. The possibility of hiring talented employees regardless of their geographical location now offers great potential in the era of remote working.

Inviting experts from all over the world through social media is also a great opportunity to train employees, which would normally be very difficult to organise in person. Saving time, energy, and money as the result of less commuting are other advantages that can reduce a company’s carbon footprint too.

However, employees may feel depressed due to feeling isolated, losing their previous work-life balance and the lack of office interactions. These are important challenges that can directly influence the productivity of a firm. Additionally, some tasks that require technical equipment cannot be done remotely, hence, the dilemma and employees’ safety must be considered.

In conclusion, if I were a CEO, I would focus on the well-being of my staff and look at how remote working can benefit both them and the company’s productivity.

“THE POSSIBILITY OF HIRING TALENTED EMPLOYEES REGARDLESS OF THEIR GEOGRAPHICAL LOCATION NOW OFFERS GREAT POTENTIAL IN THE ERA OF REMOTE WORKING.”
What was the most difficult situation you faced early on into your career and how did you manage it?

I have been very fortunate throughout my career, and while I certainly experienced challenging situations, I believe the hardest point in my career was right at the beginning of it. As a new graduate, I left the safe and comfortable environs of academia and realized all was not right in the economy in Alberta, Canada. A battle was brewing between multiple orders of government over resource development, resulting in national policies that were damaging to the provincial resource extraction industry. Times were grim in the sector with employees being exited by the thousands, combined with very high interest rates, leading to people losing their homes. At that time (especially without computers, email and LinkedIn), I sent out resumes to as many potential employers as I could and kept an open mind about what kind of employment I was open to.

I believed that once I got in the door, no matter at what level or in what position, through hard work, drive, and intellect, I would be able to progress in my career. I think this openness to different opportunities, combined with tenacity and much luck, was key to my securing a position with a wonderful company and successfully growing in my career there for 26 years!

Which advice would you give to young professionals to achieve a successful career in the industry?

Working hard in your field of study and having the technical skills to add significant value to your employer are essential. However, as someone who has successfully built high-performing teams, I would always hire for behaviors first, followed by skills and knowledge.

Know yourself and be comfortable with who you are, recognize areas of weakness and strength so you can capitalize on your strengths and improve on your areas of weakness. An attribute I believe will allow you to achieve career success is the ability to always ask “why” and “so what” questions. Go the extra step to be curious and dig deeper. With the constant news cycle that can be misleading or even false, this attribute will help you find insightful and meaningful answers that will provide significant value when making decisions.

Can you share some of the essential lessons you learned during your career? Do you feel these still apply to young professionals today or are there any differences?

The essential lesson I learned at a young age is the importance of hard work, pushing yourself to dig deeper and go the extra distance, no matter the task. The difference between successful people and those who may not be as successful is to do what others prefer not to do. It does require tenacity, discipline, and a curious mind, no matter where you are or at what level. I believe these traits will serve you well. As well, be the employee you would want to lead! With this mindset, you will achieve success, no matter what the economic conditions.
What was the most difficult situation you faced early on into your career and how did you manage it?

One of the greatest difficulties I encountered at the early stage of my career was not being familiar with how things work and lack of proper mentoring. Conscious of this, I tackled this problem by opening my mind to learn from others, especially colleagues. I also started reading relevant books that helped me develop critical skills, enhanced my professional success and confidence, and overall boosted my career.

Which advice would you give to young professionals in order to achieve a successful career in the industry?

First, develop a trait of self-discipline and social commitment. Self-discipline means the ability to resist impulses and always maintain focus. Young professionals who are self-disciplined are not easily distracted and are more likely to achieve a satisfactory result. In terms of social commitment, it means respecting your elders and your colleagues.

Second, for young people to have a successful career, they must be tolerant. Tolerance allows us to keep an open mind, appreciate the values and opinions of others, and have a good relationship with colleagues.

Third, always be positive. No matter how overwhelming the work is, it is essential to always have a positive attitude. From my experience, people who complain about their jobs are not as successful as those who embrace them. If you remain positive, better things will come.

Can you share some of the essential lessons you learned during your career? Do you feel these still apply to young professionals today or are there any differences?

Being successful in your career requires hard work and an openness to pursue knowledge. There is a Chinese saying that it is “never too late to learn”. The world is developing at a speed so fast that one will fall far behind if one stops learning.

There is no shortcut to becoming successful. As young professionals, one should accept each task as a special assignment and use all ones energy to do it quickly and skillfully. Learn how to manage your time, work with your team, and respect everyone. If you are offered opportunities to further your education, take advantage of them. There is always something new to learn.

Being healthy is also an important element of success. One can do nothing without good health. Develop good living habits, such as regular exercise, eating healthy foods, getting enough sleep, and finding a way of reducing stress.

Always be professional. There is no excuse for being unprofessional once you start your first job. Every time you are in the presence of a colleague, you need to look and act the part. Always be on time, be courteous, and dress professionally. Think about where you want your career to go and act like you’re already there. Being professional will get you far in your career.