

Dr. Gunther Voswinckel, VOSCO GmbH

World Pipe & Tube Market: current factors influencing outlook

Dr. Gunther Voswinckel – Update as per February 2019

Welcome to our regular presentation of the main worldwide economic factors influencing the pipe and tube industry.

The largest tube and pipe consuming market segment, accounting for about 51% of total consumption, is the oil and gas industry.

In October 2018, oil prices climbed yet again to a 4 year high of US\$85/ barrel. Now, as of February 2019, prices have fallen again, to US\$62/barrel. The trade sanctions against Iran and Venezuela initiated by the US government are impacting the oil price - despite the fact that we would be faced with an oversupply of oil were the sanctions not be in place.

Analysts will have once again realized that forecasts on oil price levels may be completely overthrown by political intervention on the part of stakeholders. The figures show that US tube and pipe producers in particular were greatly advantaged by the resulting business trends on the oil and gas market. Increased pumping and exploration activities in the US are currently primary driving forces. If we believe the US experts, this will remain a constant right through 2019. Russian and European tube and pipe producers were also able to profit, to a lesser degree, from this positive trend.

Several other economic factors affecting the tube and pipe industry are discussed here. Other tube and pipe markets such as the automotive (15%), mechanical engineering (9%) and building and construction industries (5%) are also attractive market segments for our sector.

Despite current turbulences, the world automotive market is characterized by steady growth of about 2% p.a. At the same time, the proportion of tubes used in auto design is steadily on the rise, meaning this market segment is becoming increasingly attractive.

The building and construction industry market is doing even better, growing by about 4% p.a. Here we see increasing competition between steel and tube structures and concrete elements. Lobbying

activities may help to further enlarge the steel/pipe penetration for skyscrapers and bridges.

World production of steel tubes extrapolated from Q3 2018 evidenced a slight increase of 2% as markets further stabilized.

In detail, growth of 13% is reported for the US, supported by political trade barriers for tubular products and the strong growth of the shale gas exploration industry.

For welded tubes below 406 mm diameter, figures showed a Q3 production increase of 5%; the US reported growth of 12% after exceptional gains in 2017 (+30 %). For welded tubes of 406 mm or larger, Q3 2018 production experienced an overall drop of 5%. But both the US (+13%) and the CIS (+9%) showed significant production growth.

In seamless tubes, Q3 2018 saw production grow overall by 4%. The US – following a boom year 2017 (+69%) – reported continued growth at the lesser rate of 17%. Even India, with its smaller production capacity, was able to report notable production gains of 32%.

This is a remarkable trend change, with US tube production experiencing impressive growth for the second time in several years. It would appear that the US trade barriers policy is having an impact. However, it should be noted experts are cautioning that this effect may not be sustainable, since some of the tube production plants taken back online to serve the increased demand are all but obsolete.

Pipe prices meanwhile continue to climb, as reflected in the pipe price index which showed an increase of 25% in 2018. Competition in saturated markets is prompting minor investment in those tube markets that display growth. Producers are streamlining their processes and targeting more demanding high-tech products rather than commodity-grade tubes. Limiting factors are sometimes the available steel quality for strip, plate and billets, as well as tube plant infrastructure in terms of both machines and the applied quality standards.

We also discuss the impact of currency exchange rates on the pipe market. A strong euro throughout 2017 and early 2018 was seen to cause export disadvantages. As the euro is currently falling again, markets should be able to compensate suppliers for some of the disadvantages.

The market for steel pipe suppliers is dominated by the OCTG industry (51%). Besides this, the automotive (15%), mechanical engineering (9%) and construction industries (5%) are also strong market segments for the sector. (Fig.1)

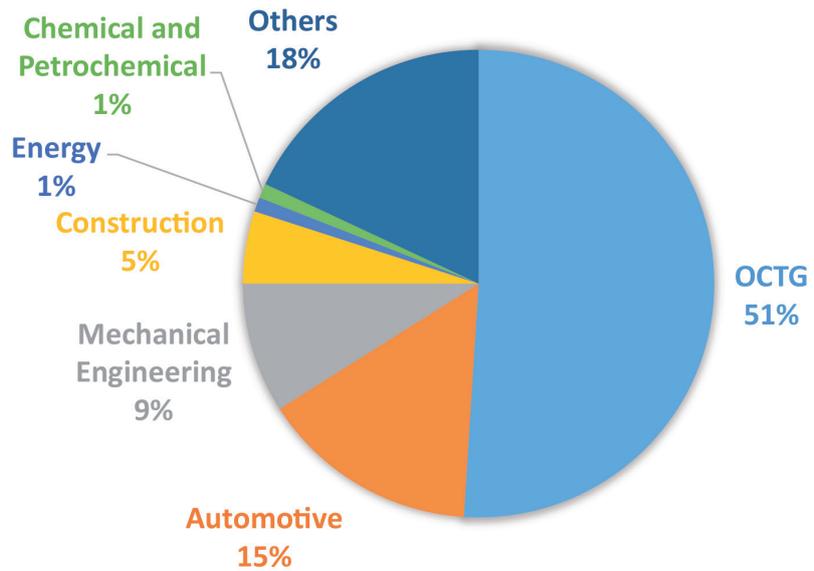


Fig. 1: Markets for Steel Pipe Industries in 2012
Source: ITAtube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

Looking at global steel tube production as per Q3 2018, it is heavily dominated by PR China (55%), followed by ROW (17%). (Fig.2) Following 2 years of shrinking production, China was able to stabilize its dominant position in 2018. The US was able to significantly increase its market share due to political measures taken by the Trump administration.

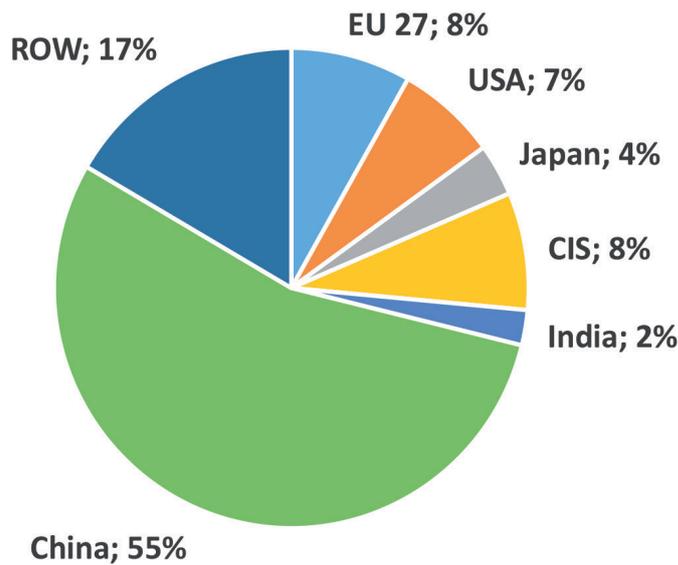


Fig.2: Global steel tube production by region, Q3 2018
Source: ITAtube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

Let's take a look first of all at the OCTG, oil and gas, market as the largest target of steel tube suppliers. This market is subdivided into, firstly, pipes used for oil and gas rigs, such as drill pipes, joints and casings, and on the other hand, line pipes to transport oil and gas.

There is a strong correlation between the oil price and the number of oil and gas rigs in operation. (Fig.3)

After an extended period of steadily climbing oil prices – from early 2016 (US\$30 /barrel) to October 2018 (US\$85 /barrel) – the oil price fell back to US\$52 /barrel in only 2 months, only to recover to about US\$62 /barrel by February 2019. This price volatility is

quite striking and a consequence of nervous reactions to the political measures taken. Without the current political interventions, the world would be facing an oversupply of oil and gas, a situation which in early 2018 caused some US experts to warn that prices could plummet, much as they did in 2014 following the first shale gas boom.

The International Energy Agency (IEA) backed up its warnings

with figures. The organization expected growth in oil consumption in 2018 of about 1.4 million barrels/day. At the same time non-OPEC countries, particularly the US, were expected to raise their pumping levels by about 1.7 million barrels/day.

Citigroup analysts went even further and predicted a hike in output by non-OPEC producers of about 2.2 million barrels/day.

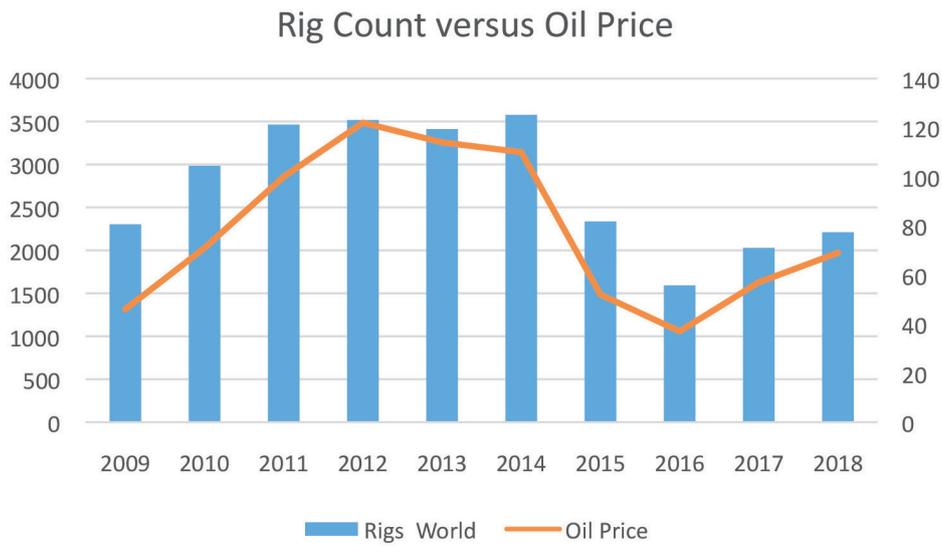


Fig.3: Correlation of oil and gas rigs versus oil price
Source: based on Baker Hughes and Nasdaq

If the IEA and Citigroup predictions had been proven correct, the world would have been faced with an oversupply situation. As it is, political intervention by the US government, i.e. the sanctions imposed on Iran and Venezuela's oil exports, created an artificial mood of supply shortages, which in turn prompted the current oil price rally.

With this obvious sign that oil prices are currently heavily dependant on political intervention, it has become very difficult to give reliable forecasts for the consumption of steel tubes for this important market segment.

The second oil and gas market is represented by gas pipelines. The line pipe market is a project-based business with long planning periods and strong political determining factors. Several such projects are currently being planned in Europe, the US and Asia.

In Europe, gas pipelines are mainly built to carry gas from gas and oil fields in Russia and in the North Sea. On the North American continent, the new Keystone XL pipeline is projected to transport

oil from Canada to the petrochemical centres in the US. In Asia, pipelines are needed to serve the new petrochemical complexes in Malaysia and Indonesia. All these projects are intensively discussed on political and environmental platforms.

The European project "Nord Stream" is a good example, since US president Trump and the Polish government are using all their influence to ban this project. The US administration is even trying to threaten the international companies involved with trade sanctions. On the other hand, the US pipeline project Keystone XL (Fig.4) is supported by Mr. Trump but environmental activists are fiercely opposed to it.

Again, the political issues at play make it more and more difficult to predict pipeline project developments in the oil and gas business.

The second important market, with a market share of 15%, is cars.

This market is characterized by stability and high demand. The present trend to electro-mobility may have a negative impact on



Fig.4: Pipeline project Keystone XL
Source: CTV News

pipe supplies utilized for combustion engines. As yet, alternative drive systems represent a minor percentage of vehicles on the road, but ongoing developments need to be closely watched.

After an average growth in production figures of 4% year-on-year until 2017, 2018 showed the first sign of a slight decline in the market (Fig.5), although earlier statistics were still indicating some growth for 2018. 2019 is already being seen as a year of negative growth (-2%). Only after 2019 do the forecasts indicate the resumption of a slight upward trend of about 2% in 2020 and 2021.

Looking at regional sales figures (Fig.6), it can be seen that the development from 2017 to 2018 (extrapolated) is nonuniform. Countries like Russia (+15%), Brazil (+13%) and India (+7%) show continued growth, but Japan offsets these growth trends and shows a decline in car sales of 11%. The largest world car markets, China, USA and Europe are consolidating at almost "zero" growth.

Nonetheless, since the level of pipe use in cars is growing in parallel, this remains an attractive market segment for pipe producers.

The market segment mechanical engineering, representing 9% of the total pipe and tube market, is highly diverse due to an almost endless number of potential applications. I will confine myself here to that of cold drawn hydraulic cylinder tubes, a market that has displayed significant growth since 2012. (Fig.7)

In the 4 years from 2012 to 2016 the market grew by US\$1.5 billion (about US\$375 million p.a.). By 2020, experts project further growth of US\$1.9 billion (about US\$475 million p.a.).

With such growth potential, the supply of cold drawn cylinder tubes to the hydraulic cylinder market represents an attractive volume market for tubes.

Another worthwhile market for tube producers is the construction market, representing about 5% of world tube production. The global construction market is growing in step with global GDP growth, as already discussed in the last update in October 2018.

Primary applications for tubes in the construction market are skyscrapers and bridges. Here we find significant competition between steel/tube structures on the one hand, and concrete elements on the other. The trend in emerging economies to build high-rise towers is favorable toward the application of steel/tube structures (Fig.8).

The same strong competition between steel/pipe structures and concrete elements applies for bridges. Tube producers need

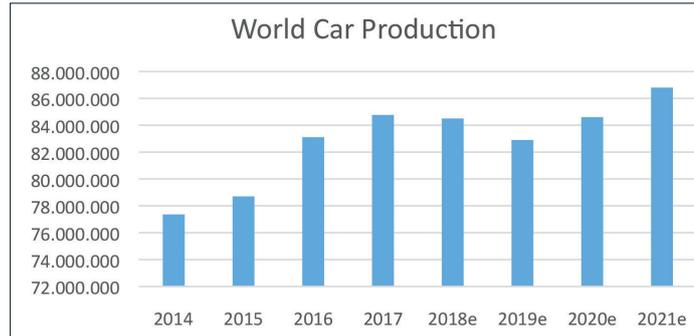


Fig.5: World car production
Source: Statista

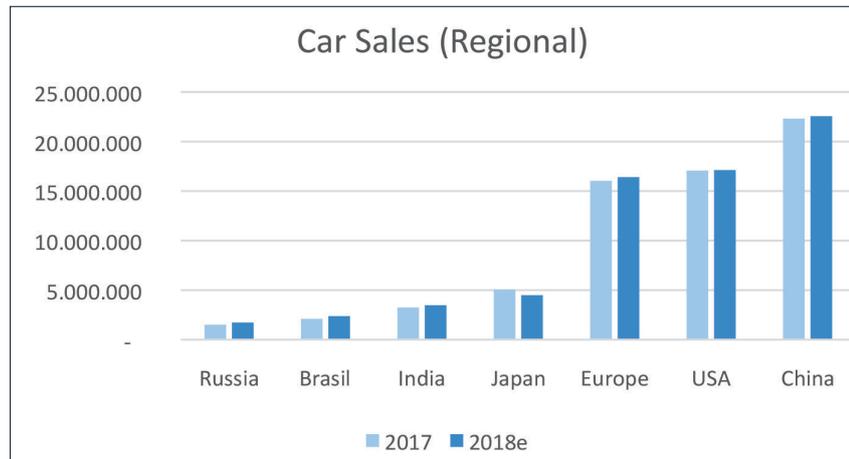


Fig.6: Car sales by region 2017-2018
Source: Statista

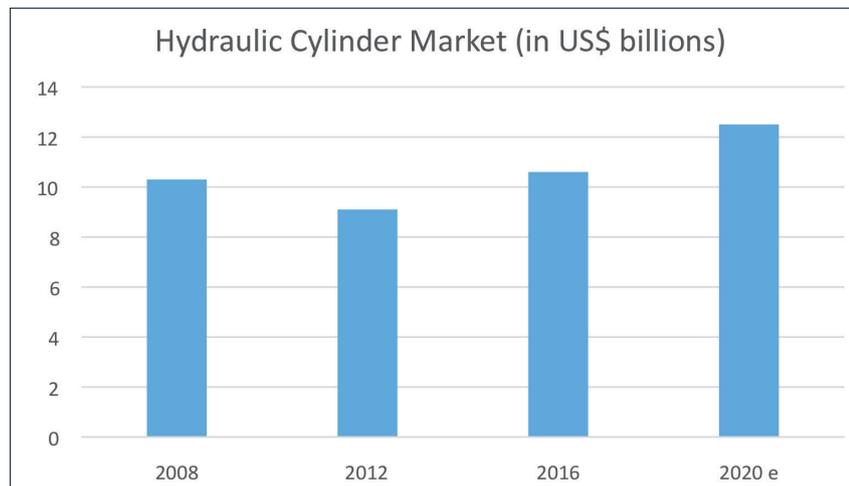


Fig.7: World market of hydraulic cylinders in US\$ billions
Source: Statista 2019

to direct considerable lobbying efforts at both these major segments of the construction market to further convince regulation authorities and project stakeholders as to the advantages of steel/tube structures as cost effective, aesthetic and sustainable alternatives to concrete elements.

A market which used to be very important is the energy market. Because this market mainly consists of boiler tube applications in fossil and nuclear power plants and in many regions of the world this market segment has almost disappeared, its global significance has dwindled until it now

represents a mere 1% of the total tube and pipe market. Some regions, however, still show significant building activities. (Fig.9)

China leads the building activities for coal plants - 599 shelved, 256 under construction and 211 announced - as well as nuclear power plants - 20 under construction. India reports 132 coal plants shelved, 69 under construction and 93 announced, and 5 nuclear power plants under construction. Indonesia as third in the ranking reports 45 coal plants shelved, 39 under construction and 88 announced, but no nuclear power plants. These countries create significant regional demand for boiler tubes of all qualities.

All these steel tube and pipe markets can be subdivided into a commodity volume and a section with more high-tech requirements. For the latter, the decisive factors are the steel quality and the tube plant infrastructure. Steel quality requirements for many high-tech steel tube applications is exacting with regard to chemistry and homogeneity. The availability of steel qualities with the necessary uniformity for welded tubes and pipes - as steel strip and plates as well as billets for seamless tubes - is limited and creates at times a significant hurdle for producers supplying tubes and pipes for such high-tech markets. On the other hand, tube plant infrastructure with regard to tube mills,

finishing lines as well as applied quality assurance is also of significant importance.

It can be shown that the above-mentioned market trends have considerable impact on global steel tube production.

Steel tube and pipe production was characterized by steady growth until 2015 when it topped a volume of more than 171 000 tons p.a. (Fig.10) The downturn in 2016 to 167 000 tons p.a. was mainly reflected in the USA, CIS and ROW. In 2017 the market turned around again but China as the main tube and pipe producer lost about 6000 tons p.a. while all other countries increased their production to compensate for the Chinese shortfall.

Fig.11 shows the breakdown for the relevant regions in more detail. The US in particular, helped by the trade policy offensive of President Trump, grew production by about 3000 tons p.a. (+34%). In Q3 2018 (extrapolated), world steel tube production was on the up once more, dominated by a fast-recovering China (+2500 tons p.a. or +3%) and, again, the US (+1350 tons p.a. or +13%). All other countries evidenced little or no growth.

From January 2018, pipe prices increased, reflected in a hike

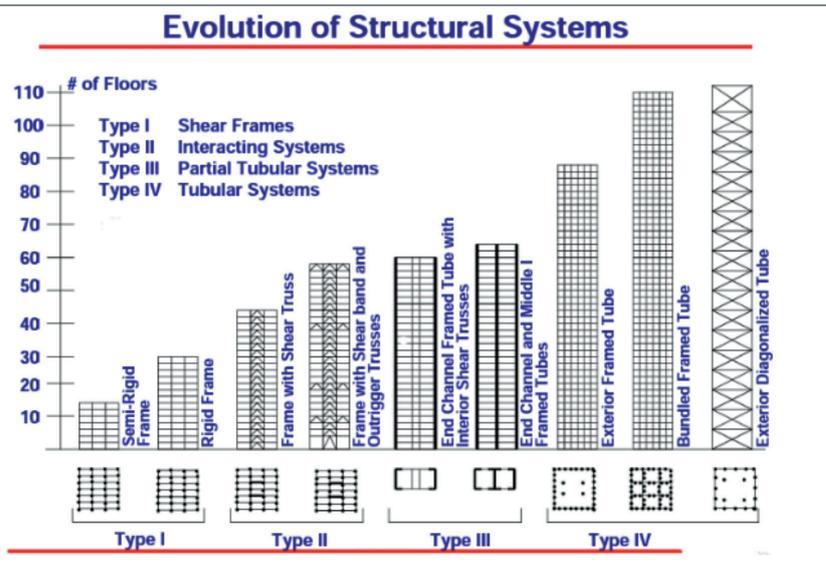


Fig.8: Evolution of structural systems
Source: Irjet

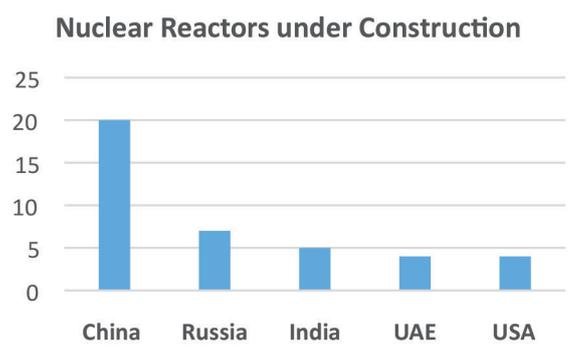
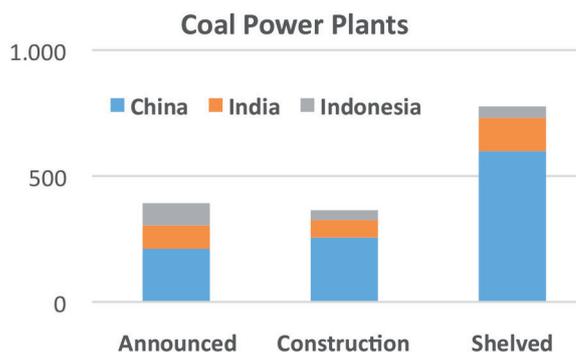


Fig.9: Major coal and nuclear power plants under construction
Source: CoalSwarm, Global Coal Plant Tracker and IAEA

in the pipe price index of about 25%, from 200 to 250. (Fig.12) The positive signals in 2018 also prompted traders to begin cautious restocking in expectation of a further price rally.

More significant variations were again displayed by the market segment seamless pipes and tubes (Fig.13). This product segment is quite volatile. In just the two-year period from 2014 to 2016, global production volumes fell by about 10 000 tons (-20%). There was a modest recovery in 2018, when production increased by 4%. However, the severity of the previous decline has meant that the industry has still not managed to reach 2012 production levels.

Growth in 2018 was dominated by volume gains in China (+2%), the US (+17%), India (+32%), ROW (+15%), CIS (+4%) and Japan (+6%). (Fig.14)

What is remarkable is that US administration measures have meant even obsolete seamless tube and pipe mills are now back in operation. However, economists can't see such outdated plant remaining online for long, since their economic performance remains questionable without major investment.

The production of welded pipes < 406 mm OD (Fig.15) saw a global production volume increase in Q3 2018 (+5%). China, after a series of weak results, was able to report an increase (+6%). It's the US once more that has the most significant production increase to report (+12%). This tube and pipe dimension range represents by far the largest product segment, with average global growth of about 5 to 10%. Even the downturn of 2017 (-2%) was nowhere

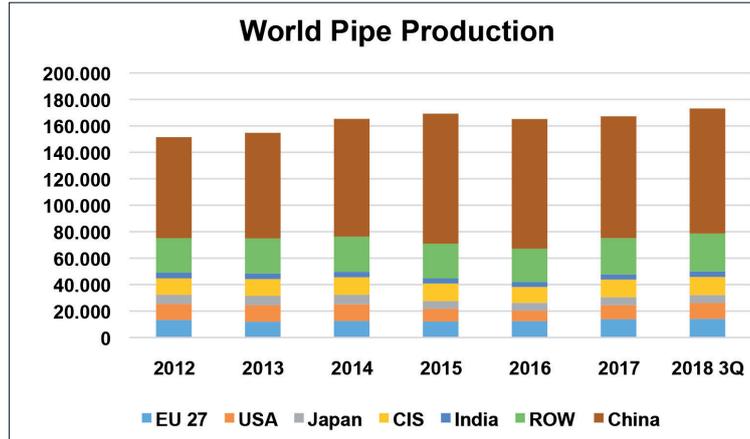


Fig.10: World steel pipe production in Tons
Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

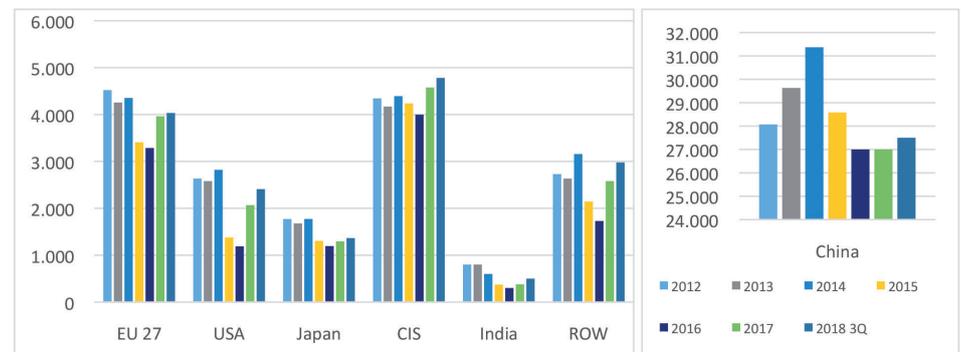


Fig.11: World steel pipe production (regional) in Tons
Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

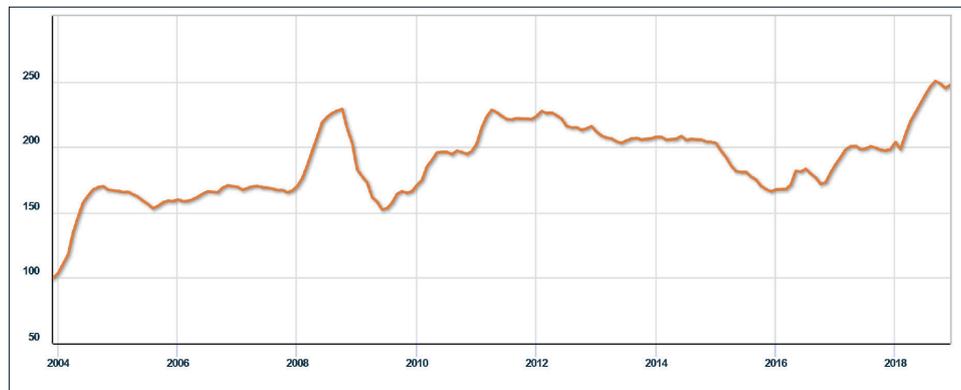


Fig.12: Producer pipe price index as of December 2018 (December 2003 = 100%) Source: Federal Reserve Economic Data

near as significant as the production volatility of other tube and pipe dimension segments. It also has the advantage of being able to serve a number of growing markets, allowing producers to capitalize on a broader range of market prospects, as we've noted in previous reports.

The production of welded pipes ≥ 406 mm OD is, at about 22 000

tons/year (±5%), by far the smallest product segment. (Fig.16) Its main application is large diameter line pipe projects. As we said earlier, such projects often depend on powerful stakeholder interventions and the capability of relevant pipe producers to qualify for them. The current US government, for example, has recently begun to impose import duties on line

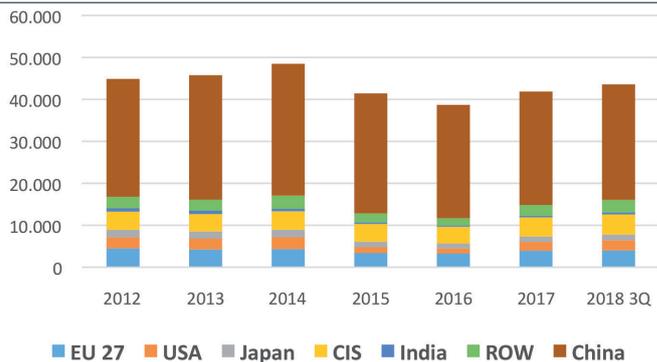


Fig.13: World steel pipe production in Tons (seamless)
Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

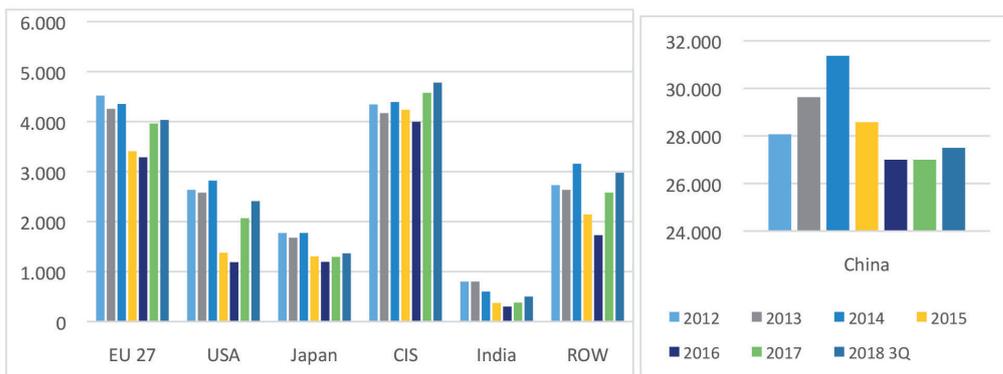


Fig.14: World steel pipe production in Tons (seamless)
Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

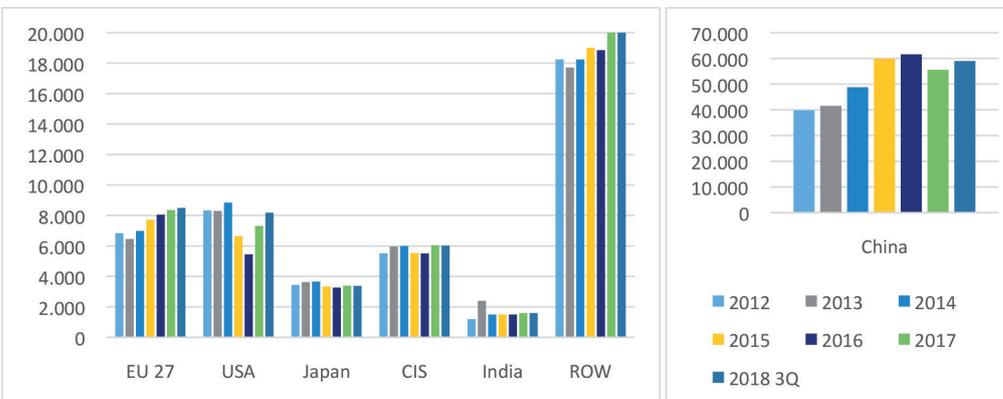


Fig.15: World steel pipe production in Tons (welded < 406 mm OD)
Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

pipe imports to protect US line pipe producers – a political signal which seems to be having the desired effect. The extrapolated Q3 2018 figures (Fig.17) show this impressively. US (+13%), CIS (+9%) and EU (+2%) gains are offset by losses for China (-15%) and Japan (-6%).

This trend reflects the decreased demand for pipelines in these regions, as well as the effect of

political measures taken by some parties. Some technologically advanced producers of large diameter line pipe tubes have nonetheless flourished on the merits of their unique selling points.

In the current scenario, currency exchange rates have also had a notable impact on tube and pipe industry exports – both products and manufacturing plant – throughout the world.

In 2017 the euro (EUR) gained about 20% against the US dollar (USD). (Fig.18) In the months since April 2018, it fell again by about 10%, down to 1.13 in October 2018. This does, of course, lessen pressure on exports into the US.

At the same time, in 2017 the exchange rate of the euro to the Chinese yuan (CYN) gained about 9.5%. In mid-2018, however, the currency fell back by some 7.4%. Since then it has levelled out at about 7.8 yuan/euro. The range of movement in 2018 was relatively even at ±3%, allowing for stable business conditions.

The value of the euro against the Russian rouble (RUB) has gained some 28% since April 2017 and is now at a level of about 75 roubles/euro. This has meant that local pipe producers to a large extent served the home market, to compensate for export losses due to higher exchange rate costs. (Fig.19)

From January 2017 (4.0) to February 2018 (4.7), the exchange rate of the euro to the Saudi Arabian riyal (SAR) gained about 15%. Since then it has dropped back some 11%, standing at 4.25 riyals/euro as of January 27, 2019. Overall, since 2017, imports to Saudi Arabia from Europe have become about 4% more expensive.

What measures are pipe producers and plant equipment suppliers taking to overcome current difficulties and to generate sustainable business?

The global increase in tube and pipe demand is leading to regionally improved plant utilization in the steel tube industry. Some pipe producing companies in the US are even reactivating obsolete

production facilities with a questionable economic future.

Still, despite the remarkable boom in the US, globalization into markets with increased demand remains one of the key answers. The Middle East and locations with major oil and gas exploration as well as auto production, mechanical engineering and construction industries are to be considered. Besides this, shale gas exploration, deep-sea offshore exploration and oil sand exploration remain major challenges to our industry.

Price competition from low-cost countries demands further specialization in high-tech products, particularly in higher-cost countries. Producers seem to have evaluated their market approach and decided to specialize and serve commodities or high-tech products even if they only represent niches, depending on their capabilities. Some countries/regions have also installed trade barriers to control imports from other countries.

Finally, every producer will have to make permanent improvements to increase productivity and reduce production costs. Technology suppliers may find interesting business opportunities in this field.

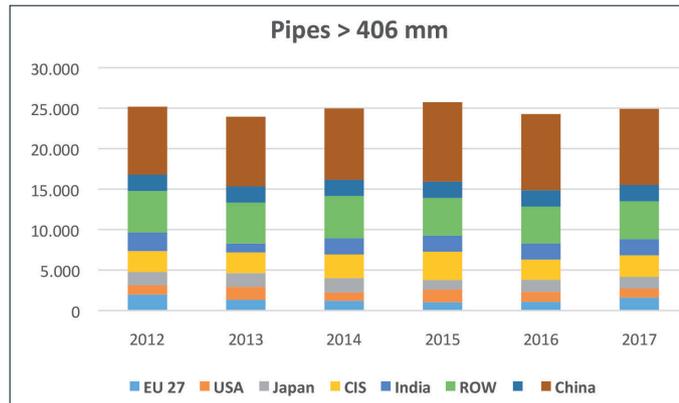


Fig.16: World Steel Pipe Production in Tons (welded ≥ 406 mm OD)
Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

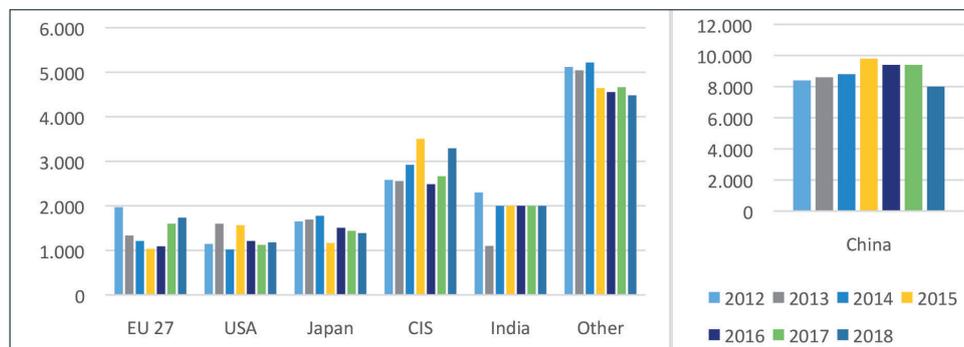


Fig.17: World steel pipe production in Tons (welded ≥ 406 mm OD)
Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohre e.V.



Fig.18: Currency exchange rates vs euro as of January 27, 2019
Source: Finance.net

VOSCO Management Consultancy
Dr. Gunther Voswinckel
Scharnhorststrasse 45
41063 Mönchengladbach
Germany
Tel.: +49 2161 309 255
drgunthervoswinckel@vosco.de



Fig.19: Currency exchange rates vs euro as of January 27, 2019
Source: Finance.net