

SWISSQUOTE

FINANCE AND TECHNOLOGY UNPACKED

PORTRAIT

Cham Paper:
the expertise
of the Swiss
paper specialist

CASINOS

Macau is
growing
in strength

ESCAPE

Marseille:
Into the blue



34-page
special

DOSSIER

SEAS & OCEANS THE GREAT DIVE

MARINE ENERGY...OFFSHORE DRILLING...AQUACULTURE...

ARCADIS ► ATLANTIS RESOURCES ► MARINE HARVEST ► MAERSK ► SALMAR

ISSN 2296-3278

47



9 772296 327000



EDDIE
REDMAYNE'S
CHOICE



SEAMASTER AQUA TERRA
MASTER CHRONOMETER

Ω
OMEGA

Boutiques OMEGA:
Zürich • Genève • Luzern • Interlaken • Bern
Crans-Montana • Zermatt • Bürgenstock



ICE CUBE PURE

ICE CUBE
Chopard

Our blue planet



By Marc Bürki,
CEO of Swissquote

It may surprise you that the seas and oceans are still largely a mystery, given the incredible technological advances over the past several decades in aeronautics and space.

But the future prosperity of humanity depends first and foremost on the oceans. The deep blue seas have been, and continue to be, the primary channel for global trade. We have barely scratched the surface in terms of potential opportunities, from increasing tidal energy and gathering rare resources, to developing marine biotechnologies and sustainable aquaculture.

The feature of this special edition explores the various aspects of the marine industry, focusing on tried-and-true technologies as well as companies leading the way with promising pilot projects. We take a look at automated commercial ports, a current trend, in a behind-the-scenes **report** on Rotterdam at the Maasvlakte 2 extension, inaugurated in 2015. At the completely automated terminal, owned by Danish giant Maersk, dock workers have already been replaced by robotics engineers. The next step is self-driving or remote controlled ships gradually making their debut on the high seas. Rolls-Royce already launched a prototype in June.

Less obvious to onlookers are the billions of gigabytes of data that already travel under the sea. More

than 95% of digital communications in the world pass through undersea **cables** and this industry is still booming, stimulated by ever-increasing data transfer needs. US tech giants such as Microsoft, Amazon, Facebook and Google have even started to construct their own cables. For example, Microsoft and Facebook just completed a new cable linking the United States and Spain.

p. 34

But while oceans are a hotbed for exciting innovations, there are also concerning projects that put the ecological balance in danger. The frantic race for hydrocarbons has led to many deepwater oil **rigs**. This is risky, especially in the Arctic, where the consequences of an oil spill would be catastrophic.

p. 44

In the decades to come, the environmental dangers of drilling in the sea will become a major concern that industry will no longer be able to ignore. One significant issue is the rise in sea level as a result of global warming. Seas could **rise** as much as one meter by 2100, which would lead to unprecedented population displacements. Annual flood costs for large coastal cities could reach \$1 trillion by 2050.

p. 54

More than ever, it is in oil companies' best interests to think not only of their profits, but their environmental impact as well. Preserving our oceans is essential to our well-being.

Happy reading!



TABLE OF CONTENTS

- | | |
|--|---|
| 3. EDITORIAL
by Marc Bürki | 16. THE MATCH
Walt Disney
vs Time Warner |
| 8. SCANS
Economic
survey | 18. PORTRAIT
Cham Paper
ushers in
a new era |
| 14. TRENDS
Personalities,
nations,
innovations | |

22. SEAS AND OCEANS THE GREAT DIVE

- | | |
|--|---|
| 24. Infographics: the
marine industry in 2030 | 36. Rotterdam: port
of the future |
| 26. Interview with
François Jacq, CEO
of IFREMER (a French
marine-sciences
research institute) | 39. The shipping industry
reinvents itself |
| 28. Blue power | 44. Deepwater drilling |
| 34. 20,000 cables
under the sea | 48. Aquafarming is
booming |
| | 51. The film that
sank SeaWorld |



52. Trainers made
from marine waste

54. When rising sea
levels shake up
the economy

58. INNOVATION

Car rental: the laborious
process of digitalisation

62. SWISSQUOTE

Chatbot: a smart, swift
virtual assistant

66. REPORT

Macau's newest bet

72. TRAVEL

Marseille: into the blue

80. PRIVATE ISSUES

Lukas Langenegger, CEO
and co-founder of Hemotune

PUBLISHER

Swissquote
Chemin de la Crétaux 33
1196 Gland – Suisse
+41 44 825 88 88
www.swissquote.com
magazine@swissquote.ch

Manager

Brigitta Cooper

EDITORIAL

Editor-in-chief

Ludovic Chappex

Design director

Natalie Bindelli and Caroline Fischer
CANA atelier graphique
Route de Jussy 29 – 1226 Thônex
www.ateliercana.ch

Editorial staff

Blaise Duval, Sophie Gaitzsch,
Benjamin Keller, Salomé Kiner,
Marie Maurisse, Gaëlle Sinnassamy,
Julie Zaugg

Layout

Natalie Bindelli, Caroline Fischer,
Coralie Meder (CANA atelier graphique),
Babou Dussan

Cover

Getty Images

Photography

AFP, Keystone, Istockphoto, Newscom,
Reuters, Getty Images

Editing (English version)

Ose Ayewoh, Marco Simon

Translation

Technicis Finance

PRINTING, BINDING AND DISTRIBUTION

Stämpfli Ltd.
Wölflistrasse 1 – 3001 Bern
www.staempfli.com

ADVERTISING

Infoplus AG
Traubenweg 51, CH-8700 Küsnacht
hans.otto@i-plus.ch

WEMF

REMP 2017: 50,638 ex. Print run: 60,000 ex.



printed in
switzerland

SUBSCRIPTION

CHF 40 FOR 6 ISSUES

www.swissquote.ch/magazine



60 YEARS OF ADVENTURE AND DISCOVERY

BREITLING BOUTIQUE

AUGUSTINERGASSE 48

ZÜRICH



superOcean
HERITAGE
SINCE 1957



INSTRUMENTS FOR PROFESSIONALS™

SCANS

digital

FACEBOOK MAKES A(NOTHER) TRY FOR CHINA

Mark Zuckerberg during a visit to the Great Wall of China in 2016. Facebook's CEO is redoubling his efforts to seduce the Chinese market.



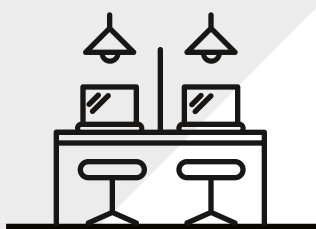
APP / EYEPRESS NEWS / EYEPRESS

Facebook has been blocked in China since 2009, but has secretly launched a photo-sharing app there called Colourful Balloons. The app, which was officially launched by a local company having no apparent ties to Facebook, has strikingly similar features to the latter's Moments app. The California-based social media group has been looking to re-enter the Chinese market for a number of years. CEO Mark Zuckerberg has visited China quite a few times. He is also learning Mandarin and even created a censorship tool that automatically hides sensitive posts in certain regions. —✓ FB



“The assumption that we double (our sales) in India in the next 10 years or seven-eight years is a no-brainer”

Paul Polman,
CEO of Unilever



\$4.4 billion

The amount the Japanese group Softbank is going to invest in WeWork coworking spaces. This constitutes one of the highest amounts ever raised by a company. Part of the funding will be set aside to establish three new subsidiaries for the Japanese, Chinese and Pacific Island markets.

recruitment

ADECCO AUTOMATES RECRUITING WITH AI

Swiss-based staffing platform Adecco has signed a partnership with the California-based firm Mya Systems, whose software will automate part of the recruitment process. The chatbot – an AI recruiter – can independently short-list a broad array of candidates, contact them and set up meetings with the most promising among them. According to Adecco, this tool should save time, improve the service for job-seekers and lighten the workload for the group's employees so that they can focus on other projects. The service will be launched in the US at the end of the year. —✓ ADEN



ISTOCK



PEABODY ENERGY

A Peabody Energy coal convoy in El Segundo, in Los Angeles county.

energy

REBIRTH OF THE AMERICAN COAL SECTOR

American coal is back in style. Trump promised to revive the market for this fossil fuel known for its pollution-causing properties, and the removal of certain legislative restrictions during his presidency coupled with the rise in gas prices has done just that. In the US, coal

production was up 14% and exports rose 58% in Q1 2017. Coal power accounts for one-third of the electricity used in America. Major mining companies like Peabody Energy and Cloud Peak Energy stand to gain from the trend.

— BTU — CLD

automobile

RENAULT-NISSAN GOES GREEN IN CHINA

Renault-Nissan has decided to manufacture electric vehicles in China through a joint venture with Dongfeng Motor called eGT New Energy Automotive Co. The company's goal is to create an electric car with a price tag of less than \$8,000 by 2019. The Franco-Japanese partnership should make it possible to comply with China's stringent criteria; it's the number one auto market in the world, and is looking to increase its electric/hybrid sales to 20% by 2025. Most major car manufacturers – such as Ford, Daimler and General Motors – have plans to release electric cars in China.

— RND — 600006



“It's my opinion that the company should go public within 18 to 36 months”

Dara Khosrowshahi,
Uber's new CEO

RANKING

THE FIVE LARGEST LISTED ASIAN COMPANIES

(in order of sales, 2016)

1. RAJESH EXPORTS (INDIA)
\$36.1 BILLION
2. MIDEA GROUP (CHINA)
\$23.9 BILLION
3. ALIBABA (CHINA)
\$23.5 BILLION
4. COUNTRY GARDEN HOLDINGS (HONG KONG)
\$23.1 BILLION
5. TENCENT HOLDINGS (CHINA)
\$22.9 BILLION

Source : Forbes

THE FIVE MOST FEMALE-FRIENDLY COMPANIES IN SILICON VALLEY

(according to an out-of-100 poll, anonymously rated by their employees, September 2017)

1. SALESFORCE
80
2. ADOBE
77
3. INTUIT AND VMWARE
75
4. APPLE
74
5. GOOGLE, KAISER PERMANENTE AND PAYPAL
73

Source : Comparably

THE FIVE CITIES THAT ARE HOME TO THE MOST COMPANY HEADQUARTERS

(in exact figures, August 2017)

1. TOKYO
613
2. NEW YORK
217
3. LONDON
193
4. OSAKA
174
5. PARIS
168

Source : World Atlas

SCANS



2.68 MILLION

The number of metric tons of aluminium that won't be put on the market this year by China Hongqiao, the world's largest aluminium producer. This is the result of the Chinese government's anti-pollution campaign, and has caused the price per tonne to soar, hovering somewhere between \$2,000 and \$2,500.

e-commerce

VIRTUAL PERSONAL SHOPPERS



GOOGLE

Walmart teamed up with Google to offer an e-commerce service where its customers can voice-order their purchases with a virtual assistant. This feature is available on Android smartphones and Google Home devices. The two heavyweights are hoping to give e-commerce king Amazon – which offers a similar service with its virtual assistant, Alexa – a run for its money. Amazon still has the upper hand, however, as it offers several hundred million products as opposed to Walmart's 68 million.

GOOG WMT

industry

GEBERIT TAKES ON INDIA

This sanitary product manufacturer has designed toilets specifically for the Indian market. With a wall-integrated water tank, they fit into tight spaces and are unaffected by the country's poor pipe system. Geberit has already installed a million of them, predominantly in companies,

shopping centres and luxury homes. The high-end sanitary products market has seen 20% growth per year in India recently. To take advantage of the trend, Geberit even established a plumbing laboratory at the University of Pune, which trains 5,000 specialists a year. GEBN

gaming

GLUTTONS FOR ESPORT GAMES



Characters from Amazon's *Breakaway* game. Major companies are starting to get interested in eSports.

DR

Public video game tournaments are all the rage these days. Even though they generate relatively moderate revenue (\$900 million in 2016), their growing popularity is unquestionable and drawing attention from major corporations. Following its nearly \$1 billion purchase of the game-streaming platform Twitch, Amazon just launched its new game

Breakaway, which was developed for the same market. Disney is looking to get a piece of the pie as well, as it will soon be the majority shareholder of eSports streaming platform BAMTech. Lastly, Chinese conglomerate Tencent is topping the charts with its game *League of Legends*, which has a record-breaking 100 million monthly players. TCEHY

food

BARRY CALLEBAUT INTRODUCES "RUBY CHOCOLATE"

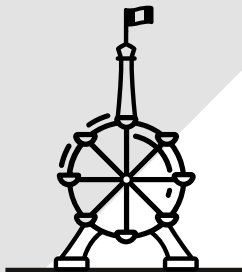


Launch of the new pink chocolate "Ruby" amid great fanfare in Shanghai on 5 September.

REUTERS / ALY SONG

It's been 80 years since white chocolate was discovered, and there have been no new additions to the family – until now. Barry Callebaut has broken the monotony by creating ruby chocolate. The Swiss group has spent 10 years between R&D centres in France and Belgium developing the light pink-hued

chocolate, which is made from ruby cocoa beans. According to company buzz, the new chocolate purportedly has a refreshing berry flavour. It was initially released in China, a country that certainly isn't known for its sweet tooth and doesn't have a culture of heavy chocolate consumers. — BARN



€3.1 BILLION

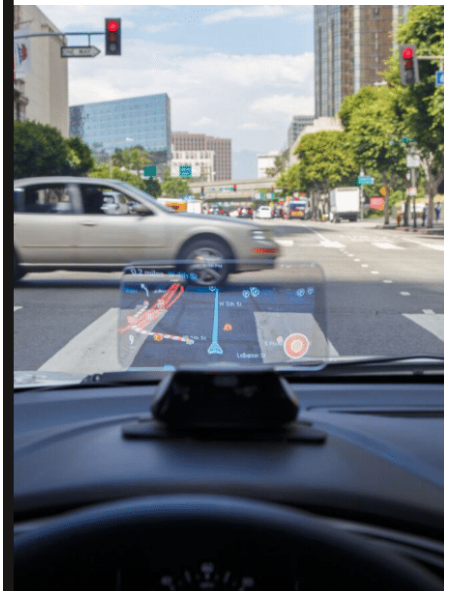
The tab for EuropaCity, a massive real estate project including shopping centres, hotels, a water park and a ski slope set to open near Paris by 2024. The project is headed by French group Auchan and Chinese Dalian Wanda Group, which are looking to compete with Euro Disney.



"We're drilling wells that make money. And that's going to continue."

Timothy Dove, CEO of the American company Pioneer Natural Resources, rejecting the widely accepted argument that fracking is too costly to make sense when oil prices are so low

KICKSTARTER



HUDWAY CAST

HUDWAY CAST

LOW-COST GPS THAT KEEPS YOUR EYES ON THE ROAD

It is all-too-common for drivers to use their smartphones to find their way around, but it's dangerous to lower your eyes when behind the wheel. That's how Hudway Cast came to be. Developers created a plastic HUD (head-up display) screen with a thin glass exterior. It's roughly 15-cm wide and mounts onto your dashboard. Simply enter your destination into a navigator paired with any of Hudway's mobile apps. Your smartphone will stream the directions to the transparent display, which magnifies the information in your field of vision. This technology, which is offered by a growing number of car manufacturers but still remains pricey, enables drivers to follow GPS directions without taking their eyes off the road.

FUNDS RAISED
\$583,563

AVAILABILITY
NOVEMBER 2017

SCANS

*digital*NESTLÉ USES BLOCKCHAIN
FOR FOOD SAFETY

IBM

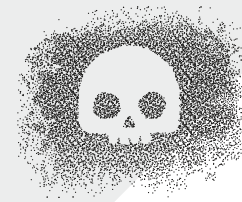
Nowadays it's nearly impossible for a major corporation to have an accurate overview of its entire chain of production in real time. That's why Nestlé partnered up with IBM, which will create a non-linear surveillance tool for the food giant using Blockchain. This will enable the Swiss group to identify the root and source of food contamination, which can currently take up to several weeks. Nestlé is hoping to avoid scandals such as the fipronil scare, where the toxic pesticide was said to have contaminated thousands of eggs in supermarkets. — NESN



“When people come here to learn, work hard and give back to their communities, we should allow them to stay in the US”

James Dimon,

CEO of JPMorgan Chase,
on Donald Trump's intention
to deport illegal immigrants
who came to the US
as children

**\$417 million**

The amount Johnson & Johnson will have to pay in damages to a dying plaintiff. The 63-year-old woman filed a lawsuit against the US-based company because she developed ovarian cancer after using their trademark baby powder for intimate hygiene purposes for decades. The company is up against 4,800 other similar suits.

*pharma*SAMSUNG: FISHING
FOR PHARMA

SAMSUNG

As if dominating the smartphone market wasn't enough, Samsung is now exploring new drugs. Its subsidiary, Samsung Bioepis, has been focused on manufacturing generic drugs since its inception in 2002 and will switch gears to run the project. To accomplish this new goal, the subsidiary has forged a partnership with Japanese pharmaceutical company Takeda. This was a breath of fresh air for Takeda, which hasn't developed any in-house blockbusters in two decades and whose pipeline had all but dried up. The partnership's first target? Acute pancreatitis.

— 4502

IPO

SMCP TO GO PUBLIC

French group SMCP is expected to make its debut on the Paris Stock Exchange by the end of the year. It is currently owned by the Chinese company Shandong Ruyi, which will remain the majority shareholder. The listing should bring the company's value to €2 billion. SMCP, which was established in 1984 and started accessible luxury brands Sandro, Maje

and Claudie Pierlot, has seen significant growth in recent years due to the emergence of China's middle class, for whom a €200 dress isn't out of reach. Last year, SMCP's turnover before EBITDA had jumped 22% to hit €130 million. The company currently operates roughly 1,200 points of sale across Europe, Asia, the Middle East and the United States.

Protest against American media magnate Rupert Murdoch in London on 12 September.



REUTERS / HANNAH MCKAY

media

THE AMERICAN MEDIA DIPS ITS TOE INTO INTERNATIONAL WATERS

Major American TV networks are in the market for foreign acquisitions. US-based News Corporation has submitted a takeover bid worth £11.7 billion for the UK satellite broadcasting company Sky News. European regulators have blocked the transaction with a government investigation on the potential

effects it would have on media diversity. News Corporation is owned by Rupert Murdoch, who also owns Fox, *The Sun*, *The Times* and Talkradio in the UK. American entertainment giant CBS also announced its acquisition of Australian Ten Network, which is struggling financially. — NWS

FLOP

Spectacles by Snap

When Snap Spectacles – connected glasses marketed by the parent company of the social network Snapchat – were launched in November 2016, everyone thought they were the rightful heirs to the would-be Google Glass throne. But they seem to have fared about as well as their predecessor, which stopped selling its product in early 2015 due to lack of public

interest. The sunglasses, which go for about \$130, let you take short videos and publish them on Snapchat without having to take out your smartphone. In Q2 2017 only 42,000 pairs were sold, bringing in a meagre \$5.4 million. In Q1, sales hit \$8.3 million. Consumers prefer to stick to their smartphone habits rather than sport unattractive eye wear. — SNAP



40 months

The US prison sentence meted out to former Volkswagen engineer James Liang. Liang defrauded the government in the scandal around the German automaker, resulting in the sale of diesel vehicles which violated US clean air rules.



“Fiat Chrysler (FCA) has not received any offer for the company”

Sergio Marchionne,

Group CEO, in response to rumours that Chinese group Great Wall Motor was interested in buying the Italian company

TRENDS



Expedia's acquisition specialist

Position
CEO of Expedia

Age
44

Nationality
Canadian

When Uber snagged Dara Khosrowshahi as its own new CEO, Expedia had to find a replacement. The company chose its CFO, 44-year-old Canadian national Mark Okerstrom, a lawyer. Okerstrom got his start at Freshfields Bruckhaus Deringer in London and then moved to the UBS London branch. He then became head of M&A at Bain & Company, a consulting firm, before joining Expedia in 2006. Okerstrom was appointed CFO at Expedia in September of 2011. Since then, he played an integral role in acquiring Expedia's stake in the German hotel price comparison site Trivago. He also oversaw the acquisition of online travel agencies Travelocity and Wotif, as well as an Airbnb competitor – the short-term rental site HomeAway. Okerstrom will be responsible for maintaining the trend of Expedia's near-continuous growth over the past five years, a feat accomplished against an ever more competitive backdrop. — EXP



the country

ANGOLA

On the verge of despair

Its capital city, Luanda, is a panorama of unfinished skyscrapers – an indication of the tough times Angola's economy is experiencing. Back in 2002, the economy was buoyed by an oil boom that enabled the African nation to jump start development after 27 years of civil war. Average growth from 2003 to 2015 was 7.2%, so the government started building new roads, railways and real estate projects. Luanda even became a coveted location for Chinese labourers and Portuguese workers seeking shelter from the crisis in Europe. But the

wind changed two years ago when the price of Brent plummeted, sending the oil-dependent economy into a tailspin. The result? GDP shrunk 4% last year and inflation hit the 30% mark. Unemployment stands at 20% and a third of the population lives below the poverty line on less than \$2 a day. Angola must now diversify its economy and take advantage of its extensive diamond, hydroelectric and agricultural resources.

Population
29 million

GDP per capita in 2016
\$3,111

Growth in 2016
0.6%

Angola's main industries are
Oil, diamond, coffee and fishing



TERRAVIA

the innovation

THRIVE

Eco-friendly cooking oil

Thrive is a culinary algae oil. This new miracle food is rich in omega-3 fatty acids and monounsaturated fat – the good fat that is better for you than the saturated fat found in other cooking oils. Thrive is more heat stable than other oils and has a neutral taste, making it a favourite for more health-conscious foodies. It was launched in the US at the beginning of 2017 by the California-based firm

TerraVia, which grows the algae in stainless steel fermenters (like the ones used for making beer). Sales have tripled every quarter since then. You can now find it on Amazon and at other speciality stores. Bon Appétit Management Company runs 650 corporate cafeterias and decided to bring Thrive onboard. In South America, Unilever opted for an inedible version of the product to replace

the palm oil in its cosmetics. TerraVia also sells algae powders, which are high in protein and can provide a base for certain foods. The Chicago-based company Enjoy Life Foods uses it for allergy-friendly cake recipes.

— TVIAQ

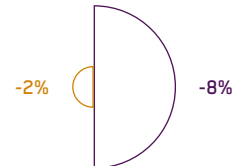
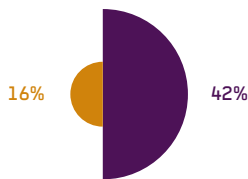
Company
TerraVia

**Launch
in Europe**
2017

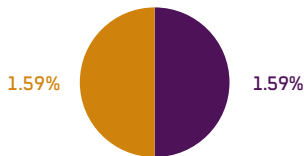
Cost
Undisclosed

THE MATCH

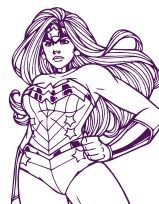
2016 REVENUE

OPERATING PROFIT
(H1 2017)CHANGE IN OPERATING PROFIT
(H1 2017)STUDIO SHARE OF INCOME
(H1 2017)

WALT DISNEY VS TIME WARNER

NUMBER OF FILMS RELEASED
IN CINEMAS LAST YEARGROSS
DIVIDENDMARKET
CAPITALISATIONNUMBER
OF EMPLOYEES



THE MOST SUCCESSFUL RELEASES OF 2017

BEAUTY AND THE BEAST
(\$1.26 BN)

WONDER WOMAN
(\$816 M)

BY BENJAMIN KELLER

For the two US entertainment and media giants, this summer has been anything other than a fairytale. The most recent season of blockbusters turned out to be the worst in 11 years in the US – for Warner Bros, the Time Warner Studios, box-office gross summer figures were down 9% whilst Disney's fell by 39%. Time Warner can, however, rely on its pay-to-view TV channel HBO, which airs

Game of Thrones. Disney's figures, on the other hand, have been feeling the strain for some time now due to difficulties experienced by ESPN, its sports channel. In search of new revenue streams, the group and its famous mouse announced in August that it was ceasing its video-on-demand service with Netflix and that it will be launching its own platform. Disney has also invested in Hulu, a

competitor of Netflix. Change is also on the cards for Time Warner. The conglomerate, which has also invested in Hulu, is in the process of buying US telecom operator AT&T, which will enable them to air their creations over the internet and on TV. Analysts advise holding on to investments in Time Warner and expect Disney to outperform the market.  DIS  TWX

Thoughtful foresight leads to careful action.



Good fund management needs the virtues of an elephant: prudence, experience and foresight. These traits underpin long-term strategies and a carefully selected weighting of the asset classes.

Discover the qualities of the balanced asset allocation funds of ETHENEA.

ethenea.com



Ethna-AKTIV (A)
Inception date: 15.2.2002



Ethna-DEFENSIV (A), (T)
Inception date: 2.4.2007



ETHENEA
managing the Ethna Funds

For detailed information on the opportunities and risks, please refer to the most recent sales prospectus. The information contained in the sales prospectus, in the current annual and semiannual reports as well as in the Key Investor Information Document form the sole legal basis. These documents can be obtained free of charge in English from the management company ETHENEA Independent Investors S.A., 16, rue Gabriel Lippmann, 5365 Munsbach, Luxembourg and from the representative in Switzerland IPConcept (Schweiz) AG, In Gassen 6, Postfach, 8022 Zürich, Switzerland. Paying agent: DZ PRIVATBANK (Schweiz) AG, Münsterhof 12, Postfach, 8022 Zürich, Switzerland.

Cham Paper ushers in a new era

Located in the canton of Zug, this low-key company dealt with the rise in the Swiss franc by outsourcing production to Italy. An effective strategy that has boosted profit and has captured analysts' attention.

BY MARIE MAURISSE



The Zougise firm is also investing in real estate and will build a residential, office and commercial area on its Cham site.

Hheavy-duty tape, food products, cigarette cartons – you name it. If it's plastic-coated, metallic, cardboard or recycled, Cham Paper Group makes it. But the Swiss listed company doesn't ring a bell for most. The company was established in 1657 and has managed to endure in an industry with a great deal of barriers. Cham recorded net profit of 7.1 million Swiss francs in H1 2017, a promising result considering that it's double what it was in the last reporting period. Their numbers have JCTY News analysts chomping at the bit, proclaiming that the group is a model for "stability and growth".

Cham Paper has always been able to adapt to overcome market fluctuations, employing tactics such as creating new products to shift along with demand. After all, paper is extremely versatile. In addition to food packaging, the focus of its primary activity, the company has also worked its way into digital imaging, printing what are often large images and on any kind of medium. They print logos on jerseys, flowers on linens, and advertisement on banners, skis, and other objects. "It's our most dynamic segment today," said Edwin van der Geest, head of communications at Cham. "Growth in the segment is over 15%."

The Swiss group's hard work is even more impressive considering that they survived hard times in the 2000s. Their business is a prime example of globalisation: its raw materials come from Portugal, South America and Scandinavia. Of its sales, Europe represents 75% and the US and China are responsible for the rest.

That's why the strength of the Swiss franc brought Cham's competitiveness to its knees. In order to streamline its activities, management decided to move its entire operation to Italy in 2015 and to improve its return.

JCTY News analysts are proclaiming that the group is a model for "stability and growth"

And these changes are definitely paying off. EBIT in H1 2017 doubled, hitting the 10-million mark in Swiss francs. The margin was 14.4%, up 5 bps year-on-year. Neue Helvetische

Bank, one of the few institutions to follow Cham Paper's progress closely, commended the company's success in its last memo. According to Neue Helvetische analyst Stephan Vollert, "they aren't losing money any more. They are actually making a profit. Their hard work is truly impressive". Vollert explained that Cham Paper isn't well-known because it has few shares available on the market.

The company's jaw-dropping results are a reflection of its drastic turnaround; R&D aside, Cham's headquarters are becoming that of a real estate company. They have developed a project to renovate the old Papieri manufacturing site in order to build a neighbourhood of homes, offices and businesses spanning 120,000 square metres. Construction permits were granted in late 2016 and works should begin shortly. This project should pay off well for results, even if the company will have to wait a few years before it can reap the fruits of its labour. That's why group spokesman Edwin van der Geest is led to believe that Cham Paper is still undervalued. Would Cham make a good investment? "Absolutely," said Neue Helvetische Bank's Stephan Vollert. "But as the old adage goes, anything worth having is worth waiting for!" ▲

BY THE NUMBERS

386
Number
of employees

198.4 M
In Swiss francs,
2016 revenue
(paper business)

8.59 M
In Swiss francs,
2016 net profit

5.3 %
2016 EBIT
margin

1657
Year company
was founded



de GRISO GONO

GENEVE

GENEVA BOUTIQUE - RUE DU RHÔNE 27 - TEL. +41 (0)22 317 10 82
GSTAAD BOUTIQUE - GSTAAD PALACE - TEL. +41 (0)33 744 14 60
ST MORITZ BOUTIQUE - BADRUTT'S PALACE - TEL. +41 (0)81 833 54 50

www.degrisogono.com



New Retro



Dossier prepared by:
Ludovic Chappex
Sophie Gaitzsch
Benjamin Keller
Marie Maurisse
Julie Zaugg

GETTY IMAGES / JONATHAN KNOWLES

DOSSIER

SEAS AND OCEANS

THE GREAT DIVE

Undersea turbines replacing wind turbines, millions of kilometres of cables transferring digital data, commercial ports equipped with automated cranes and trucks...The development of marine technologies is accelerating and is revamping the underwater world of tomorrow. With that comes both promising advances and environmental challenges. We take a closer look.

- | | | | |
|-----|---|-----|--|
| 24. | Infographics:
the marine industry in 2030 | 39. | The shipping industry
reinvents itself |
| 26. | Interview with François Jacq,
CEO of IFREMER (a French
marine-sciences research
institute) | 44. | Deepwater drilling |
| 28. | Blue power | 48. | Aquafarming is booming |
| 34. | 20,000 cables under the sea | 51. | The film that sank SeaWorld |
| 36. | Rotterdam: port of
the future | 52. | Trainers made from marine
waste |
| | | 54. | When rising sea levels shake
up the economy |

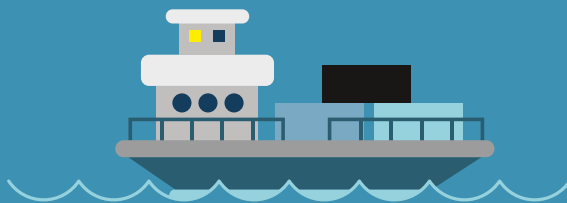
THE MARINE INDUSTRY IN 2030

BY BENJAMIN KELLER

2010

GLOBAL VALUE OF THE MARINE INDUSTRY

2030



\$1,500 BN



\$3,000 BN

x2

DIRECT JOBS GENERATED WORLDWIDE

**+9 million**

Global value of the marine industry an abundance of jobs boats vs planes

2010 - 31 m

2030 - 40 m

STRONGER THAN PLANE

Volume of goods transported (in millions of tonnes)

2015 52.2
2030 96.7



BY PLANE

2015 10,959
2030 19,631



BY BOAT

x200

Boats transport 200 times more goods than planes by volume.

The cost of transportation by boat is much lower, but the value of goods exported by plane is substantially higher.

1. MARINE AND COASTAL TOURISM

2010	2030
\$390 BN	\$777 BN

**+99%**

Marine tourism is expected to grow at a higher rate than all of international tourism combined over the next few years

2. OIL AND GAS

2010	2030
\$504 BN	\$636 BN

**+26%**

Deep-water crude-oil production is set to grow considerably, and shallow-water production is set to decrease slightly

3. PORT OPERATIONS

2010	2030
\$193 BN	\$473 BN

**+145%**

Port operations are becoming increasingly technology-focused and are sailing towards automation. But they are also threatened by rising sea levels.

4. MARINE EQUIPMENT

2010	2030
\$168 BN	\$300 BN

**+78%**

Future demand for marine equipment (machines, valves, sub-marine cables, etc.) is closely related to the growth of the naval construction and repair sector

5. INDUSTRIAL PROCESSING OF FISH PRODUCTS

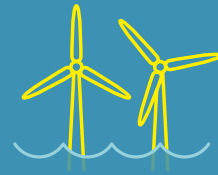
2010	2030
\$79 BN	\$266 BN

**+237%**

By 2030, Africa could control 31% of the market for the industrial processing of fish products, second only to Asia (53%)

6. WIND POWER

2010	2030
\$2.9 BN	\$230 BN

**+7,837%**

Currently at 7GW (the equivalent of seven nuclear reactors), the installed power capacity of offshore wind energy could reach 400GW by 2030

7. MARINE AND COASTAL TRADE

2010	2030
\$83 BN	\$118 BN

**+43%**

Around 90% of international freight is shipped by sea, and global trading of goods could triple or quadruple by 2050

8. NAVAL CONSTRUCTION AND REPAIR

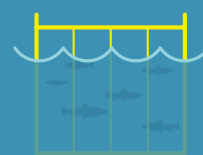
2010	2030
\$58 BN	\$103 BN

**+78%**

Container ships, bulk carriers and oil tankers account for the majority of boats being built in shipyards, most of which are in Asia

9. INDUSTRIAL MARINE AQUACULTURE

2010	2030
\$3.6 BN	\$11 BN

**+203%**

Aquaculture currently represents 44% of global fish production, and that figure could reach 62% by 2030

INTERVIEW

"MANUFACTURERS SEE THE MARITIME INDUSTRY AS RISKY, BUT APPEALING"

François Jacq, chairman and CEO of IFREMER (a French marine-sciences research institute), describes the economic changes underway in the maritime industry

BY LUDOVIC CHAPPEX

The oceans and seas have long inspired wonder and longing, and in recent years these sentiments have been spreading to politics and economics. So what's all the fuss about? *Swissquote Magazine* interviewed François Jacq, chairman and CEO of IFREMER.

The craze over the maritime economy now seems bigger than ever. Would you agree?

Yes, I'd say it's even become quite the trend. The "blue economy" and "blue growth" are phrases that are becoming increasingly common, and there are a number of reasons why. First of all, let's examine the demographics. A third of the global population lives in coastal areas, which is also where more than half of the world's largest cities are located. That's why growth in maritime trade and tourism has skyrocketed. The two industries are the foundation of the maritime economy. Next, let's look at the geostrategic reasons. All nations understand that within

the planet's oceans and seas lies an abundance of potential future resources, such as oil, minerals and marine life. The craze is therefore well-founded.

From which other industries can we expect the strongest growth?

We can expect renewable energies to grow immensely from now until 2030, starting with offshore wind power. The promised expansion in this area has often been postponed because everything is more complicated under the sea. It's always the same: when there is an efficient alternative on land, manufacturers generally opt for it. The marine environment is more unknown, uncertain and risky for them. Apart from the boom in renewable energies, I expect that marine surveillance and research will lead to new projects in those areas. New technologies using underwater sensors will make marine observation more subtle and responsive, making it possible to test pollution, for example.

Why are offshore wind farms replacing underwater turbines and other newer methods of generating electricity?

Offshore wind power is tried and tested technology. It's a fully functional industry, so it's easier to roll out in mass. With wind farms, the controversy revolves around installation and social acceptance of the projects. In contrast, underwater turbines have yet to prove their profitability and reliability on a large scale. The current installations are really pilot projects. It should also be pointed out that underwater currents are local phenomena that are still more difficult to predict than wind direction and speed.

Will new technologies come into play eventually?

In the more distant future – closer to 2040 or 2050 – the various sub-sea energy solutions will become more important as well as marine biotechnology in areas such as drug manufacturing. Other activities



HUMANIST TECHNICIAN

An alumnus of France's École polytechnique with a degree in sociology and a Ph.D. from the École nationale supérieure des mines de Paris, François Jacq was appointed as an advisor on industry, research and energy in Prime Minister François Fillon's cabinet in 2007. He was the Chairman and Chief Executive of Météo France from 2009 to 2013 before becoming the CEO of IFREMER.

that should develop substantially include deep-sea mining for mineral resources such as cobalt, nickel and copper. But this is old news. This future potential has been seen as a gold mine since the 1960s. Now it just has to happen under profitable conditions.

Why is progress taking so long in this area?

There aren't really any major technological barriers, but right now it's not very profitable to go looking for resources underwater when they are more easily accessible on land. The marine environment is a real ecological challenge. Everything is more complex underwater, where pollutants and harmful substances spread freely. In the event of an

accident, it's much harder to limit the damage.

Nevertheless, deepwater oil drilling is becoming more widespread.

Oil companies have used up all of the underwater oil wells that are easily accessible. That's why they've started deepwater drilling to cultivate as vast a reserve as possible. For them, it's not a moral dilemma – it's a requirement. The Arctic, which likely has extensive resources that are becoming more easily accessible due to climate change, is currently at the top of everyone's list. But this conquest could be dangerous for the environment. I hope that the oil companies involved will consider the stakes and take the time to really think about it.

CO₂ capture and storage would trap the gas via pipelines to then inject and dissolve it at the sea floor. What's the latest with these projects?

Research on these kinds of solutions has been ongoing for 20 years or so. The thought of trapping CO₂ under the sea to relieve atmospheric pressure is tempting. The real question is: what is a tonne of CO₂ worth? Without any kind of political strong arming, the technology required is still far too expensive. I think it's likely that this technology will be more accessible in the distant future rather than in the next decade. The risk of gas leaks is also still significant. As a reminder, the ocean already traps a lot of anthropogenic CO₂ naturally through the carbon cycle. It acts as a pressure relief valve, but this function is probably not sustainable given the growing quantity of CO₂ emissions.

Which countries stand out with regard to their marine investments and technological developments?

As in many other areas, the US stands out due to its sectors, innovativeness and global power status. China and South Korea are also very committed to developing maritime projects. The trend is extremely tangible when we visit our Chinese counterparts. The EU is at the forefront when it comes to public policy, particularly in the areas of marine observation and surveillance.

What about among the EU countries?

There is currently a parallel to be drawn with national economic power in the EU. Germany is playing an important role in both underlying research and economic activity. The blue economy has also become an issue in France. Nearly all major candidates in the last presidential election addressed the subject in their campaigns, whereas it wasn't even on the table in the early 2000s. These days, everyone believes the ocean is bursting with opportunities. ▲

A marine turbine departing for the open sea, near the Scottish island of Eday.



BLUE POWER

Waves and tides are a promising energy source. While the UK is a pioneer in the field, several regions of the world are working on their own projects.

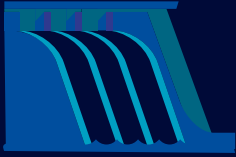
BY JULIE ZAUGG

Two kilometres off the coast of the northern tip of Scotland, four pale blue turbines can be found at the bottom of the sea, bolted to a base weighing several hundred tonnes. Each of the 15-metre-tall turbines can generate 1.5 megawatts of electricity, thanks to water movements from the tides, which are particularly fast in this region of the North Sea. This is enough electricity to power 2,600 homes. This project, which has just completed its first phase, is known as MeyGen and is the work of UK company Atlantis Resources.

“In time, our installation will be able to generate 390 megawatts,” said Cameron Smith, one of the company’s directors.

The vast quantities of water that are moved every day by the tides and waves are a promising source of energy. “Currently, only 0.1% of electricity consumption worldwide comes from tides and waves, but this number is expected to increase to 5%,” said Mark Jacobson, a renewable energy expert at Stanford University. In the UK, this form of energy could produce up to 20% of the country’s

THREE FORMS OF MARITIME ENERGY



TIDAL DAMS

With a wall of turbines located at the entrance of a bay, these dams produce energy through the difference in the water level created by the tides on either side of the structure

Example: Sihwa Lake in South Korea



TIDAL FLOWS

A group of turbines at the bottom of the ocean is activated by the movement of water generated by tides

Example: the MeyGen project in Scotland



WAVES

A series of buoys either on the ocean surface or just below the water oscillates from the rhythm of waves and produces energy

Example: CETO technology from Carnegie Clean Energy, tested off the coast of Australia

when energy consumption is higher. “Additionally, since turbines are usually submerged underwater, their audio and visual impact is minimal,” said Smith.

Marine energy is particularly appropriate for providing energy to oil rigs or offshore scientific expeditions, as well as to islands and isolated regions close to the coast. “Compared with other options for producing energy offshore, which rely on solar panels, fossil fuels and fuel cells, these turbines are not expensive to operate. They also require relatively little maintenance,” said Debra Fiakas, director of Crystal Equity Research, a firm that follows companies active in the industry.

Currently, 0.1% of electricity consumption worldwide comes from tides and waves, but this number is expected to increase to 5%

Traditionally, the most common concept is producing electricity from tides, as evidenced by tidal dams at entrances of bays. Inaugurated in 1966, the Rance tidal power station in Brittany, France was the first dam of this type. It was followed by the Jiangxia tidal power station in China, built in 1980, and the Annapolis tidal station in Canada built in 1984. More recently, Korean companies K-Water and Daewoo inaugurated the Sihwa tidal power station in 2011. With an energy production capacity of 254 megawatts, this tidal power station is currently the largest in the world.

Lately, the UK has been developing innovative initiatives, especially in Scotland, Northern Ireland and Wales. In Wales, engineers are working on

electricity consumption, according to Smith. In countries with long coastlines, such as Ireland, Canada and Japan, this type of energy is even more promising.

The industry was dominated by start-ups for a long time, but now large companies are starting to take an interest, including France's Alstom, GDF Suez and DCNS; Germany's Siemens; the UK's Rolls-Royce; and South Korea's Posco, Hyundai and Daewoo. Swiss company ABB has invested in Scottish turbine producers Scotrenewables, Tidal Power and Aquamarine. Valued at \$498 million

in 2014, the marine energy industry is expected to be worth \$11.3 billion by 2024, with average annual growth of 23%, according to the firm Transparency Market Research.

Indeed, marine energy has many advantages over other green energy sources. “Unlike wind or solar energy, tides and waves are extremely predictable, which provides stable energy production,” said Jacobson. “The density of water is also higher than the density of air, which optimises the quantity of energy generated by marine sources.” Waves and tides are also stronger in winter,

lagoon filled with turbines that are activated by the tides. Valued at €1.3 billion, the lagoon will be the first of its kind, located in Swansea Bay. The turbines will be able to produce 320 megawatts of electricity. Companies such as Prudential, Macquarie and Investec are amongst investors in this project. "Marine energy has received strong support from the UK government, as well as from European funds," said Cameron Smith. "It also benefits from the expertise the UK has in terms of wind energy and offshore oil." France, South Korea, Canada, China, Norway and the Netherlands also have maritime energy projects in the works.

In China, one of the most ambitious initiatives is currently being devel-

oped by Arcadis, a Dutch company. "We studied the possibility of generating electricity through a huge tidal dam more than 30 km long off the coast of China," said Rob Steijn, in charge of the group's marine energy projects. Unlike the Rance or Sihwa power stations, which produce energy from the difference in water levels created from the tides (a static element), energy here will be produced by using the force of the waves (a dynamic element). "The amount of electricity that could be produced in this way would be in gigawatts, rather than in megawatts," said Steijn. Such a quantity could provide several million homes with electricity. A smaller model of this concept will be opened as early as 2018, near Amsterdam. ▸

Scotland's Prime Minister Nicola Sturgeon visits the MeyGen project site in Eday, off the northern tip of the country. Marine turbines already supply thousands of homes with electricity.



COMPANIES TO WATCH

ATLANTIS RESOURCES

The British jewel

The company has offices in Singapore, Edinburgh and Bristol and is one of the primary players in the UK marine energy market. It has just completed the first phase of its flagship project MeyGen, off the coast of northern Scotland. It also signed a contract with SBS Intl Ltd to develop a project in Lombok, Indonesia, and another with Hyundai to collaborate on a project in South Korea. But it is in a tricky financial position: last year, it posted a loss of €7.3 million. Consequently, it's a risky investment but it could be profitable in the long term when the company's projects start generating revenue.

HEADQUARTERS: EDINBURGH (UK)

EMPLOYEES: 53

REVENUE (2016): €3.1 M

ARL

OCEAN POWER TECHNOLOGIES

Partnership with the Navy

The US company, which went public in 2007, developed an innovative solution to capture the energy of waves using a type of buoy called a PowerBuoy, which is attached to the sea floor by a metal rod. "This company is targeting the offshore energy production market," said Debra Fiakas, director of Crystal Energy Research. "Notably, it has collaborated with the US Navy." The group's share price has fluctuated over the past few months, going from more than \$10 to less than \$2. "Investors should keep an eye on this company and buy when shares are at their lowest," said the analyst.

HEADQUARTERS: PENNINGTON,

NEW JERSEY (US)

EMPLOYEES: 29

REVENUE (2016): \$843,000

OPTT



WIND TURBINES IN FULL FORCE

Although offshore wind turbines are powered solely by the wind — not the ocean's current — the sector is often associated with maritime economics. It also has ties with naval construction, as wind farms are often produced by shipbuilding companies.

Compared with other maritime industries, wind power has unparalleled growth potential. The installed power capacity of wind energy already exceeds 7 gigawatts (GW), but predictions indicate that it could reach 40 GW, or even 60 GW, by 2020. According to the most optimistic scenarios, the total power could subsequently reach almost 400 GW by 2030, and 900 GW by 2050 (see chart on p. 25). Europe will likely have the largest share of the market.

In terms of energy produced by waves, so far the majority of projects are prototypes. Projects are being developed in the Azores (Portugal), off the coast of Oregon and Hawaii (US), Cornwall and off the coast of the Orkney Islands (UK), as well as near the island of Jeju (South Korea), close to Guangzhou (China) and off the Canary Islands (Spain). However, according to a report from Price-waterhouseCoopers, Australia will have the most potential for this type of power station, especially along the western and southern coasts (read the Carnegie Clean Energy company profile on p. 33). The size and strength of the waves in these regions could produce 1300 TWh (terawatt hours) of electricity per year, which is five times the country's energy consumption.



This artificial lagoon project, full of turbines that are activated by the tides, is expected in the Swansea Bay, South Wales. Valued at £1.3 billion, companies including Prudential, Macquarie and Investec are some of the investors in this project.

TIDAL LAGOON POWER

The biggest challenge is the cost of these power stations, which is 10 times higher than for other renewable energies

Marine energy therefore has immense potential. But despite the buzz around these technologies, there are still several obstacles to overcome, according to Mark Jacobson: "These solutions are only of interest in regions with strong waves and tides. This means they couldn't be used in the North Atlantic or in the South Pacific. Additionally, the extreme conditions on the

high seas could damage the turbines; they need to be replaced every 15 years on average, compared with every 30 years for turbines on land."

The biggest challenge, however, is the cost of these power stations, which is 10 times higher than for other renewable energies. "Maritime energy costs between \$2 and \$5 per watt to install," said Steijn. "These investments need to be made beforehand, knowing that any profits won't be made for another 10 to 15 years." The only way to reduce the cost of these stations would be to deploy them on a large scale. "The price of wind energy has reduced considerably over the past few years with the increased number of turbines," said Smith. "The same trend will most likely occur for marine energy." ▲

ARCADIS

A giant in remission

This engineering giant has lots of experience with ocean currents, thanks to its flood prevention projects in several countries, particularly in the Netherlands and the east coast of the US. "This expertise led the company to invest in marine energy," said Joost van Beek, analyst at Theodoor Gilissen. Over the last few years, the firm was struggling due to a new CEO that ordered a forced centralisation. This led to several departures and a series of costly acquisitions. "But these problems have since been handled," said van Beek. "The share price, which is currently rather low, is an attractive investment."

HEADQUARTERS: AMSTERDAM (NL)

EMPLOYEES: 27,000

REVENUE (2016): €3.3 BN

ARCAD

CARNEGIE CLEAN ENERGY

Betting on innovation

The technology developed by this firm, which has recently been active in the solar and battery industries due to the purchase of Energy Made Clean (hence the current difference between revenues and workforce), converts ocean wave energy into power and water through a fully submerged system. The power is then converted into electricity either underwater or on land. Several units were tested off the west coast of Australia. The energy produced was sold to a naval base. The company has signed agreements with French companies EDF and Naval Group. Currently, investing in this company is a bet on the future.

HEADQUARTERS: BELMONT (AU)

EMPLOYEES: 3,000

REVENUE (2016): \$3.6 M

ASX

TWENTY THOUSAND CABLES UNDER THE SEA

Almost all data is sent through underwater telecommunications systems, and billions have been invested in submarine cables. Google, Facebook and Microsoft don't just rent these networks any more – they're buying their own.

BY BENJAMIN KELLER

There aren't 20,000 cables under the sea. If you count only active communications cables, there are 293. Which doesn't seem like a lot. That is, until you realise that, all together, they cover 1.1 million km – that's 27 and a half times the circumference of the Earth!

Most communications aren't sent via satellite, but through underwater fibre-optic networks, which are cheaper and faster. The European Subsea Cables Association (ESCA) says that 97% of phone calls, emails and other digital communications are sent underwater. The sector is growing as companies and individuals are consuming more and more data and demanding faster transfer speeds.

The first submarine cable was laid in the English Channel in 1850, in order to set up a telegraph network between the UK and France. The first transatlantic cables followed soon after. French science-fiction writer Jules Verne was already talking about such cables in his 1870

novel, *Twenty Thousand Leagues Under the Sea*. But it wasn't until the 1980s that fibre optics appeared, along with the internet. Since 1989, over \$40 billion has been invested in underwater communications cables, according to the latest report by Submarine Telecoms Forum. In 2016 alone, 14 new cables (100,000 km) were laid at a cost of \$2.4 billion. And the end is nowhere in sight.

Forty new cables costing \$7 billion will be laid in 2017 and 2018, according to Telegeography, a telecommunications market research firm. The sector is dominated internationally by Alcatel-Lucent Submarine Networks (ASN), a division of the Finnish equipment manufacturer

Microsoft completes the "Marea" cable linking the United States and Spain.



Nokia, which bought the French-American firm Alcatel-Lucent in 2015.

At the end of September 2017, Microsoft and Facebook inaugurated a 6,600-km cable between the US and Spain

ASN has produced more than 100,000 km of cables over the past five years. That's more than the Japanese manufacturer Nec (just under 100,000 km) and the Swiss-American tech firm



+33 %



Annual increase in capacity over the past five years for the world's main underwater cable routes

MICROSOFT

TE Connectivity (over 80,000 km), based in Schaffhausen, Switzerland. The rest of the pack is far behind.

PRIVATISATION

The sector is undergoing major changes. Historically, new installations were built and owned by large consortiums of national telecoms operators. But now, content providers and data-centre owners such as Facebook, Amazon, Google and Microsoft – whose needs are constantly increasing – want to strengthen their control over the infrastructure. Instead of buying bandwidth for existing cables, today's tech giants have decided that it's easier to build and own their own networks. Those are

the companies that are bolstering demand for new systems at the moment. By setting up their own cables, they will be saving money and improving security over the long term.

At the end of September 2017, Microsoft and Facebook inaugurated a 6,600-km cable between the US and Spain, installed in collaboration with Telxius, a Spanish telecoms infrastructure company and subsidiary of Telefonica. The cable, called Marea, will help meet growing demand for internet and cloud services. When it is commissioned in 2018, it will be able to send up to 160 terabits of data per second, making it "16 million times faster than the average household connection,"

says Microsoft. The company also says that the new cable will be able to broadcast 71 million high-definition videos simultaneously.

Peter Jamieson, president of ESCA, told *Swissquote Magazine*: "The bandwidth for this type of cable is reserved for content providers. Only a portion of the capacity is provided to third parties, such as Telefonica. Soon, new cables will be needed for the more traditional routes, since a large part of the existing infrastructure is about 20 years old (ed. note: the average lifespan of a cable is 25 years). Who will build them? Private entities? Or will we see a return to the consortium-based model?" We'll just have to wait and see. ▴

ROTTERDAM: PORT OF THE FUTURE

Europe's largest port is also its most innovative. A completely automated terminal, the first of its kind, opened in 2015. We take a look.

BY SOPHIE GAITZSCH



At the end of a knot of motorways, through a landscape of immense windmills and factory and refinery smokestacks, is Maasvlakte 2. The latest expansion of the Port of Rotterdam, built on the embankments off the North Sea, is a technical prowess quoted at €2.9 billion that amazes well beyond the Dutch borders. But it's not the only reason visitors flock to the port on this beautiful late summer day. They're also here to see what the port of the future could look like.

In April 2015, APM Terminals, a company owned by Danish giant Maersk, opened Maasvlakte 2, the

first completely automatic terminal in the world representing an investment of €500 million. A few months later, Rotterdam World Gateway (RWG), a consortium of five companies in the maritime transportation industry including France's CMA CGM, inaugurated similar ports costing €700 million.

MANAGING GIANT SHIPS

It's a lucky day for visitors. The Christophe Colomb, a 365-metre long ship in the CMA CGM fleet capable of shipping more than 13,000 containers, arrives from Singapore. It will soon be back out to sea, heading to Hamburg. On the dock, unloading cranes, stacking devices



The terminal of APM Terminals in Maasvlakte 2. The eight automated unloading cranes are operated remotely.

APM TERMINAL

and transport platforms are busy working. In a metallic ballet, multi-coloured containers are transferred to other smaller ships headed for regional ports, as well as to barges, trains and trucks that will transport the containers throughout Europe. All of this without any intervention from dock workers. Workers at the terminal manage all the operations at a distance behind screens, in a room similar to an airport control tower.

“Ten or 15 people manage the terminal on a daily basis,” said Ronald Lugthart, director of RWG, when the terminal was opened. “Our employees are mostly computer engineers. It’s a completely new approach.”

What are the advantages of automation? First and foremost, increased productivity. For unloading ships, automation can move 45 to 50 containers per hour, compared to 35 with manually operated machines. That’s a substantial amount, especially when it comes to ultra-large container ships, a new generation of giant ships that can transport more than 18,000 containers. They need ports that can handle large volumes of cargo very quickly.

Automation can also optimise equipment maintenance. Hans Volkers, our guide for the day and Information Officer for Maasvlakte 2, points out a RWG hangar: “The self-driving

vehicles that transport containers are electric. When their battery is almost depleted, they drive to this building. A robot takes out the empty battery and replaces it with a full one. All this takes only five minutes.” APM Terminals and RWG also highlight the advantages of automation in terms of worker safety and sustainability. The terminals run entirely on solar and wind energy and are classified as “zero CO₂ emissions” installations.

UNION PRESSURE

Back in central Rotterdam, in his office on the 16th floor of Erasmus University, Bart Kuipers, an economist who specialises in ports, >

provides a contrasted balance sheet of the two first years of operations at the new ports. Volume has increased slower than expected. In 2016, the terminals were functioning at only 40% of their capacities. They are expected to reach 70% this year.

Rotterdam is a laboratory for testing new port technologies

For the time being, they are slower than manually operated terminals. "The problem with the automated terminals is that the containers on the ships must be in exactly the

right location for everything to happen as planned. In the real world, this is rarely the case," said Kuipers. APM and RWG also had to make concessions to powerful unions looking to save jobs: "Unions managed to establish an increase in the number of people needed to run the automated terminals, with work productivity lower than expected. The positive takeaway is that these negotiations prevented any strikes." Another reason for delay is that the APM terminal was at a standstill for several days in June following an incredible cyber attack targeting Maersk, its parent company.

However, Kuipers doesn't question the relevance of these investments: "The first semi-automated terminals opened in the 1990s took 10 years to function at full capacity. Companies

are only motivated by gains in productivity. Automation is a global trend that they can no longer ignore and Rotterdam is a laboratory for testing new port technologies. This is where companies will find the expertise, technical capacities and suppliers. Even though Rotterdam can no longer be the biggest port in the world, it can still be the smartest." Following this example in the Netherlands, other completely automated terminals have opened in China and Australia over the past few months. ▴

PORT OF ROTTERDAM IN NUMBERS

460 million tonnes

Volume of goods
handled per year

1st

Rotterdam is currently the largest port in Europe and the ninth largest port in the world. It was the largest port in the world for four decades, before being dethroned by Chinese ports in the 2000s.

42 km

The length of the port,
with a total surface area
of 126 km²

175,000

Number of employees

Source : Rotterdam Port Authority



Self-guided electric vehicles carry containers from the docks to the loading areas (the terminal has 62). They are able to lift the containers to stack them.

APM TERMINAL

AFTER THE STORM, THE SHIPPING INDUSTRY REINVENTS ITSELF



Maritime container transport faced an unprecedented crisis in 2016. Things have since calmed, but the industry remains under pressure and is trying to find solutions that will secure its future.

BY SOPHIE GAITZSCH

Since this spring, deliveries of giant ships have come at breakneck speed, each one setting new records. In March, all eyes were on the MOL Triumph, a colossus with a capacity of 20,170 containers. But the largest container ship in the world was quickly ousted a month later by the 20,568-container Madrid Maersk.

Its reign was also short-lived. In May, the OOCL Hong Kong, with a 21,413-container capacity, was launched. The symbols of a flourishing industry? Far from it. In 2015–2016, maritime transport faced the biggest crisis in its history. A debacle to which the massive size of the new generation of ships contributed in large part. ▶



ARCTIC CAP

The North-East Passage, which links the Atlantic and the Pacific along the length of the Siberian coasts, is currently free of ice for part of the year, opening new opportunities for commercial shipping. Advantage: a 30% reduction in the distance between Shanghai and Rotterdam (in comparison to going via Suez), which helps save time and fuel. For the moment, however, the passage remains unpredictable and dangerous. Being accompanied by an icebreaker is indispensable. And even if major development work is under way, experts estimate that it will take a good ten years for the Arctic to become the “polar shipping highway” that some people hope it will. Among shipping companies, one of the best-positioned to take advantage is the State-owned Chinese giant Cosco, which envisions a regular Arctic route by 2030. “China is proactive in the Arctic also for geostrategic and political reasons,” comments Arctic specialist Mikaa Mered. The Korean firm Hyundai Merchant Marine has also tossed its hat in.

in services and the stagnation of manufacturing production, particularly in China, the main engine of the expansion of international trade over the last decade.

PANIC SALES

To reduce the surplus, shipping companies hastily got rid of some of their ships, some only six or seven years old. Mostly, however, they engaged in brutal price wars. In June 2015, sending a container from Shanghai to Northern Europe only cost \$205, a historical low, compared with \$1,200 a few months earlier.

In 2016, nearly all shipowners were in the red. Maersk, a Danish company and the world leader in shipping, reported a net loss of \$1.9 billion. For the French giant CMA CGM, the financial year ended with a \$452-million loss. The storm also claimed some victims. Hanjin, the largest South Korean shipping company, folded.

“It was the first of the major container-shipping companies to fail,” says Lars Jensen, director of Sealntelligence Consulting, an analysis and advisory firm in Copenhagen. “The crisis also prompted a massive wave of consolidations.” For example, Cosco swallowed fellow Chinese shipping firm China Shipping as well as the Hong Kong firm OOCL; Maersk took over German firm Hamburg Süd; and CMA CGM bought Singaporean NOL. On the other hand, large partnerships were put in place allowing common ships to be used, similar to the alliances entered into by airline companies.

“These adaptations should have happened a long time ago,” says Lars Jensen. “If nothing changed before, it is because many companies are State-owned, or in the hands

“The cause of the crisis can be summed up in one word: overcapacity,” explains Roar Adland, a professor specialising in shipping at the Norwegian School of Economics. Shipowners ordered too many new ships during periods of optimism, especially between 2006 and 2008, and in 2013. The industry’s overcapacities were also the result of low interest rates since the crisis,

which allowed several players to stay in business.”

The commissioning of massive ships commanded during boom periods came during a slowdown in business. “We witnessed a historic gap between global GDP and global trade, with slower growth for the latter,” notes Adland. Economists attribute the phenomenon to the increase



COMPANIES TO WATCH

MAERSK, THE LEADER

With 16.6% global market share and a 655-ship fleet, Maersk is the unquestioned leader of the container-transport segment, ahead of the Swiss firm MSC and the French company CMA CGM, neither of which are listed on the Paris stock market. The Danish conglomerate, which also has interests in energy, wants to re-focus on shipping. In August, it announced the sale of its Maersk Oil division to Total for \$7.5 billion, a decision hailed by analysts. Most analysts are in favour of a "hold" recommendation on the share.

HEADQUARTERS: COPENHAGEN (DK)

EMPLOYEES: 88,000

REVENUE (2016): \$35.5 BN

MAERSK*B

HAPAG-LLOYD: THE GERMAN RISING STAR

The German company Hapag-Lloyd, founded in 1847, merged with the Kuwaiti firm United Arab Shipping Company (UASC) at the end of May. With the merger, it became the fifth largest company worldwide, with 213 ships and 7.1% market share. "The integration of UASC will be completed in the third quarter, which will allow us to benefit from synergies," explained CEO Rolf Habben Jansen. Hapag-Lloyd can bank on an annual savings of \$435 million from 2019. Analysts recommend buying this share.

HEADQUARTERS: HAMBURG (DE)

EMPLOYEES: 12,585

REVENUE (2016): €7.7 BN

HLA



A ship of the company OOCL, in the Sydney bay. This Hong Kong-based firm holds the world's largest freighter record (21,413 containers).

of wealthy families or huge conglomerates." Jensen believes this trend will continue, with only seven huge companies remaining in a few years, compared with 20 in the early 2010s. For his part, Maersk CEO Søren Skou said in the *Financial Times* that the movement towards consolidation will end with five or six large companies remaining.

SALVATION VIA DIGITALISATION?

Since the beginning of 2017, prices have increased and shipping companies have come back into the black.

But the market remains precarious. "We will not see solid equilibrium before 2019," says Lars Jensen, who emphasises that shipping companies continue to order ever larger ships, in order to take advantage of economies of scale, but also because of the ripple effect: "Everyone is scared of being overtaken by the competition once business picks up again."

Container-transport companies also reflect upon how to best integrate digital technologies and automation ▶

Demonstration by Rolls-Royce of the first remote-controlled vessel from land (Port of Copenhagen, June 2017).



ROLLS-ROYCE

into their business models. The trend is still in its infancy. However, some initiatives have already seen the light of day, such as the installation of completely automated terminals, such as in the port of Rotterdam (see report on p. 36).

Among the pilot projects that have garnered the most attention, Maersk partnered with IBM this spring to develop a system for monitoring container shipments based on the blockchain. The goal? Strengthening the transparency and security of information-sharing between the different stakeholders (senders, forwarding agents, transporters, ports, and customs), limiting

fraud and errors, reducing transit delays and improving inventory management. In a press release, the two companies recalled that in 2014, sending a refrigerated container involved around 30 different organisations and required more than 200 communications. IBM says that, with widespread adoption, the new system could allow the shipping industry to save several billion dollars.

Reserving containers online is another change that could revolutionise cargo transport. Maersk teamed up with Chinese e-commerce heavyweight Alibaba at the end of 2016 to offer Chinese firms an internet reservation service. This new



offering allows companies to bypass intermediaries specialising in freight, who traditionally took care of this step. A few months later, CMA CGM followed suit.

DRONE-SHIPS

Finally, several companies are working to design crewless ships. The project that's gotten the most attention is from Rolls-Royce, one of the shipping industry's main manufacturers. These futuristic container-ships will be capable of analysing their surroundings and reacting in an appropriate manner. A single team on land can thus control multiple ships at once. In addition, the lack of personnel on board will mean more space for goods and reduce costs. The goal of this innovation is also to "optimise fuel consumption and the use of the fleet." The brand is planning for the first autonomous vessels to be put into service by 2020. ▀



3D illustration of a fully automated future cargo ship, designed by Rolls-Royce.

ROLLS ROYCE



The Saint-Cergue, one of the first boats of the Swiss merchant fleet, was built in 1937.

THE DISAPPOINTMENTS OF THE SWISS NAVY

Switzerland has a commercial shipping fleet. This strange situation in a country with no coastline can be laid squarely at the feet of the government. During the Second World War, Switzerland bought ships to ensure the country's supply lines. After the war ended, the government sold them, but encouraged the creation of a high-seas fleet via payment guarantees. The idea: Switzerland guaranteed the shipping companies' loans, in exchange for the ability to requisition the ships in case of crisis.

Until recently, six Swiss companies operated some 50 ships (cargo ships, oil tankers, container ships). However, the collapse of the maritime transport market hit them hard, with political repercussions. At the end of May, the Federal government approved a loan of 215 million Swiss francs to liquidate 13 ships belonging to the companies Swiss Cargo Line and Swiss Chem Tankers, for which Switzerland acted as guarantor. And these financial packages could continue: an internal report from Switzerland's Federal Office for National Economic Supply identified 16 additional ships in delicate situations, according to an investigative report published by the Sunday press at the end of August.

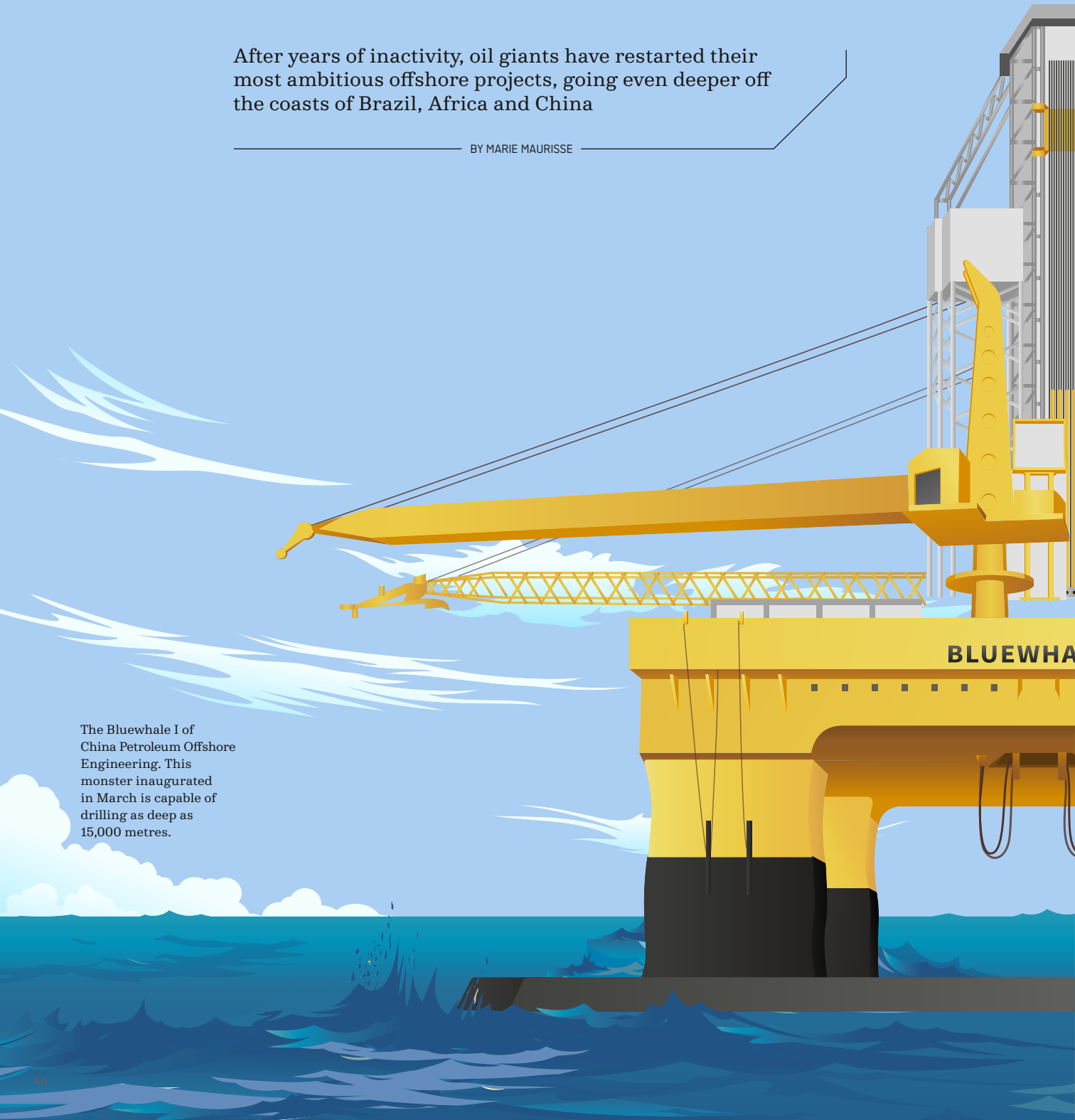
Twenty-seven seagoing ships flying Swiss colours are still financed until 2031, thanks to secured loans. The volume of guarantees is 512 million Swiss francs.

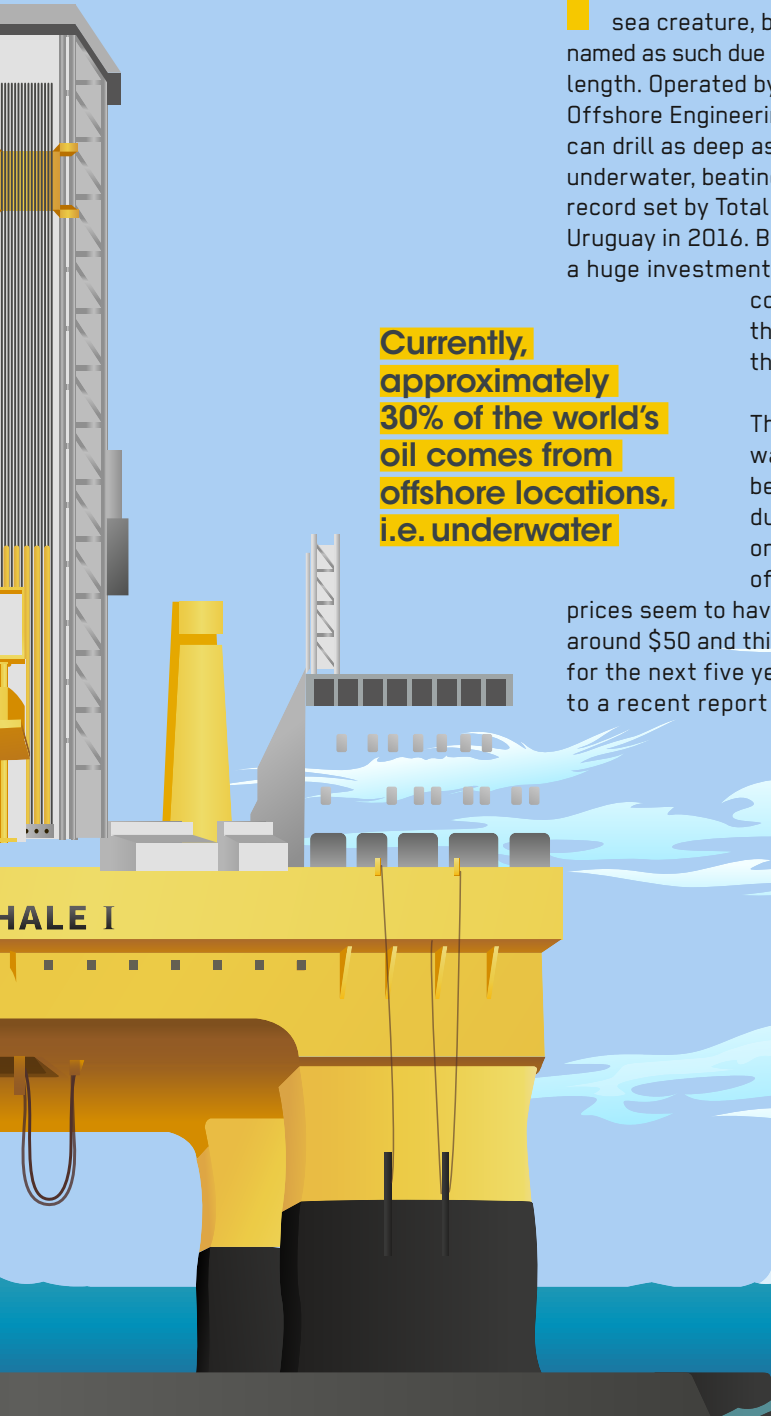
DEEPWATER DRILLING

After years of inactivity, oil giants have restarted their most ambitious offshore projects, going even deeper off the coasts of Brazil, Africa and China

BY MARIE MAURISSE

The Bluewhale I of China Petroleum Offshore Engineering. This monster inaugurated in March is capable of drilling as deep as 15,000 metres.



An illustration of the Bluewhale I offshore oil rig. The rig is a tall, yellow structure with a grey upper section. It has a yellow derrick and a yellow platform. The rig is situated in the ocean, with waves visible at the bottom. The sky is blue with white clouds. The rig is labeled 'BLUEWHALE I' on its side.

In March, a blue whale appeared in Chinese waters. It wasn't a sea creature, but rather an oil rig named as such due to its 118-metre length. Operated by China Petroleum Offshore Engineering, "Bluewhale I" can drill as deep as 15,000 metres underwater, beating the Raya-1 well record set by Total off the coast of Uruguay in 2016. Bluewhale I was a huge investment for the Chinese company: building the rig cost more than \$700 million.

Currently, approximately 30% of the world's oil comes from offshore locations, i.e. underwater

This gigantic project was made possible because the oil industry is now back on track after years of difficulty. Barrel prices seem to have levelled out to around \$50 and this trend could last for the next five years, according to a recent report from Citigroup.

Against this background, industry giants are tempted to make more big investments and restart deep-water drilling projects to access untouched areas.

Currently, approximately 30% of the world's oil comes from offshore locations, i.e. underwater. "The majority of the easily accessible reserves have already been drilled," said Paul Turret, director of ISEMAR, the Higher Institute of Maritime Economics. "That leaves deepwater drilling, which has lots of potential particularly in West Africa and South America." The biggest projects are taking place in Brazil, where 13 concessions have already been granted to the main listed European oil companies, along with Brazil's Petrobras to extract black gold at more than 3,000 metres deep. The Santos Basin, a pre-salt area off the coast of Sao Paulo, is the most prolific area. ▶

According to industry professionals, a barrel of crude oil extracted offshore is worth \$52 dollars. Even less off the coast of Brazil, a region with good extraction conditions. “The price is the same for both continental oil or shale oil,” explained Oswald Clint, a specialist analyst at Bernstein. “But there’s no risk of hurricanes and we’ve been in known territory since 2006. The return on investment is high.” That’s why Norway’s Statoil, France’s Total, Spain’s Repsol, the UK-Dutch Royal Dutch Shell and Portugal’s Galp are already drilling there.

Elsewhere, other projects provide similar yields without the risky investments. Total just acquired the rights to explore and exploit two deepwater offshore concessions off the coast of Senegal. As for BP, the Deepwater Horizon disaster in 2010 didn’t convince the company to abandon offshore drilling in the Gulf of Mexico, where the UK company exploits four rigs dubbed Thunder Horse, Atlantis, Na Kika and Mad Dog. BP recently found one billion additional barrels, making it possible for them to lower the break-even point to \$40 a barrel – a bargain.

ANALYST’S ADVICE

“IN THE ARCTIC, OIL COMPANIES TAKE CARELESS RISKS”

Philippe Michel, head of Swiss Upstream Advisor, is a consultant in oil mining and production. He recommends that investors be mindful of the environmental impact of deepwater drilling.

The Deepwater Horizon disaster in 2010 was felt by many. At what point does offshore deepwater drilling become harmful to the environment?

In the oil industry, things are always risky. For known locations, such as Brazil, Angola or the Gulf of Mexico, production is controlled but there’s always risk of a catastrophe. The main risk of deepwater drilling is an oil spill. The Macondo spill in the Gulf of Mexico cost BP \$20 billion. But since the water is warm in that area, oil can evaporate quicker and cleaning the area is relatively effective. Conversely, in the Arctic where the water is frozen, clean-up is virtually impossible.

On that note, what do you think of deepwater drilling in the Arctic?

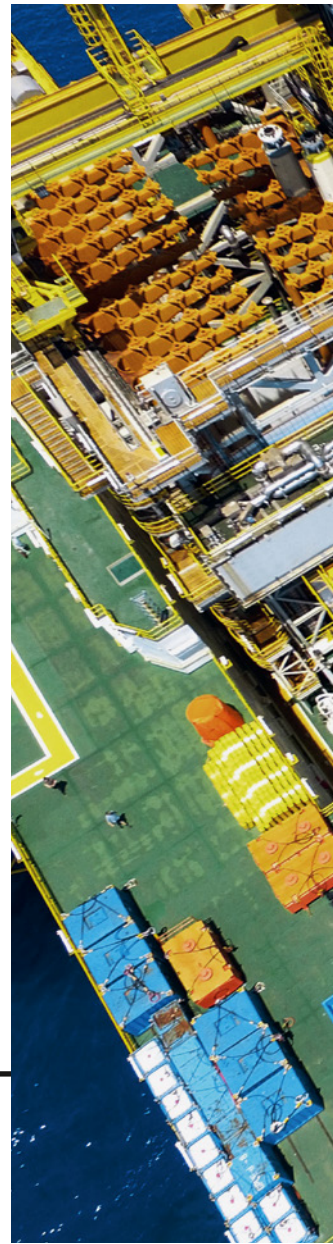
The problem there is that floating icebergs can cause an oil spill if they run into an oil rig. There are systems to discon-

nect the wells if that happens, but they are very expensive to implement. And in the event of a spill, the environmental damage would be irreversible, since the pollutants would only disperse very slowly. That’s why I believe companies like BP that drill in the Arctic are taking careless risks. I really respect Total’s decision not to drill there. It’s the only company that officially made such a commitment and I think that is extraordinary.

Which company will evolve the best in the deepwater drilling industry?

Large international operators are the only companies with the technical knowledge and a large enough cheque book to be able to drill in deep water, since a well of that type costs \$60 million. They are all very good. But if we look at the facts, Total has never had a major disaster and is developing significant wells in Angola and Girassol in particular, where the company is demonstrating its considerable technological mastery. Exxon Mobil hasn’t had a disaster either. Petrobras has significant expertise, but it is limited to Brazil.

An aerial view of Bluewhale I in the Shenhua area off the Chinese coast.



US oil giants Chevron Corp and Exxon Mobil Corp aren’t really involved, as they are strongly focused on shale oil in the US.

The market enthusiasm also benefits service providers who manage the platforms, including Geneva-based Transocean. In mid-August, it announced the acquisition of its Norwegian competitor Songa Offshore, the main subcontractor of Statoil. Jeremy Thigpen, the group’s CEO, announced that the



AFP / QIANLONG / IMAGINECHINA

“break-even point of offshore oil is beginning to be comparable to onshore oil”.

But these projects don't come without risks. “Deepwater drilling is still a game for the big players; it's not for everyone,” said Angus Rodger, head of the oil and gas division of Wood Mackenzie. Because even though these giants dominate the industry, the process is still risky. People are now looking towards the Arctic, where projects

are just getting started. Russia already drills for oil in this region with its Prirazlomnaya rig, which produces 10,000 tonnes of oil per day. But the climate, as well as difficulties drilling through ice, make it a complicated place to extract, therefore increasing the price of producing one barrel, to as much as \$75. Not to mention the environmental dangers (see inset on p. 46). For these reasons, Shell left the area in 2016 and ended its explorations close to Alaska.

But market changes are forcing producers to look at this region once again. Norway just launched a new licence grant to drill 102 blocks. In the United States, President Donald Trump wants to reduce the offshore drilling restrictions put in place by his predecessor Barack Obama. Texas-based company Hilcorp is already in line to begin research for its Liberty project, in order to build an oil rig close to 100,000 sq. m long. ▲

AQUAFARMING IS BOOMING

Aquaculture is a rapidly growing industry with many innovative ideas. This trend is fuelled by increasing demand for sustainable seafood as well as the devastating effects of overfishing.

BY JULIE ZAUGG



More than half of all fish and seafood consumed globally comes from aquaculture. This industry, which refers to farming aquatic organisms in a controlled environment (in streams, basins, rivers or off the coast), has grown significantly. "Each year, aquaculture generates more than 100 million tonnes of products," said Tore Tonseth, analyst at Sparebank 1, who follows the industry. Some of the species raised in this way include salmon,

tilapia, trout, sea bass, shrimp, scallops and oysters, as well as some types of algae. "Approximately 90% of production takes place on small family farms made up of a series of basic ponds. Salmon is the only species farmed in an industrial manner, mainly in Norway and Chile."

Aquaculture is doing so well as a result of increased demand for fish and seafood, which reflects the emergence of a middle class in developing coun-

tries. "Consumers are increasingly aware of the environmental impacts of their food," said Tonseth. "Additionally, fish and seafood provide a far more efficient source of protein, environmentally speaking, than beef or other types of meat." This is coupled with a significant decrease in high seas fish stocks because of overfishing.

But aquaculture has its fair share of ecological challenges. Organic



Circular structures deployed offshore prevent sea lice from reaching farmed fish due to strong sea currents.

waste produced by fish and seafood, as well as the large quantities of antibiotics they are fed, pollute the oceans. In the same vein, the construction of shrimp farms along coastlines destroyed huge regions of mangrove trees in Thailand, India, Costa Rica and Ecuador. Feeding carnivorous species such as salmon, sea bass and trout requires large quantities of animal flours, which are made up of small fish (anchovies, sardines, herring).

This has led to overfishing of these fish.

There are diseases as well. "Several salmon farms were recently destroyed by infestations of sea lice," said Lage Bohren, analyst at Carnegie Investment Bank and expert in the aquaculture industry. "For a long time, farmers relied on pesticides, but parasites began to become resistant to these products." >

COMPANIES TO WATCH

MARINE HARVEST

King of salmon

The world leader in salmon largely dominates the aquaculture market, with more than 400,000 tonnes of fish produced each year. "This company also has a diversified geographic exposure, with locations in Norway, Chile, Scotland, Canada and Ireland – all the major salmon producing regions," said Tore Tonseth, analyst at Sparebank 1. Like its competition, Marine Harvest benefits from the increased price of salmon, which ensures a gross profit margin (EBIT) of 30% or 40%. Another advantage is its high liquidity level, which will allow it to make acquisitions in the coming years.

HEADQUARTERS: BERGEN (NO)

EMPLOYEES: 12,717

REVENUE (2016): €3.5 BN

— MHG

SALMAR

Norwegian rebound on the horizon

SalMar dominates the salmon industry in Norway. Globally, it is the world's fourth largest salmon producer. "This company has a strong management team, inexpensive production methods and a company culture focused on efficiency," said Lage Bohren, analyst at Carnegie Investment Bank. The company was nevertheless significantly affected by the sea lice epidemic that hit the entire industry. But Bohren still believes SalMar is a good investment, since the price of salmon will remain high for the next two or three years thanks to increased global demand.

HEADQUARTERS: FRØYA (NO)

EMPLOYEES: 1,357

REVENUE (2016): \$1.1 BN

— SALM

That being said, the environmental balance sheet of these farms isn't as dismal as one may think. On a global level, aquaculture significantly limits overfishing, a phenomenon that is much more harmful to oceans than residual coastal pollution. Additionally, while small family farms have rightly been singled out, large companies such as Norway's SalMar and Marine Harvest (see p. 49) are subject to very strict environmental standards.

A FLOOD OF INNOVATIONS

Faced with these challenges, the aquaculture industry has become incredibly innovative. "This autumn, Norwegian company SalMar will test giant circular steel structures that

can hold eight times more salmon than traditional cages and most importantly can be located offshore, where strong sea currents keep sea lice away from the fish," said analyst Lage Bohren.

Another massive project comes from Norway's NSK Ship Design. This company built a salmon and trout farm on a 430-metre-long ship that can hold up to 10,000 tonnes of fish. This mastodon of the sea is able to relocate depending on currents and storms, as well as benefit from optimal farming conditions.

Another company, Marine Harvest, has developed egg-shaped mini farms that can be placed offshore.

"These structures are completely watertight, so they keep out ocean water that is infested with parasites that could contaminate the fish," said Bohren.

Spanish company Smart Floating Farms has developed an aquaculture farm that is entirely self-sufficient, powered by solar energy. It grows plants using hydroponics that can be used to feed the fish. The organic waste produced by the fish is used as fertiliser for the plants.

Another massive project: a salmon and trout farm on a 430-metre-long ship that can hold up to 10,000 tonnes of fish

The Californian start-up Calysta has developed protein-based micro-organism tablets to feed the fish.



Innovative tactics have also been used to produce fish food. "Some companies have started feeding their fish insects or algae as a source of protein or Omega-3s," said Tonseth. California start-up Calysta has even developed protein tablets made from microorganisms derived from the natural process of fermentation.

Another company, Cargill, has developed more effective animal flours, notably by adapting the composition of the flours to ocean conditions or the life cycle phase of the fish. Some flours contain nucleotides and vitamins which help aquatic animals better fight off sea lice. Other flours contain a cocktail of nutrients designed to increase the size of the fish. In particular, the US-based company has been able to produce rounder tilapia that hold up better during transportation... and taste better. ▲

THE FILM THAT SANK SEAWORLD

A 2013 documentary about orca whales led to a drastic drop in visitors to the famous water park and it hasn't recovered since

BY JULIE ZAUGG

When it came out in July 2013, *Blackfish* didn't attract much attention. The low-budget documentary told the story of Dawn Brancheau, a SeaWorld employee who was attacked by an orca. Used to swimming 150 km per day in the ocean, these cetaceans cannot tolerate being confined to tanks only a few metres big. But the film was shown on CNN a few months later, which changed everything. "More than 20 million people watched *Blackfish* between October and December 2013," said Naomi Rose, an orca specialist. "It completely transformed how people viewed the species."

At SeaWorld, the *Blackfish* effect began in 2014. That year, revenue fell 5.6% to \$1.38 billion, and the number of visitors fell 4.3%. The revenue of the Florida-based company has since continuously declined. In the first half of 2017, it posted a loss of \$237 million and a drop of 353,000 visitors, despite an austerity programme that aimed to save \$40 million by the end of the year, as

well as several hundred employee layoffs. Just before the film came out, SeaWorld shares were worth \$38.30. Today, they are only worth \$13, a 66% drop.

Before the film came out, SeaWorld shares were worth \$38.30. Today, they are only worth \$13

And that's not all. "Many companies, such as Southwest Airlines, and celebrities ended their partnerships with SeaWorld," said Rose. "The company also had to deal with several lawsuits brought by investors." In California, where SeaWorld has a water park, the state government passed a law making orca breeding illegal.

Up against this tsunami of events, SeaWorld began by denying everything. "The company refused to acknowledge the link between the film and

its financial troubles. Instead, it blamed bad weather and the dates of Easter weekend," said Rose. "It also tried to discredit orca activists by describing them as emotional people or extremists." SeaWorld published videos and financed a website denigrating a former orca trainer in the film.

But by the end of 2014, the company realised that wouldn't be enough. CEO Jim Atchison stepped down and SeaWorld hired a prestigious New York public relations firm. Shortly afterwards, SeaWorld began an advertising campaign highlighting the veterinary care the animals received and explaining that some of the animals were survivors of the 2015 oil spill in Santa Barbara. It also launched a website and Twitter campaign with the hashtag #AskSeaWorld and promised to invest \$100 million to expand its aquariums. And in an ultimate victory for its opponents, SeaWorld announced in March 2016 that it would stop breeding orcas in captivity. ▲

TRAINERS MADE FROM MARINE WASTE

The plastic bags which float in the ocean are now being used as primary materials for the textile and construction industries

BY MARIE MAURISSE

An H&M dress, made with textile from marine waste.

In April, supermodel Natalia Vodianova twirled down Parisian catwalks in a flowing dress from H&M, the flagship piece from the Swedish giant's new collection. Who would have believed it? The powder-pink dress was made from "bi-onic", a material made from marine waste; essentially from plastic. The brand realised that it could combine ecology with business.

Several start-ups have started harvesting bags, bottles and fishing nets. Once collected, they become an excellent primary material.

In order to create their jumpers, shirts and trousers in the same way, H&M need look no further than the 150 million tonnes of plastic waste which pollute the seas, according to figures given by the Ellen MacArthur foundation. The foundation warns that by 2050, there could be more waste than fish in the ocean. To work towards reversing this alarming trend, several organisations and start-ups have started harvesting bags, bottles and fishing nets. Once collected, they become an excellent primary material.

One business which is particularly active in this market is Bionic Yarn, which provided H&M with the material for their new collection. Brands like G-Star and O'Neill also use their "bionic" fabric. The company's artistic director is none other than the American singer Pharrell Williams,

The singer Pharrell Williams, artistic director of Bionic Yarn, which sells a textile made from marine waste.



AFP / DIMITRIOS KAMBOURIS

who is also marketing his own clothing line.

Although very localised at first, these ecological initiatives are expanding. In 2015, Adidas launched a pair of trainers made entirely from marine waste. The Spanish company Ecoalf now boasts a whole collection of bags, sandals, jackets and t-shirts which are all the rage in London and New York, and which are woven from rubbish collected by fishermen in the Mediterranean.

But marine plastic waste serves more than just the fashion industry.

It can also be used to make asphalt, such as Dutch group VolkerWessels' "PlasticRoad" surface – whose share price continues to rise – or even beach huts, as designed by the Singapore-based architecture firm Spark. The most ambitious project comes from Recycling Technologies, a British company founded in 2013, which is transforming waste plastic into a fuel called Plaxx. This could be used to replace the diesel that fuels cargo ships – one of the worst pollutants in the world – and could soon revolutionise the shipping industry. ▲



23 cm

This is the average
sea level rise between
1880 and 2012
according to the
Intergovernmental
Panel on Climate
Change (IPCC)

WHEN RISING SEA LEVELS SHAKE UP THE ECONOMY

Rising ocean levels have already cost billions. But this is only the beginning. The future consequences of this phenomenon will depend on how fast and how much affected countries and industries can adapt.

BY BENJAMIN KELLER

Up to \$290 billion. This is the cost of hurricanes Harvey and Irma that hit the West Indies, the Caribbean and the United States this summer, equivalent to 1.5% of the US gross domestic product (GDP). For US meteorologist Michael Mann, the impact of these typhoons was made worse by rising sea levels associated with human activity. "Sea level rise as a result of climate change has increased more than 15 cm over the last few decades, which means that the storm surge (ed. note: rising of the sea as a result of a storm) is seeping farther and farther into coastal cities," Mann, a climate science professor at Pennsylvania State University, wrote in the *Washington Post*. The increased devastating power of hurricanes is just one of the consequences of sea level rise on the global economy.

The average sea level could rise up to a metre by 2100, as a result

of sea ice melt and the expansion of seawater due to global warming, according to the Intergovernmental Panel on Climate Change (IPCC). For the United States alone, rising sea levels could cost 1% to 2% of the national GDP and up to 5% of the GDP in vulnerable regions such as Florida. "These estimates could be far too low, since recent observations have shown a rapid thawing of glaciers in Antarctica and Greenland. This could lead to sea levels rising higher and faster than expected," said Jonathan Harris, researcher at the Global Development and Environment Institute at Tufts University in the United States. "Such a scenario would have catastrophic effects that would be far worse than the destruction from hurricanes like Harvey."

Coastal regions and islands are the most vulnerable. "We've already spent billions of dollars to protect coasts from flooding on the east >

coast of the US and the Gulf of Mexico,” said Harris. “Including loss of property, the total costs for these regions could reach several thousand billion dollars. According to a recent estimate, 1.9 million coastal houses, the combined value of which is \$882 billion, could be destroyed by 2100 in the United States.” These estimates are based on a moderate sea level rise. “An extreme rise of 1.8 m to 3.6 m resulting from thawed ice from West Antarctica, which is now a very real possibility, would be far more devastating,” warns the specialist.

Annual flood costs for large coastal cities could reach \$1,000 billion by 2050

A World Bank study published in 2013 on the 136 biggest coastal cities in the world predicts that the annual costs for flooding in these cities could increase from \$6 billion to \$1,000 billion by 2050 if new adaptation measures are not taken in the meantime. By putting in place protection systems (pumps, embankments, etc.) the balance could be reduced to \$63 billion per year. The World Bank study is based on a sea level rise of 20 cm by 2050, which is a moderate scenario.

THREAT OR OPPORTUNITY?

That said, these numbers should be taken with a pinch of salt, because the effects of sea level rise on the economy are very difficult to predict. They vary based on the extent of global warming and the speed of ice melt and sea level rise, but also the ability of countries and industries to adapt, persevere and innovate. Furthermore, it's not enough to simply estimate costs. One must also take

into account the potential benefits of the investments made for this phenomenon.

The impact of hurricanes is particularly difficult to calculate. “There are three theories regarding their long-term effects,” explained Rob Dellink, economist at the Organisation for Economic Cooperation and Development (OECD). First, damages are never compensated. Second, reconstruction generates income that counterbalances damage. Third, replacing old infrastructure with new, more efficient construction could even accelerate growth. It all depends on the local context, the ability to rebuild the right way, the responsiveness of the local government and the organisation of the insurance market.”

Insurance is another aspect that adds to the complexity of determining the economic consequences of rising sea levels. Each year, natural disasters become more and more expensive. In 2016, insured damage from natural disasters around the world cost \$54 billion, compared to \$38 billion the year before, according to Swiss Re, the world's largest reinsurer. With the hurricanes this year, the current financial year could be even worse. “Global warming could bankrupt our industry,” said Frank Nutter, president of the US reinsurance association. But where some anticipate the fall of the industry, which would have significant repercussions on the rest of the economy, others see potential new growth.

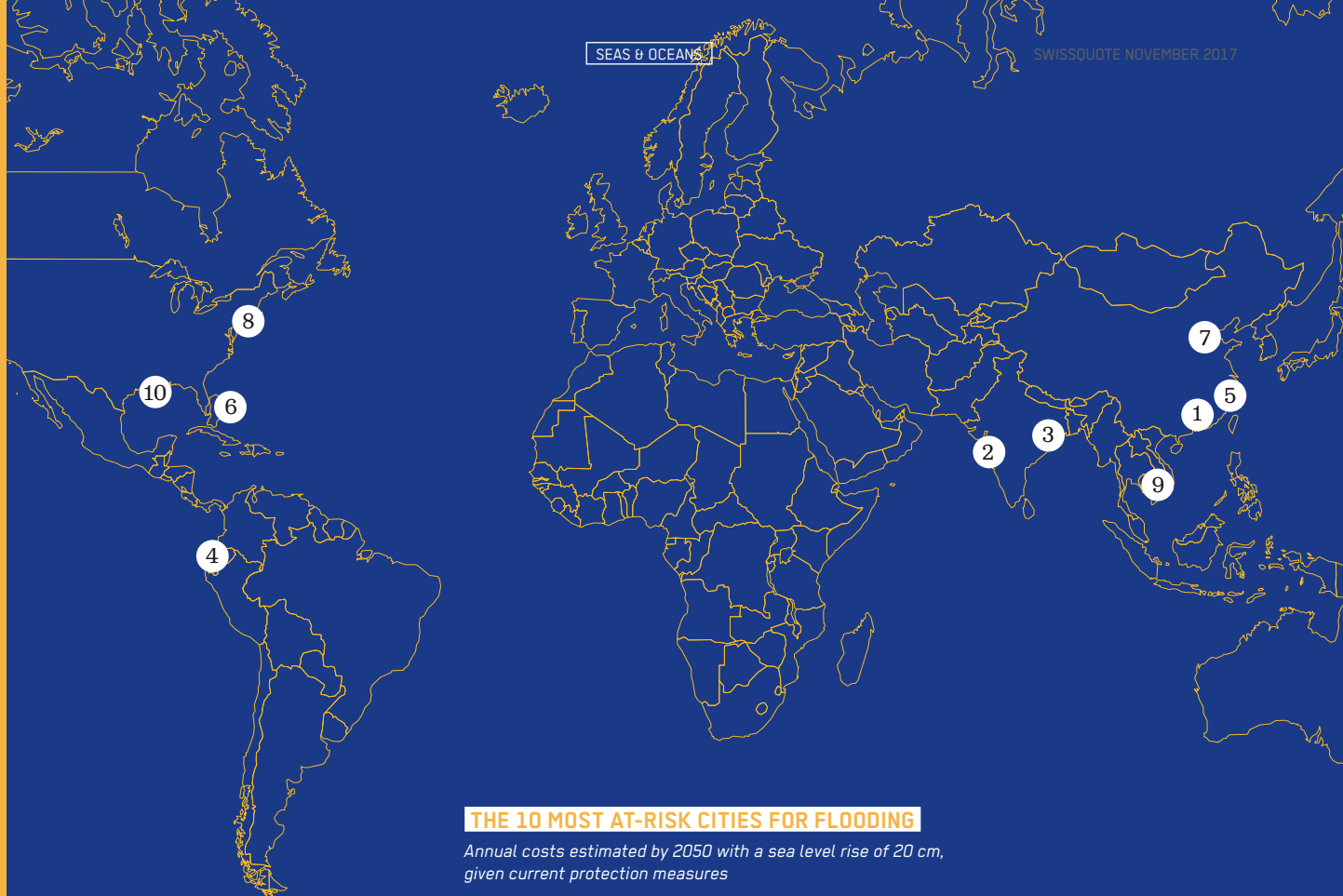
“Currently, only one-quarter of investment projects around the world are insured for climate events,” said Mikaa Mered, professor of economics and geopolitics of the Arctic and Antarctica at the ILERI School of International Relations in Paris. “That means that the remaining 75% aren't insured and therefore new products can be developed.” Swiss Re is already developing new

Migratory waves and new cities



Rising ocean levels will also lead to many population relocations, which will affect anywhere between one million and hundreds of millions of people, according to the forecasts. In the Pacific, Kiribati, a group of 33 islands at only 1.8 m above sea level, could be completely submerged over the next few decades. Two islands have already disappeared. The government is planning to relocate the entire population of 110,000 people to Fiji. Some residents have already left.

The consequences will be enormous, and not just for the economy. “It's very likely that the migration issue will get worse and lead to more and more conflicts,” expects researcher Mikaa Mered. “Many people will head north and the far north will increasingly become a land of immigration. This begs the question of making the Arctic a sanctuary, as people are discussing building new cities. What can become a sanctuary today might not be able to be in the future, for climate and migration reasons.”



THE 10 MOST AT-RISK CITIES FOR FLOODING

Annual costs estimated by 2050 with a sea level rise of 20 cm, given current protection measures

1.	Canton, China	\$13.2 BN	6.	Miami, United States	\$2.5 BN
2.	Bombay, India	\$6.4 BN	7.	Tianjin, China	\$2.3 BN
3.	Calcutta, India	\$3.3 BN	8.	New York, United States	\$2.1 BN
4.	Guayaquil, Ecuador	\$3.2 BN	9.	Ho Chi Minh City, Vietnam	\$2 BN
5.	Shenzhen, China	\$3.1 BN	10.	New Orleans, United States	\$1.9 BN

Source:
World Bank, 2013

business lines for climate change. In particular, the Zurich-based reassurer recently began covering a coral reef 60 km off the coast of Cancun, Mexico. If a storm destroys the reef, Swiss Re will cover the repair costs up to \$70 million. Besides attracting tourists, reefs, threatened by global warming, form a natural barrier against storms and flooding. Preserving reefs is therefore advantageous both ecologically and economically.

LOCAL AND GLOBAL CONSEQUENCES

It's also worth distinguishing between local consequences of sea level rise and global incidents. The blows to the energy and tourism

industries will be massive on a local level, but relatively limited from a global perspective, given that the benefits enjoyed by some regions will compensate for the losses in other areas, according to the OECD. "Decline for some means growth for others, and what is destroyed by climate change will be rebuilt elsewhere," said Mered. "Some regions will suffer more than others. Dubai is better prepared than Bangladesh." Southern and Southeast Asia are particularly vulnerable regions, according to researchers, and especially islands like Kiribati (see inset on p. 50).

Even though the real impact of rising sea levels is largely unknown, one

thing is certain: the cost of not doing anything would be extremely high. "The good news is that the ways to reduce greenhouse gases are becoming simpler and less expensive," said Jonathan Harris from Tufts University. "Solar and wind energy prices have dropped drastically, as well as the cost of energy measures that reduce pollution. There is incredible potential – which has remained virtually untapped – to store carbon in the ground and forests, thanks to better farming and forestry practices. The extent of the problem, however, means that policies must be put in place immediately to encourage rapid progress across all fronts." ▲

Car rental: the laborious process of digitalisation



Copenhagen Airport
(2015).



ISTOCK

Traditional car rental companies such as Europcar, Hertz or Avis have been slow to adapt their services to the digital era, while new actors are shaking up the market with their fully digital solutions

BY BENJAMIN KELLER

It's the first day of the holidays. You have already booked your rental car online, but after landing, you still have to take a shuttle from the airport to the agency which is out in the sticks, with the temperature hitting 35 degrees in the shade. And even then, your mission is far from over. You still need to join a long queue behind other holiday-makers to speak with the one and only person behind the counter who is responsible for helping all customers. When your turn finally comes, you still need to sign papers, discuss the insurance details and be given the keys. At a time when the digital economy is in full swing, traditional short-term car rental firms are proving slow in keeping up with the pace.

"These agencies somehow got stuck in the 70s", said Christian Devismes, a financial analyst at CM-CIC Securities in Paris, who tracks Europcar, the French-based European leader in the car rental sector with a turnover of €2.15 billion, a fleet of 214,000 vehicles and a network of 3,750 agencies spread across the world. "This slow uptake in comparison with other sectors such as the hotel trade can be primarily explained by the fact that the car rental busi-

ness is less straightforward," he indicated. "It requires dealing with insurance matters. Signatures and more documents need to be provided than in other services. These are some of the factors that slow down the digitalisation process."

However, newcomers on the market, like Virtuo in France, are already offering fully digital solutions. Created in 2015, the start-up which is currently up and running in Paris, Lyon, Nice, Aix-en-Provence and Avignon (mainly in stations and airports) is seeking to compete directly with Europcar, Hertz, Sixt and Avis. Its app makes it possible to manage all the steps from a smartphone, from the booking stage to unlocking the car (for Mercedes A-Class and GLA only), including the inspection of the vehicle, for just € 49 a day for up to 150 km travelled. The French entrepreneur Xavier Niel, who owns the Swiss operator Salt, invested in the start-up.

DISRUPTIVE FRESH BLOOD

Karim Kaddoura and Thibault Chassagne, the two founders of Virtuo whose eager ambition and fine appearance is reminiscent of French President Emmanuel Macron's style, ▶

Karim Kaddoura and Thibault Chassagne, the young founders of Virtuo. This French start-up offers a 100% digital service.



claimed in the French media to be lining up a “disruptive solution” in a sector in which “customer experience has seen no changes for over 20 years”. But Christian Devismes is not so convinced by their ability to “uberise” the market, i.e. by their hope to draw on new technology to produce a service that is so innovative that it would outpace even the most long-standing of actors in the industry.

“It is relatively simple to come up with new solutions when you are starting from scratch, but new leasers often come across obstacles because the market is deeply embedded in capitalistic ways, meaning that the detention costs of the fleet are very high,” continued the analyst. “I get the impression that start-ups like Virtuo tend to be bought by the giants in the industry, who benefit from a well-established

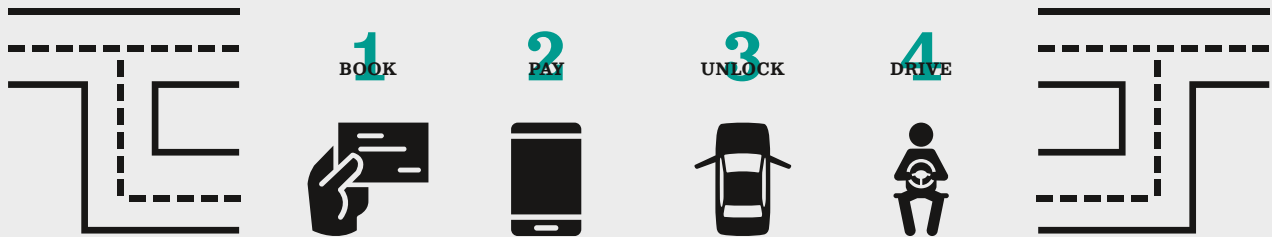
model and who have more negotiating power with constructors.”

Newcomers on the market are offering fully digital solutions

Acquisitions have already taken place. Europcar recently added several start-ups focused on new types of mobility to its portfolio, including Ubeeqo, a self-service rental company created in 2008 and implanted in five European capitals as well as in three other cities. The Ubeeqo app makes it possible to book a vehicle, either for use in cities or to travel

abroad, but also to order a taxi or a car with a driver thanks to its partnerships. Last June, Europcar also announced that it had bought a 20% share in SnappCar, the number two in Europe on the rental market for private individuals, a concept also referred to as car sharing, which follows a similar model to that of Airbnb in the accommodation industry.

So despite appearances, it would seem that the dinosaurs of the rental industry are indeed breaking into the digital era. The terms “transformation” and “new mobility” come up again and again in Europcar’s latest press releases. In marketing terms, the aim is not only to “place digital technology at the heart of the customer experience”, according to the group that is distinguished by its yellow and green colours, but to become



the “supplier of mobility”. In other words the idea is to offer various services on a single platform: traditional rental services, car clubs, car sharing or even drivers on request.

THE REVOLUTION OF AUTONOMOUS CARS

“The changes that the industry will face in the coming five years are set to be more exciting than those of the last 20 years put together,” promised Anett Wittmann, the spokesperson for Avis, one of Europcar’s main rivals. The American group is also busy digitalising its solutions and diversifying its offer. It started dematerialising rental services in several European and American airports, taking advantage of the system developed by the self-service company Zipcar, which it bought in 2013 for \$500 million.

The Avis representative mentioned a major innovation that is not yet available to customers but which will soon be on the market: autonomous vehicles. These vehicles could potentially bring radical change to the market. It is partly in anticipation of their emergence that car rental companies have developed partnerships with firms specialised in drivers on request, like Uber and Lyft. The day when smart cars will become a reality, professionals from the rental sector will be able to put their expertise to use in managing fleets, while benefitting from the

reputation and efficiency of the Uber and Lyft apps.

Autonomous driving is attracting new actors to the rental market, namely tech giants. Avis has signed a partnership with Waymo, a subsidiary of Alphabet (Google), to manage its fleet of autonomous vehicles on request, a concept which is currently being tested in Phoenix, in the United States. Its local competitor

Hertz, on the other hand, is going to test autonomous cars for Apple. We will have to wait and see who will reap the most benefits from these collaborations in the long term. Avis and Hertz cannot compete in terms of size with Apple and Google. It is not inconceivable that the latter will simply end up buying out the rental companies or turning them into subcontractors. That could be where the true threat lies. ▴

IN SWITZERLAND, MOBILITY AND SHAROO ARE REINFORCING THEIR NETWORKS

In Switzerland too, the car rental sector is gradually undergoing transformation. “We are living in an era marked by changes,” explained Carmen Spielmann, CEO of the Zurich-based car-sharing start-up Sharoo, which counts 55,000 members for 1,500 vehicles shared throughout the country. “The needs of customers are evolving and technology is constantly producing new ways of getting around,” elaborated the director. “We expect that, in the future, different forms of mobility will be combined and offered by a single service provider.”

Mobility, the Swiss pioneer of self-service rental services, shares this vision. The Lucerne cooperative, which holds shares in Sharoo, is pulling out all the

stops to become this unique service provider. Last November, the company that already boasts 131,000 customers and a fleet of 2,950 vehicles extended its “Catch a car” offer to Geneva. This service, which was initially launched in Basel, makes it possible to return a vehicle in a different place.

And Mobility fully intends to become a player in the market of autonomous vehicles. The company is currently taking part in a pilot test involving this type of shuttle service in Zug. “Such an innovation could introduce significant changes to the way the market functions,” believes Bernard Sauterel, spokesperson for Mobility in French-speaking Switzerland.

CHATBOT: A SMART, SWIFT VIRTUAL ASSISTANT



Swissquote launches its brand-new AI messaging service, a first in the banking industry. CTO Paolo Buzzi shares his thoughts.

Imagine chatting in real time with a machine and getting the information you need right away, even faster than if you were dealing with another person – welcome to the world of chatbots. Artificial intelligence has come a long way, and these interactive bots are getting better and better at understanding and processing complex requests. Once again living up to its reputation as an innovator, Swissquote is the first player in the financial industry to use this new technology.

What is the chatbot's role, and how is it useful for Swissquote clients?

Chatbots can answer questions that used to be handled by our call centre. We noticed that a lot of questions deal with lost passwords, changes in address or other similar issues. In other words, the same questions are often asked over and over. For our clients, dealing with a chatbot for those types of questions will be faster and more efficient – and they won't have to sit on hold!

What about clients who would rather speak with a person?

Clients who don't want to use the chatbot don't have to. They'll still be able to contact our call centre. The idea is simply to give them another option. In some cases, people don't necessarily want to talk to another person. With the chatbot, they can maintain a certain level of anonymity. And for some, dealing with a fast and efficient machine can be reassuring.

Isn't it dangerous though to let a machine handle client identification?

Not if we follow the same processes as the call centre. If a client wants to reset his or her password, for example, the chatbot first asks a few questions to confirm the client's identity. Only then will it send an email allowing the client to reset the password. As a bank, we are extremely attentive to all aspects relating to security and confidentiality. That's why we don't want to use an interface like Facebook Messenger, whether for call-centre or trading services. We use our own secure social network, Pulse, which means we have full control over the process.

Which languages does the chatbot understand ?

The chatbot can answer questions in English, German and French. Other languages, such as Chinese, will be added later depending on need.

Besides providing call-centre services, what else can the chatbot do ?

Our chatbot can provide information on share prices or search for stocks based on different criteria, such as price range, market or currency. Soon, chatbots will be able to help less-experienced clients, who aren't necessarily familiar with our platform, learn more about the world of finance. Clients will be able to ask questions such as: "Which companies offer the highest dividends?" The next step will be to offer a trading platform with an integrated chatbot. Placing an order would be as easy as saying something like: "I want to buy 100 shares in Apple." The platform would even be able to handle more complex orders, such as: "I want to sell Apple only if it hits such-and-such a price."

How does the chatbot understand clients' questions ?

Artificial intelligence has come a long way. The challenge is designing a chatbot that behaves like a human. Users need to be able to formulate questions using their own words, as if they were speaking to another person. Unfortunately, there are no libraries out there offering turnkey solutions. Everything must be developed. That's why our relationship with the researchers at EPFL is so invaluable.

What changes do you expect to see over the long term ?

We'll probably add a chatbot function to Robo-Advisor, our automated portfolio manager. Doing so would make the robot a fully interactive advisor, ready to serve the client at all times. Given that our clients are generally alone at their computers, having an electronic coach available 24/7 can be very helpful. Unlike human managers, the robot can process all of a client's data at once. It knows the exact composition of the client's portfolio, their risk profile, age, etc. It can provide quantitative answers based on that information, data history and market conditions. And it can do so in the blink of an eye. ▲

Can users communicate orally with the chatbot ?

Technically speaking, the chatbot only handles text for the time being. But voice recognition is just around the corner – it's only a matter of years. That said, it is possible to communicate with our chatbot orally using the voice-to-text option (ed. note : when you press and hold the microphone icon and speak, the phone converts the audio content into text) available on most smartphones.

THE CHEDI

ANDERMATT, SWITZERLAND



Take the virtual tour



THE CHEDI PENTHOUSES

The Chedi Penthouses combine the exclusivity of a private home with the amenities of the most elegant and luxurious hotel in the Alps. When it comes to the interior layout and finishing of your penthouse, you can let your imagination run free. Our architects and designers will work with you to realise your personal wishes, whether one-of-a-kind master bedroom, stylish library, expansive private spa landscape or private hideaway with guest rooms for your friends.

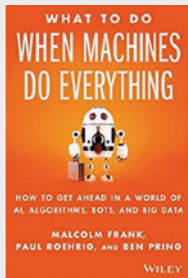
Sizes range from 189 m² to 616 m²

Contact us for more information or visit us in Andermatt (Switzerland).

Phone +41 41 888 77 99, realestate@andermatt-swissalps.ch

www.andermatt-penthouses.ch

TO READ, TO DOWNLOAD



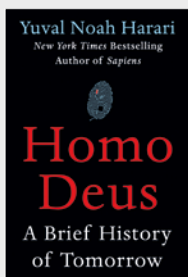
From CHF 30.-

WHAT TO DO WHEN MACHINES DO EVERYTHING

By Malcolm Frank
(Wiley, 2017)

HOW TO SUCCEED IN A ROBOTIC WORLD

What will we do when machines do everything? What will happen when intelligent systems drive cars and perform medical diagnoses better than humans (and this is already partially a reality)? We can definitely take a well-deserved break... but that's not all. Malcolm Frank, executive vice president of strategy and marketing at US-based firm Cognizant – a technology consultancy company that employs more than 250,000 people – sets out his “guide to success in the next generation of the digital economy”. Frank uses various data as well as real examples to illustrate his argument.



From CHF 16.-

HOMO DEUS

By Yuval Noah Harari
(Harvill Secker, 2016)

A (WORRYING) STORY ABOUT THE FUTURE

Having retraced the story of our species in his book *Sapiens*, Israeli history professor Yuval Noah Harari describes the future in his new bestseller *Homo Deus*, recently translated into French and German. Genetic engineering, cheating death, the rise of data and AI... Harari predicts that homo sapiens, who appeared on earth a little under 300,000 years ago, will soon have all the technology they need to change the rules of their very existence. Is man capable of maintaining control once he has taken on a God-like status?



Free
Apple Store,
Google Play

DAYUSE

HOTELS FOR THE DAY

Missing your plane and having to wait around until the evening, in a city you don't know, whilst dragging all your luggage around with you is a common situation. Whether you want to relax or work, Dayuse lets you reserve a hotel room during the day for 75% of the cost of classic hotels. More than 4,000 hotels in approximately 100 cities across 16 countries have partnered with the online booking site.



Free
Google Play

CAMERA BLOCKER

SMILE, YOU'RE NOT ON CAMERA

Do you cover the camera on your mobile phone with sticky tape because you're worried that the NSA is spying on you? This app takes care of it for you. Camera Blocker, as its name suggests, deactivates the camera on your smartphone to protect against spyware and viruses, and even stops the camera from being used without your knowledge by third-party apps.



Free
Apple Store,
Google Play

BITCOIN WALLET

BITCOIN IN YOUR POCKET

Bitcoin is a decentralised digital currency that was invented in 2008 and designed by an unknown. Bitcoin Wallet, which claims to be the “most popular Bitcoin wallet in the world” lets you send and receive this cryptocurrency to anyone, anywhere in the world. It also enables to you buy and sell in a number of physical currencies.



Free
Google Play

DOCTOR CLEAN

A SPEEDIER PHONE

By deleting all your unused files, Doctor Clean can improve the speed of smartphones by 50%. This software deletes unused files, such as those in your cache, and can free up several gigabytes of memory. In just one click, it also deletes all unused apps as well as monitoring the temperature of your device.

Symbol of the excesses in vogue in Macau. The Parisian, inaugurated in 2016, serves as a casino, a hotel and a mall. The area is also home to many restaurants.



THE
PARISIAN
澳门巴黎人

Macau's newest bet

The world's largest gambling hub continues its incredible growth, now by betting on families and mass tourism. The trend has led to gigantic casinos.

BY JULIE ZAUGG

The Eiffel Tower stands proudly against the blue sky. All along Boulevard Saint-Honoré, tourists wander among shops, occasionally stopping to explore the luxury boutiques on either side of the street. A man in a striped shirt and a black beret has set up his easel on the street to paint. This idyllic scene is not in Paris, but in Macau, in a casino named The Parisian, a Haussmann-esque structure inspired by the City of Lights that opened in September 2016.

There are French bistros serving steak-frites and bœuf bourguignon, a reproduction of the fountains at Place de la Concorde, halls decorated to resemble Versailles and a crowd of actors that walk around the casino, disguised as mime artists, painters or high-society women from the era of the Sun King.

Next to The Parisian, The Venetian, another casino, this time inspired by the Serenissima. Its main attraction is a series of canals with floating gondolas under a blue ceiling subtly lit to make it seem like visitors are outdoors. The two artificial cities are operated by Sands China, a subsidiary of the US group founded by gambling magnate Sheldon Adelson. They are among a handful of mega casinos that have opened over the past two years on the Cotai Strip, in the centre of the former Portuguese enclave that now belongs to China.

Another is Wynn Palace, a giant copper-coloured building with soaring cable cars that opened in August 2016. It is owned by Wynn Resorts, another Nevada company led by businessman Steve Wynn. A year earlier, Studio City, a casino operated by Melco – an Australian-Hong Kong joint venture – opened, with decor

inspired by Hollywood. Later this year, US group MGM Resorts International will open a new casino, followed in 2018 by The Grand Lisboa, operated by SJM, a conglomerate founded by Hong Kong businessman Stanley Ho.

This real estate frenzy is a result of the incredible good health of this small territory on the southern side of China that has become the world's largest gambling hub. "Since the start of the year, the Macau gambling industry grew 25% to 30% per month, compared to the same period last year," said Ben Lee, a director of the consulting firm IgamiX. Lee believes profits are expected to reach \$35 billion in 2017, compared to \$28 billion last year. In comparison, Las Vegas casinos made \$11.1 billion in financial year 2016.

The number of visitors is also booming: 31 million people last year. ▶

"This figure is expected to reach 45.6 million by 2025, which is a 47% increase," said Chelsey Tam, analyst at Morningstar.

"The recent depreciation of the yuan favoured cash outflows"

Zibo Chen, analyst at Macquarie

The vast majority of visitors to Macau's casinos come from mainland

China (90% in 2016). "Most people come from the neighbouring province of Guangdong, with a population of more than 100 million and located less than four hours from Macau by train," said Edmund Lee, partner at PricewaterhouseCoopers, in charge of relations with the Macau casinos. Everything was designed with these tourists in mind.

Most of the casinos have several Chinese restaurants serving delicacies that are well-loved by this clientele, such as abalone and shark fin soup. Their gaming tables have less poker and more baccarat (a popular

card game in China), but also Sic Bo (a dice game) and Mahjong tournaments (a dominoes game played on the pavements of the Middle Kingdom). The House of Dancing Water, a type of aquatic Cirque du Soleil show inspired by Chinese mythology, has been sold out since it opened in 2010.

Macau is a relatively closed market. Until the territory's handover to China in 1999, the Sociedade de Turismo e Diversões de Macau, led by Stanley Ho, was the only company authorised to open casinos there. "Three concessions were granted to SJM, Wynn



An ice sculpture of the character Po, one of the protagonists of the film Kung Fu Panda, during an exhibition at the casino The Venetian.

Resorts and Galaxy Entertainment (ed. note: a Hong Kong company),” said Lee. “They are valid until 2022.” These three companies received the right to give sub-concessions to Sands China, MGM China and Melco. But the Ho family continues to dominate the industry: SJM is led by Stanley Ho and his children have management roles at Melco and MGM China.

The Macau casinos have seen their profits skyrocket over the past few months, mainly due to the explosion

ALL OF ASIA IS GETTING INVOLVED

Several Asian countries are looking to compete with Macau and attract some of its Chinese clientele. Singapore started building its first casinos in 2009. Their profits increased from \$4 billion to \$7 billion between 2011 and 2015. The Philippines also has several casinos, particularly in the suburbs of Manila, much like Vietnam has near Ho Chi Minh City. A handful of casinos even opened in Saipan in the Mariana Islands in the middle of the Pacific, as well as Vladivostok, the easternmost point of Russia, close to the Chinese border.

At the end of 2016, Japan changed its legislation to make gambling legal. The US company Wynn Resorts plans to build a casino there. Elsewhere, the majority of new establishments are managed by local operators, with the notable exception of those in Singapore, and as a result are less spectacular than the casinos in Macau. They have also had bad publicity. Casinos in the Philippines were used to launder some of the \$81 million stolen by hackers in the Bangladesh Bank heist of 2016. Profits are still low: after a high-profile opening, the Singapore casinos have experienced stagnant revenue over the last two years.



NEWSCOM / LUCAS VALLECILLOS - VWPICIS

of real estate prices and easier access to credit in China, which increased the cash flow available to gamblers in the country. “The recent depreciation of the yuan also favoured cash outflows and some of these outflows fed the VIP rooms of Macau,” said Zibo Chen, analyst at Macquarie. In the longer term, the growth of China’s upper classes and the traditional appetite they have for gambling will continue to feed Macau’s growth.

However, this good fortune suffered a significant setback between June 2014 and July 2016. The new Chinese President Xi Jinping and the launch of his anti-corruption campaign convinced many players to keep a low profile. “The big fish, who spend \$25 million in one weekend, began avoiding the Macau casinos,” said Ben Lee.

A series of measures designed to minimise the Chinese capital flight also has an impact on the amounts of money spent in Macau. A limit was

established on the amount of money that could be taken out of ATMs with a Chinese UnionPay card. “Some machines were even equipped with facial recognition cameras to prevent the same person from making several withdrawals with different cards,” said Edmund Lee.

Two employees dressed up as mermaids dance underwater

The Macanese government also cracked down on junket operators, intermediaries that lend money to big players. As a result, revenue from the Macau casinos, which spiked at \$44 billion in 2013, fell 2.6% in 2014, then 34% in 2015, before levelling out in mid 2016. It began to pick back up again in 2017. ▶

One of the main reasons for this recovery was the decision to expand the pool of visitors to include more families and non-gamblers. To do this, most casinos increased their restaurants, hotel rooms, shows and shops.

That's what Galaxy Macau did. Its large golden facade looks out onto the Grand Resort Deck, a 75,000 sq. m water park that includes a wave pool, slides, luxury cabanas and a white sandy beach. A 575-metre long artificial river winds around the complex and visitors can float on inflatable rubber rings. Two employees dressed up as mermaids dance underwater. Even in the middle of the week, the park is filled with children.

The casinos operated by Sands are also making a big effort to attract a mass public. "These casinos have over 800 shops, an arena hosting concerts by Chinese and Russian pop stars, an exhibition area and

a convention space," said Michael Ting, analyst at CIMB that follows the company. And let's not forget the trips to the Eiffel Tower and the gondola rides. The US-based company also hired stars Sophie Marceau and David Beckham to promote their casinos. A third casino is slated to be built with a London theme.

"Casinos are no longer dependent on a small number of high-level gamblers whose luck can change from one day to the next"

Michael Ting, analyst at CIMB

Two amusement parks, one of which is dedicated to the film Avatar, will

also increase tourist traffic to this destination, as well as the imminent opening of a bridge linking Hong Kong, Macau and Zhuhai in China, a new terminal for ferries and an aerial train that goes between the casinos.

By focusing on a public that is no longer exclusively gamblers, casinos were able to recover from the crisis of the past two years. It also helped them increase their margins. "Margins reached 30% to 35% in the mass tourism segment, compared to 5% to 10% in the VIP segment," said Adam Trivision, analyst at Gabelli & Co.

Profits are also less volatile. "Casinos are no longer dependent on a small number of high-level gamblers whose luck can change from one day to the next," said Michael Ting. The city of Macau also benefits from this diversification: it relies on casinos for 80% of its revenue and one-sixth of its population works in the industry. ▲

LAS VEGAS HOLDS OUT

In the United States, the casino market has recovered since the 2007 crisis. But now it must face another challenge: online gambling.

In the United States, the casino industry is on the upswing, after a difficult period during the recession that hit the country starting in 2007. "Since the end of the crisis in 2009, the industry has grown year on year," said Sara Slane, in charge of public affairs for the American Gaming Association. "In 2006, profits reached \$39 billion, an increase of 1.1%."

While Las Vegas remains the main hub for gambling, Massachusetts had the highest growth last year," said Slane. This state, along with Pennsylvania and

Delaware, is one of a handful of states with new legislation legalising casinos. Florida, Maryland and New York also have new casinos. Up against this regional competition, Atlantic City (NJ), the other major gambling hub in the country, has seen profits fall.

The market is dominated by four players: Caesars Entertainment, MGM Resorts International, Las Vegas Sands and Wynn Resorts. They don't have big expansion projects in the works for Las Vegas, where the market is saturated, but instead have begun investing in Massachusetts. "MGM will open a casino there in 2018 and Wynn in 2019," said Slane. Malaysian company Genting, which already owns a casino in New York, plans to build

another on the Miami seafront for an estimated \$3 billion. But in the US, casinos are up against an invisible enemy. "Virtual casinos, mobile gaming and the Daily Fantasy Sports industry have attracted both the attention and money of gamblers," said Robert Tercek, president of the digital games provider Milestone Entertainment. At the end of 2015, this market was worth \$41 billion.

This new offer has generated certain expectations that players look for. "They want to win more often, earn points, play in a network and most importantly, play games that are free," said Tercek. Given this change, casinos must adapt if they don't want millennials to boycott their slot machines.

CHALLENGE EVERYTHING



H₀ BLACK

GENEVA MONTRES PRESTIGE INTERLAKEN KIRCHHOFFER HAUTE HORLOGERIE
LAUSANNE OURANOS LUGANO LES AMBASSADEURS LUZERN LES AMBASSADEURS
ZUG FINERYS ZURICH LES AMBASSADEURS

THE HYDRO
MECHANICAL
HOROLOGISTS

HYT
HYTWATCHES.COM

TRAVEL

Into the Blue

A multicoloured anthill of a city with a smooth, glassy blue sea: Marseille's two main features complement each other beautifully

BY SALOMÉ KINER



MARSEILLE



From the village of Estaque in the west to the cliffs of Cap Canaille in the east, the Marseille coastline stretches for around 50 kilometres. Whether you happen upon it by chance at the end of a road or drink in the panoramic view from a vantage point, this view has charmed plenty of admirers. Turning from a cerulean blue out at sea to idyllic turquoise waves that lap the limestone rocks of the rocky inlets, these waves are even more spec-

tacular as they form a powerful contrast with the cheeky urban character of this cosmopolitan city. Happily for those who like to experience a bit of everything, you won't be forced to choose between the two different sides of this jewel of a city. By way of a small town-planning miracle, the Mediterranean city can be visited by following the shoreline, as you move effortlessly between the traces of history and the revitalising innocence of the water. ▸



Romanticism



Who said that carousels were just for children? In Marseille, couples who aren't afraid of heights kiss under the stars on the big illuminated ferris wheel. The

gondolas climb high above a carpet of traditional roofs of pastel tiles and glittering masts which shimmer and move as if to music, reflected in the water of the Vieux Port.



Places to stay

SOFITEL HOTEL

The jewel in the crown, this hotel rules over the centre of the city, looking down from its lofty position in the Vieux Port

245 SWISS FRANCS FOR 2 PEOPLE, PER NIGHT

LE PETIT NICE – PASSEDAT

Nestled into the hillside overlooking the sea on the Corniche, this 5-star hotel is also home to the 3-star chef Gérald Passédat

350 SWISS FRANCS FOR 2 PEOPLE, PER NIGHT

LA PETITE CALANQUE

A charming guest house in the Calanques National Park, for a pastoral experience just 20 minutes from the city centre

SUITES START AT 100 SWISS FRANCS FOR 2 PEOPLE, PER NIGHT

Sports



AFP / MOIRENC CAMILLE / HEMIS FR / HEMIS

An early morning walk on the Corniche Kennedy. The Corniche, along with the Canabière, is a street at the heart of Marseille. Used extensively by joggers, cyclists and amorous couples, this stretch of tarmac follows the shoreline from the Vieux Port (old port) to the entrance of the Calanques National Park. This is an ideal route for discovering the beaches, the nautical areas of the Borély park and the retro villas with flaking paintwork that have a view of the horizon. If you want to escape the bedlam of the city, head towards the Côte Bleue. With 300 days of sunshine a year, Marseille is the destination of choice for walkers. The rocky inlet at Niolon – accessible both in terms of distance and difficulty of the terrain – offers an hour's walk along the coast. You'll be accompanied along the way by the scent of fig and rosemary.

More info: www.calanques13.com

Culture and history



ISTOCK



The Museum of European and Mediterranean Civilisations (MuCEM) is the centre of the Joliette quarter, a neighbourhood that changes from one day to the next. With the city centre behind you, the industrial port and the open sea in front of you and leaning against the beautiful striped Major cathedral, this cultural space is home to more than one million items, each one of which is a testimony to our cultural history. This contemporary building's panoramic roof terrace leads, via a concrete

bridge, into the bowels of the Fort Saint-Jean. Marseille is a 2,600-year-old elegant lady. This doyen of French cities tells the story of some of Europe's greatest upheavals. To ensure that you soak up the most of this rich history, lose yourself in the maze of hiding places and tunnels inside the Fort. And when the sparkling sea suddenly appears at the opening of the arrowslit, conjuring up the atmosphere of the great conquests of the old city, the trip becomes truly enchanting.

Adventure



We've all heard about time travelling but Marseille takes you on a cruise back in time. Twenty minutes and five centuries separate the futurist mirror of the dock at the Vieux Port from the pirate legends at the Château d'If. Built in the 16th century to protect the Marseille harbour from invasion, the fortress was immortalised in the literary works of Alexandre Dumas, where the author imprisoned the Count of Monte-Cristo. Open all year. Closed Mondays.

More info: www.chateau-if.fr

Local



Since the *New York Times* added it to its address book, there is always a queue outside Le Glacier du Roi. Just tasting the sorbets is enough to make you think of a punnet full of summer fruits. Take your ice cream cone and sit on the steps of the town hall, facing the marina, and keep watch for the return of the fishermen. Drink a pastis for the full experience. ▀

Le Glacier du Roi, 4 place de Lenche



Gastronomy

Visiting Marseille without sampling bouillabaisse is a crime that will leave you full of regrets. This soup, made from five different fish, is best tasted whilst taking in the view over the sea, where the ingredients were sourced. If you want to experience how the locals relax, head to Chez Fonton in the quaint enclave of Vallon-des-Auffes. But it's at the Rhul where bouillabaisse was raised to the status of a gastronomic institution. Exasperated by bland imitations and tourist traps, the Marseille chefs in the kitchen at the Rhul hotel worked together to draw up the famous *Charte de la Bouillabaisse* in 1980. This charter ultimately determined the official bouillabaisse recipe.

Chez Fonton, 140 rue du Vallon-des-Auffes

Le Rhul hotel and restaurant, 269, Corniche Kennedy



JENNIFER HUBER



CARS

Swedish Sanctuary

VOLVO XC60: THE PINNACLE OF COMFORT

BY BLAISE DUVAL

**ENGINE:** 2-LITRE, 4 CYLINDERS**POWER:** 320 HP, 400 NM**ACCELERATION:** 5.9 seconds**STARTING PRICE:** FROM CHF 54'000.-**MODEL THAT WE DROVE:** CHF 96,165.-

(T6 AWD with options)

Proving that you don't take updating a bestseller lightly, Volvo has clearly made every effort when it comes to designing the new version of its XC60 SUV. First released in 2008, this model – which is now competing with the big names, such as the BMW X3, Audi Q5 and Mercedes GLC – has been a commercial success for the Swedish manufacturer. And its successor seems to be destined for similar results. Taking inspiration from the recent, imposing lines of the XC90, this SUV is sleeker and more sculpted, at 4.68 m long and 1.90 m wide, and has a big personality. It must be said that Volvo is renowned for producing models with a pure design that please almost everyone. The XC40, the XC60's

little brother, which was launched end-September, is just as popular. Once you're inside, the XC60 exudes an air of tranquility.

Volvo has decided to focus on increasingly automated driving

Its rounded lines are in stark contrast to the more angular designs that are rolling off some German production lines. And the build quality is amongst the

THE COMPETITION

**ALFA ROMEO STELVIO : THE ANTI-XC60**

Does assisted driving leave you cold? In that case, the Alfa Romeo Stelvio – launched this year – is the model of choice on the SUV market, doing the Italian manufacturer proud. Drivers like it for its sharp steering, sport chassis and southern-European charm. Prices start at CHF 50,400.-

**BMW X3 : THE NEW BENCHMARK ?**

This is the new car of the autumn. BMW has updated the emblematic SUV to take control back from the Mercedes GLC and the ultra-modern Audi Q5. As you don't mess around with a winning formula, the design has barely changed but the car is full of upgrades. Prices start at CHF 56,200.-

very best. The ride is comfortable and delightful, and the R-Design sport finish that we test drove, with extravagant 21-inch wheels, didn't fundamentally change much. You can, of course, choose the dynamic drive mode, which stiffens the electronic air suspension to make the most of the 320 hp on offer. The test drive was pretty good, but you quickly become aware that the engineers at Volvo didn't put dynamism and performance at the top of the list. The Swedish brand intelligently chose to play to its strengths and do everything that it could to enhance these.

If you're looking for comfort and safety then you are unlikely to find

a better car than the XC60 on the premium SUV market. Following the example of Tesla and Mercedes, Volvo has decided to focus on increasingly automated driving in an environment that no longer – or only very rarely – allows the power that this car has to be used. With heavy traffic and strict speed limits, it's nice to be able to let the Pilot Assist technology drive us around, in semi-automatic mode. You still have to keep your hands on the wheel, but the XC60 is able to follow the road all by itself – all it needs is the white line – and adapts its distance to the vehicle in front, according to predefined settings. Which is nice...especially in traffic jams.

The impressive 360° camera and various collision-prevention systems available complete the offer. And the accident safety features are everything that you expect from Volvo's reputation as a leader in the market.

It goes without saying that, just like its top German rivals, the Swedish SUV takes full advantage of the latest popular refinements (as optional extras): head-up display, LED headlights and noise-reduction glazing for the side windows. And if the silence becomes unbearable, then all you need to do is turn up the volume on the Bowers & Wilkins 19-speaker sound system (a luxury option at 3,300 Swiss francs). You said you wanted premium, didn't you? ▲

BOUTIQUE



DISCONNECTED

With its rectangular case, rounded corners and aesthetically plain dial devoid of indices and logo, at first glance it could be mistaken for a smartwatch on standby. And yet, this white gold Swiss Alp Watch Zzzz, by Swiss watchmaker H. Moser & Cie, is 100% mechanical, with a manually-wound movement and a minimum power reserve of four days. Minimalist and chic.

www.h-moser.com

CHF 25'600.-

THE CALL OF THE WAVES



Whether genoa, main sail or spinnaker canvas, the Brittany-based company 727 Sailbags recycles boat sails that have come the end of their life and turns them into travel bags, saddle bags, cushions, deckchairs, lampshades and other unique creations. We particularly like the desk lamp in brushed stainless steel and gennaker, designed in collaboration with Elomax, an interior design agency based in Nantes.

www.727sailbags.com

CHF 228.-



SONY CHALLENGES GOPRO

Firmly establishing itself as the market leader, Sony's new action cam is making the competition blush. Weighing in at 110 g, the RX0 is the same size and weight as a GoPro and has a large, high-end sensor (measuring 1 inch) with 15-megapixel definition and a Zeiss lens. Shock-proof and waterproof down to 10 m, the device can film in 4 K and offers numerous shooting options, such as super slow motion with 1,000 images per second.

www.sony.ch

From CHF 849.-



SPORTS IN YOUR BEDROOM

Pyjamas that can help you forget the after-effects of an intensive sports session are the latest innovation by Under Armour, the US-based sports equipment manufacturer. The company's latest line in nightwear uses "bioceramic" particles that claim to be able to help athletes recover quicker after periods of exertion whilst also helping promote better sleep. Apparently US quarterback Tom Brady, who inspired the range, won't sleep in anything else.

www.underarmour.com

From CHF 115.-

MADE-TO-MEASURE TRAINERS

With the support of Kilian Jornet – the best trail runner in the world – Salomon has entered the world of made-to-measure running shoes with the S/LAB ME:sh. This is a customised shoe that uses 3D analysis to map the shape of each customer's foot. The width, support, sole and fabric can all be customised, as can the look: there are 768 possible colour combinations!

www.salomon.com

CHF 345.-



THE TUBE CHAIR

Dreamt up by designer Joe Colombo in 1969, the Tube Chair has just been re-imagined by Cappellini. The iconic modular chair, which is part of MoMA's permanent collection in New York, retains the original features that made the chair so successful: the famous stackable and interchangeable cylinders, held together by hooks, that can be arranged into 16 different configurations.

www.cappellini.it

CHF 2,720.-



EXPRESSO TO GO!

The Minipresso, an ultra-compact pocket coffee machine, is fast becoming the must-have item for coffee-addicts who are always on the go. The motor, which is powered by a semi-automatic piston that generates up to eight bars of pressure and doesn't need electricity or a compressed air cartridge, powers the machine and allows the precious nectar to flow into the integrated cup. And if this wasn't enough to convince you, the Minipresso is compatible with Nespresso capsules.

fr.wacaco.com

CHF 58.-



LUKAS LANGENEGGER
 CEO AND CO-FOUNDER
 OF HEMOTUNE

 BORN 6 FEBRUARY 1989
 IN ZÜRICH, SWITZERLAND


Interested by both the economy and natural sciences, Lukas Langenegger has chosen to combine the two. After training at UBS where he worked for two years, he studied chemical and biological engineering at EPFZ (École polytechnique fédérale de Zurich) and then at MIT in Boston. After returning from the US in 2014, Lukas, a native of Zurich, joined a research group at EPFZ, carrying out research in the area of blood purification. With two other researchers, Carlos Mora and Corinne Hofer, he founded Hemotune, a spin-off which is developing a revolutionary system to purify blood in cases of septicaemia. In an external circuit connected to the bloodstream, nano-particles are used as magnets to extract the toxins. Hemotune has notably won the most recent final of the Swiss entrepreneurial competition Venture Kick. The start-up is also supported by Wyss Zurich, a research and development centre at the University of Zurich and EPFZ. Hemotune's technology has been laboratory tested, and Langenegger hopes to begin carrying out clinical testing on humans by 2020.

BOSTON, BACTERIA AND THE GREAT GATSBY

A PARTICULAR MEMORY FROM YOUR CHILDHOOD ?

Growing up with four brothers and sisters – something which requires diplomacy, assertiveness and the ability to compromise.

THE PROFESSION YOU WOULD HAVE LIKED TO DO ?

Doctor.

YOUR FAVOURITE HOBBY ?

Reading the newspaper or watching a good documentary. It is important to remain informed about global events.

SOMETHING THAT HAS INSPIRED YOU RECENTLY ?

My three-year-old nephew. He is literally taking in everything; he tries to categorise everything he sees, hears and experiences, and he is learning as much as is humanly possible.

A SONG WHICH SUMS YOU UP ?

Remember the Name, by the American hip-hop group Fort Minor.

A PLACE THAT MADE AN IMPACT ON YOU – AND WHY ?

Boston, where I first came into contact with the start-up scene while researching for my Master's at MIT. I was impressed by the passion of the entrepreneurs.

THE FILM THAT YOU WOULD HAVE LIKED TO EXPERIENCE ?

The Great Gatsby.

THE IDEAL WOMAN ?

For me, gender plays a secondary role in defining the ideal personality. For both sexes, I would say that a mixture of empathy, passion, self-reflection, courage and the desire to be continually learning are all important.

THE IDEAL ANIMAL ?

Probably bacteria. Each cell of the human body contains at least one. Without them, life as we know it would be inconceivable. And yet they get a bad press.

YOU WIN 5,000 SWISS FRANCS ON THE STOCK MARKET.

WHAT DO YOU DO WITH THE MONEY ?

I would buy myself something that I would otherwise never have bought. A nice watch, for example.

A BOOK THAT YOU RECOMMEND ?

100 Tricks to Appear Smart in Meetings, by Sarah Cooper.

WHAT IS YOUR FAVOURITE WORD AND YOUR FAVOURITE SWEAR WORD ?

“Digitalisation”. On the one hand, it offers unprecedented opportunities and business models, but on the other it is a fashionable word which is often misused by dusty old managers who want to appear innovative. ▴



Panthère
de
Cartier

Turning good ideas
into great investments.

⌚ Themes Trading

Online Gaming

Lifestyle ■ Technology ■ Social

⌚ LONG TERM || LOW RISK

Global High Dividends

Economy ■ Finance ■ Industry

⌚ LONG TERM || LOW RISK

Cybersecurity

Technology ■ Industry ■ Social

⌚ MID TERM || LOW RISK

Swiss Small Gems

Culture ■ Industry ■ Finance

⌚ LONG TERM || MID RISK

Trade trends in one click

Invest in thematic portfolios with
⌚ Themes Trading from Swissquote.



swissquote.com/themes-trading

 **Swissquote**