



# UPDATE OF NORTH AMERICAN TRENCHLESS MARKET

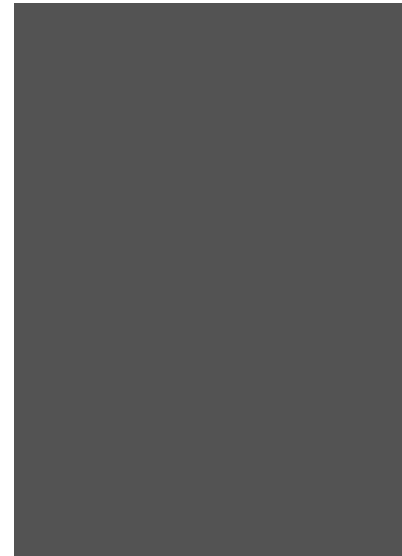
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# SEWER LINES

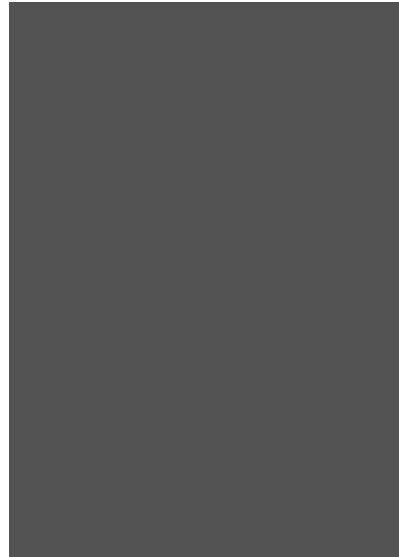
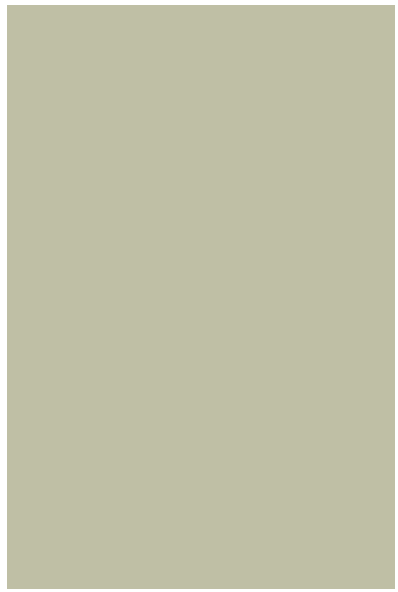
- OFFSET PIPES
- DETERIORATION
- ROOT INTRUSION
- CRACKED, LEAKING
- UNDER CAPACITY
- RAIN INFILTRATION/ INFLOW





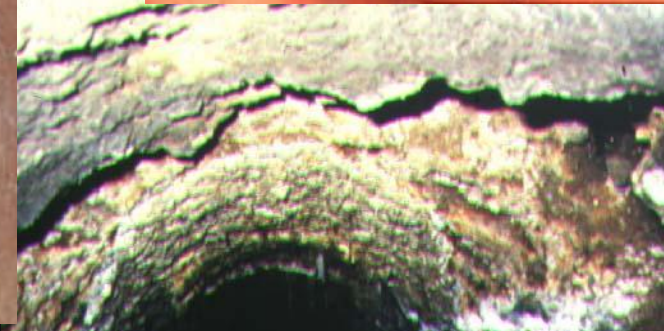
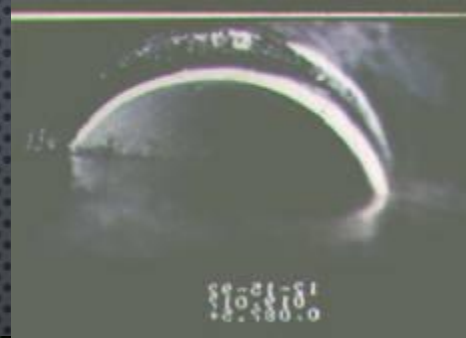
# WATER LINES

- ENCRUSTED
- CORRODED
- LEAKING
- UNDER CAPACITY





# DEFECTIVE SEWERS





# DEFECTIVE WATER PIPES



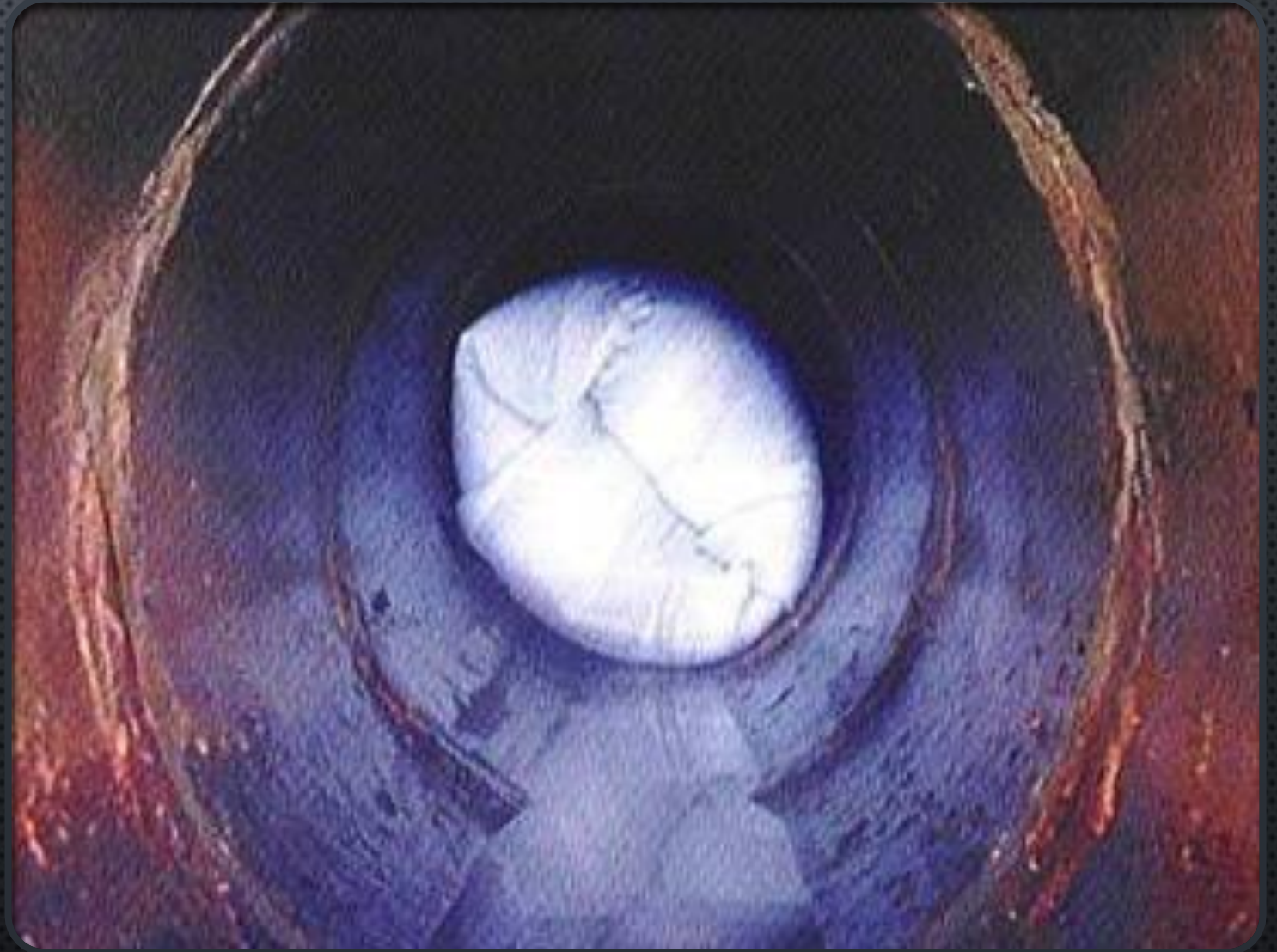


# MAIN REHABILITATION METHODS



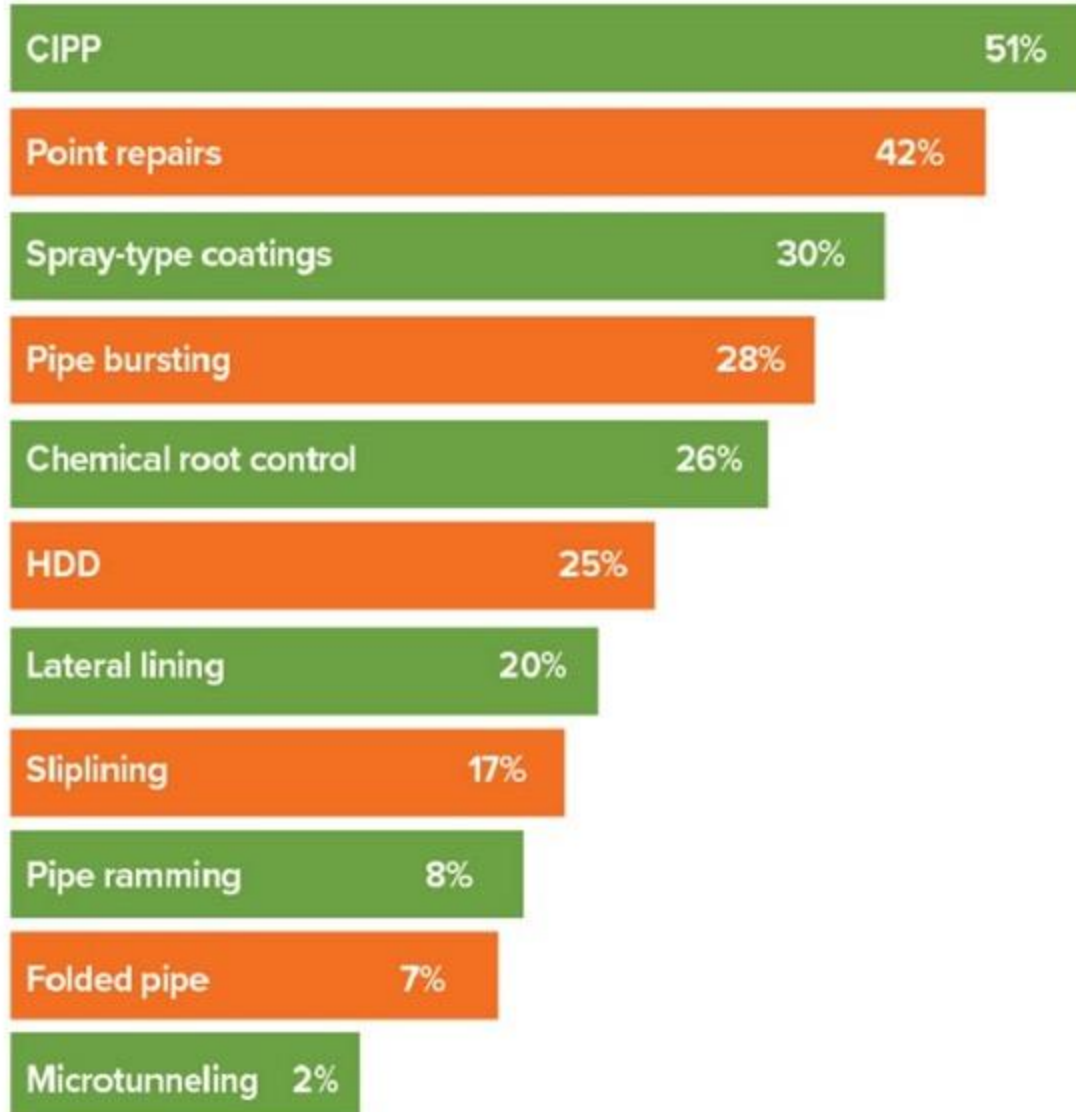


- THE GLOBAL CURED-IN-PLACE PIPE MARKET: HIGHLIGHTS, PROJECTS THE GLOBAL MARKET WILL REACH **\$2.49 BILLION** IN 2022 (STRATVIEW RESEARCH, 2018)
- MAJOR DRIVERS OF GROWTH INCLUDE AGING POTABLE AND SEWAGE WATER INFRASTRUCTURE, INCREASED SPENDING BY GOVERNMENT AND UTILITIES ON REHABILITATION.
- <300MM DIAMETER PIPE IS PROJECTED TO REMAIN A PRIMARY GROWTH ENGINE FOR THE GLOBAL CIPP MARKET.





When Using Trenchless Methods, how often are the following technologies used:



# UTILIZATION OF TRENCHLESS METHODS

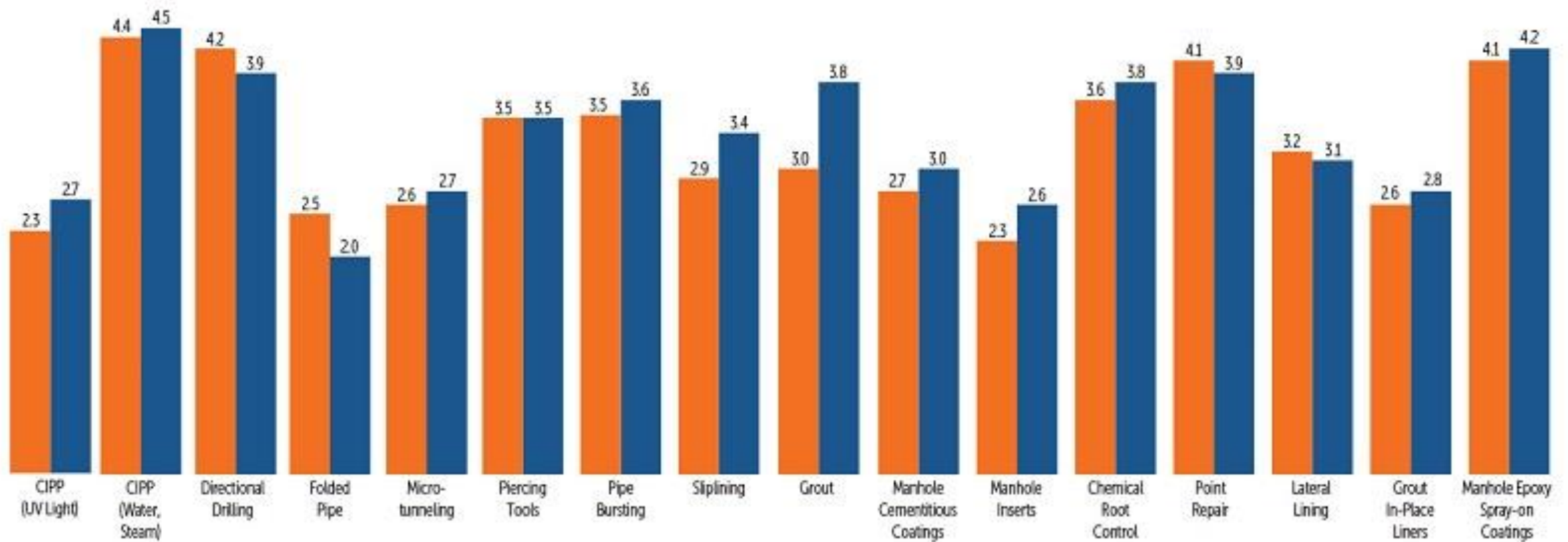
Underground Construction, 2019



## How Municipal Personnel View Various Trenchless Techniques

2018 2019

5= very beneficial 4= beneficial 3= somewhat beneficial 2= low benefit 1= no benefit

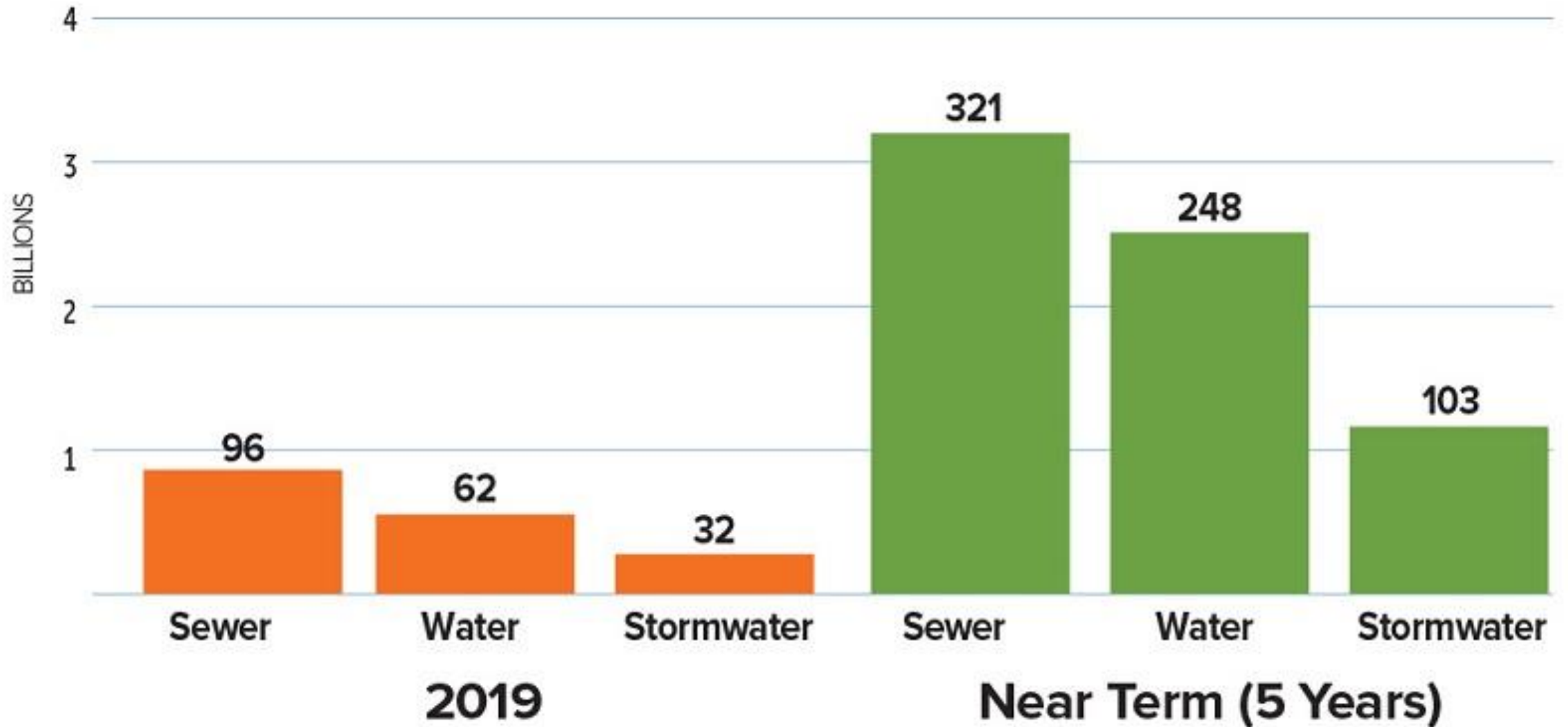


**1. CIPP (WATER/STEAM), 2. MANHOLE EPOXY COATINGS, 3. DIRECTIONAL DRILLING**

Underground Construction, 2019



Ideally, how much money is needed to address your immediate near-term needs?





WATER INFRASTRUCTURE IN THE U.S. IS AGING AND OVERBURDENED AND INVESTMENT ISN'T KEEPING UP WITH THE NEED.

Unless the gap is filled, pipes will leak, water rates will rise, the cost to make these investments will go up, clean-up projects will be delayed, and waters will be polluted.

WHAT IS NEEDED

\$143.7  
BILLION GAP

\$84.4  
BILLION GAP

WHAT WE'RE SPENDING

2010

2020

2040

AS A RESULT, BY 2020:



**\$59**  
BILLION OF  
INCREASED  
COSTS TO  
HOUSEHOLDS  
due to higher  
water rates.



**\$147**  
BILLION OF  
INCREASED  
COSTS TO  
BUSINESSES  
due to higher  
water rates.



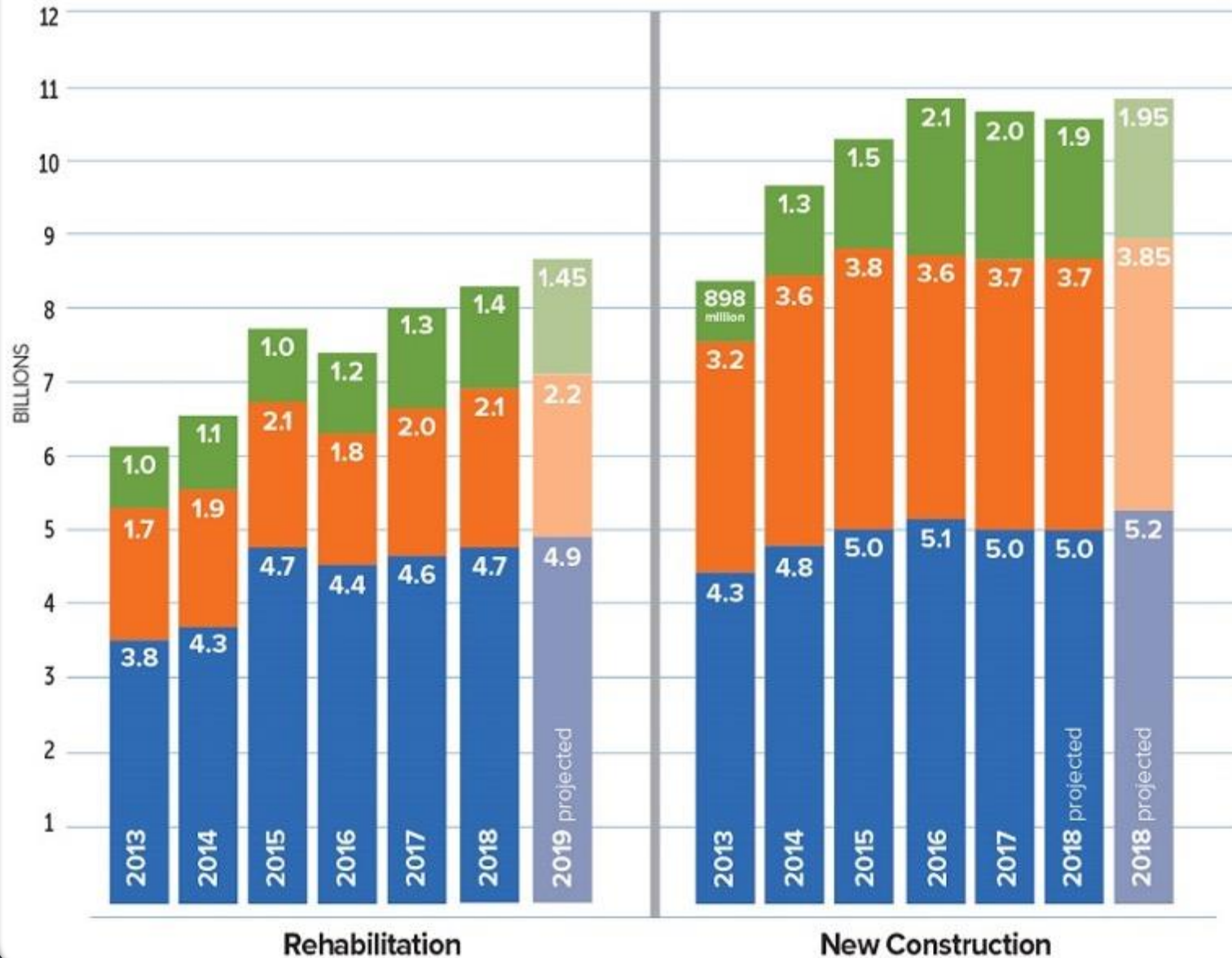
**\$416**  
BILLION  
LOSS IN GDP  
due to increased  
costs and loss  
of worker  
productivity.

# FUNDING ISSUES FOR REHABILITATION



# Construction/Rehab Spending

SEWER WATER STORM WATER



- New installation of sewer infrastructure is projected to increase by **3.7 percent** in 2019 to \$5.4 billion, with a **3.9 percent** increase (\$3.85 billion) for water construction
- Sewer rehab is projected at a **4.1 percent** growth in 2019, or \$4.9 billion, with water getting a **4.5 percent** (\$2.2 billion) spending boost.
- Projected spending plans for sewer, water and storm water piping infrastructure of **\$19.75 billion** in the United States for 2019, representing an overall increase of **3.7 percent**.

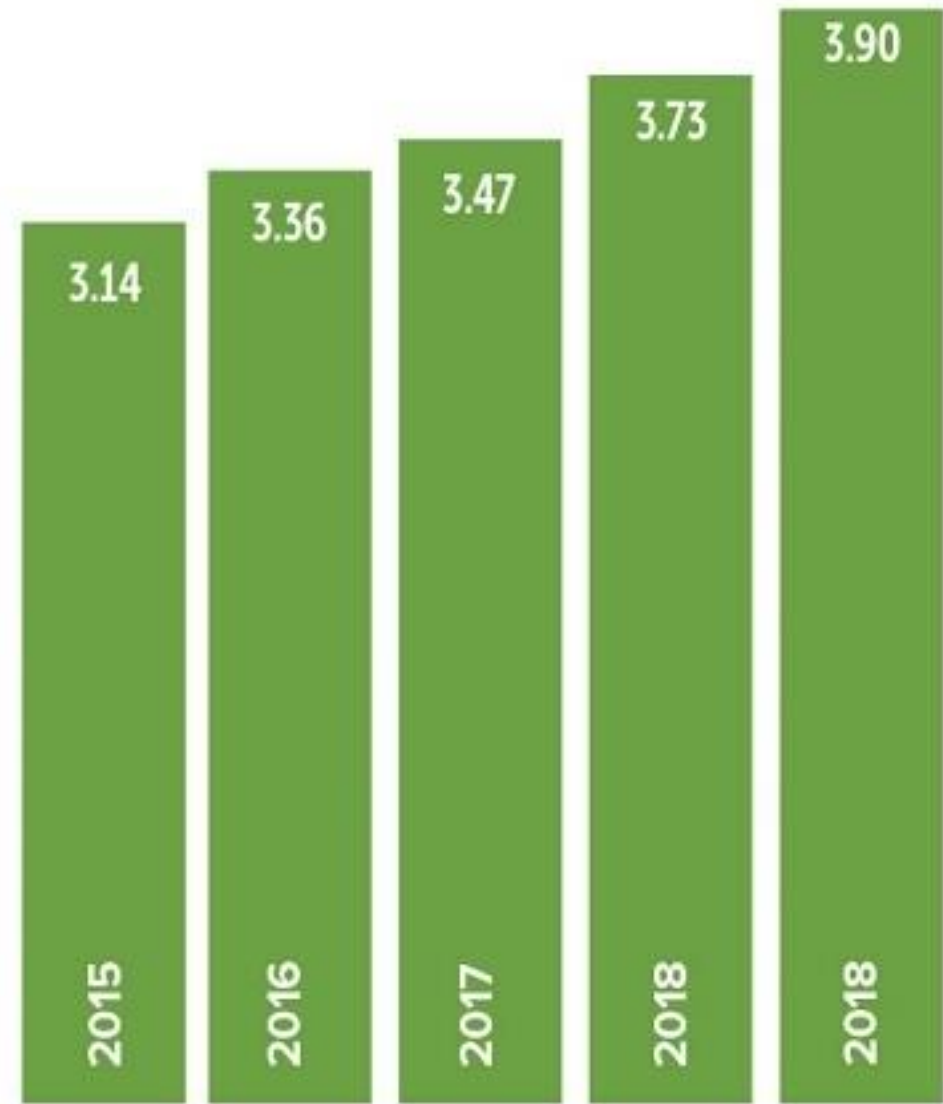
Underground Construction, 2019



## Personnel Performance Rating (per municipalities)



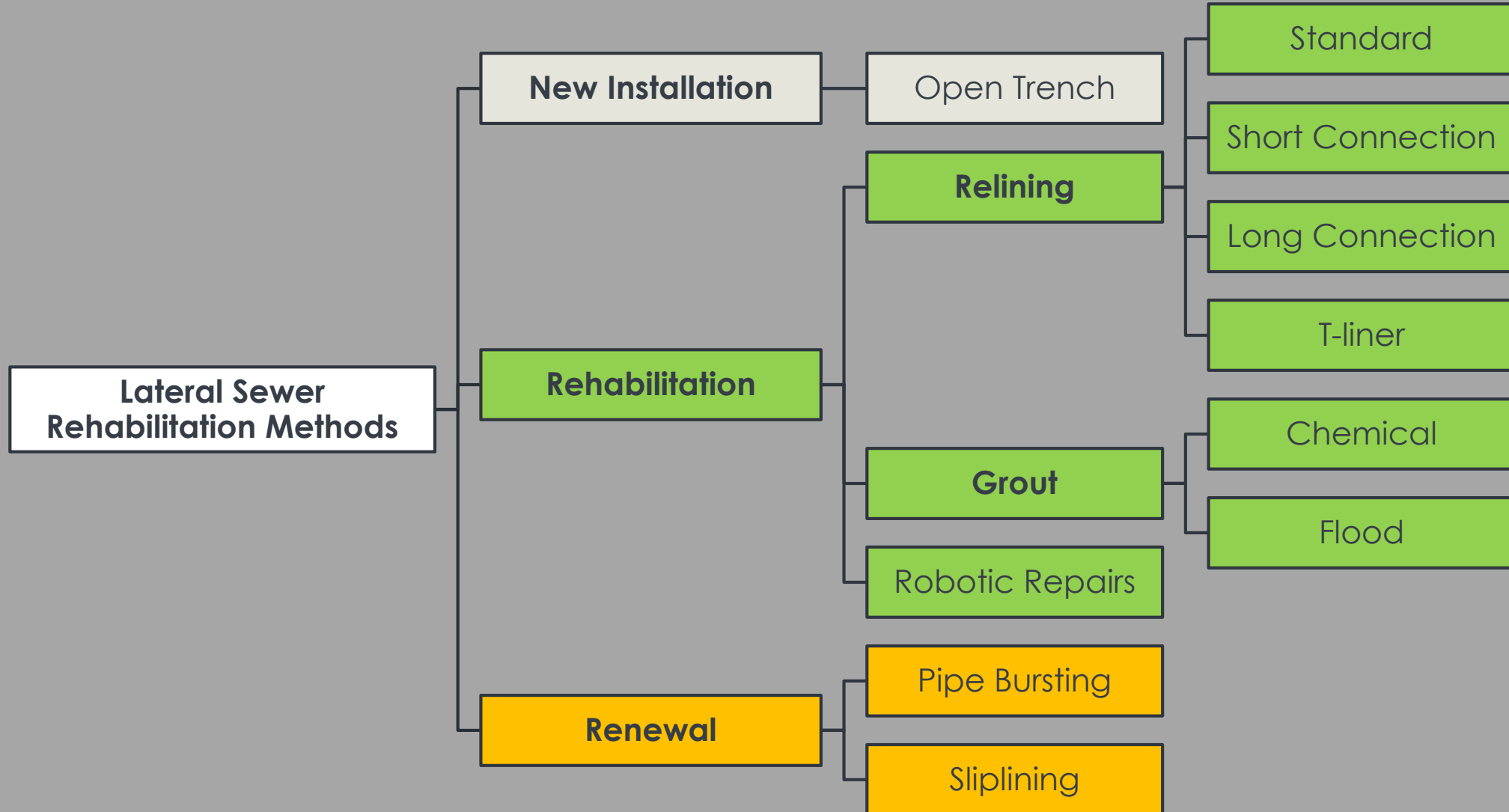
Contractors



Consulting Engineers



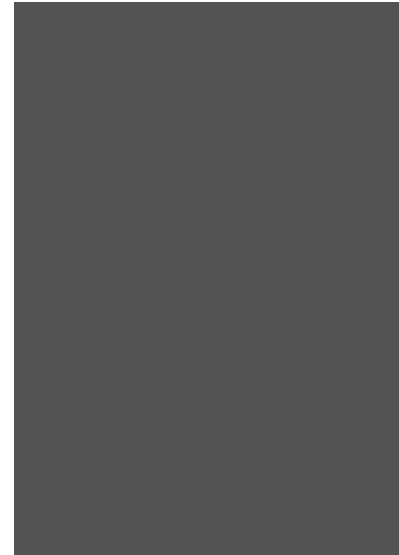
# LATERAL REHABILITATION METHODS





# CIPP MATERIALS AND CURING

- POLYESTER RESIN IS EXPECTED TO REMAIN THE MOST DOMINANT TYPE. THIS RESIN IMPREGNATES LINER MATERIALS WELL AND CAN BE CURED EVEN WHEN AMBIENT TEMPERATURES DROP TO NEAR OR BELOW FREEZING. IT ALSO OFFERS HIGH FLEXURAL MODULUS, LOW TENSILE ELONGATION, GOOD CHEMICAL RESISTANCE AND OTHER ADVANTAGES.
- VINYL ESTER RESIN IS LIKELY TO EXPERIENCE THE HIGHEST GROWTH OVER THE NEXT FIVE YEARS, DUE TO ITS CAUSTIC AND HIGH-TEMPERATURE MATERIAL-RESISTANCE PROPERTIES.
- STEAM IS PROJECTED TO REMAIN THE MOST DOMINANT CURING METHOD, AS IT TRANSFERS HEAT FASTER THAN IN THE WATER-CURING PROCESS.
- UV CURING SHOULD HAVE THE GREATEST GROWTH OVER THE NEXT FIVE YEARS. THESE LINERS ARE THREE TO FIVE TIMES STRONGER THAN CONVENTIONAL FELT CIPP LINERS.







# UV CURING

- SINCE 1985 IN EUROPE
- 2006 IN USA
- UV GENERATED POLYMERIZATION
  - MORE CONTROLLED
  - MORE CONFIRMABLE
  - MORE CONSISTENT
- FASTER CURE
- IN EUROPE AND ASIA:
  - ~70% OF LINERS
- QUALITY ASSURANCE ADVANTAGES



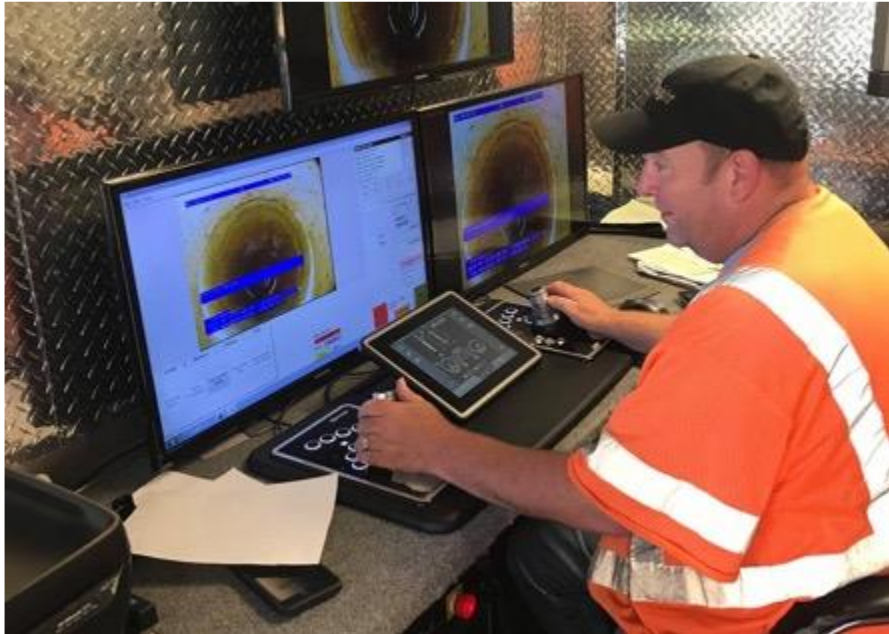
# CIPP MARKETS AND FUTURE

- NORTH AMERICA IS EXPECTED TO REMAIN THE WORLD'S **LARGEST** CIPP MARKET AS IT CONTAINS MOST OF THE PIPELINES AT RETIREMENT AGE AND IN NEED OF REHABILITATION.
- ASIA-PACIFIC IS LIKELY TO REMAIN THE **FASTEST-GROWING** MARKET DURING THE FORECAST PERIOD AS VARIOUS EMERGING COUNTRIES IN THE REGION HAVE BEGUN IMPLEMENTING CIPP AT A FASTER RATE.





# PIPELINE CONDITION ASSESSMENT







# **DRINKING WATER REHABILITATION**



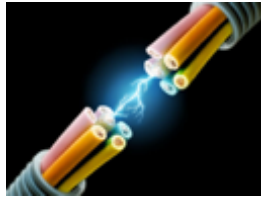
# DRINKING WATER MARKET

- THE COMPOUND ANNUALIZED GROWTH RATE (CAGR) OF THE GLOBAL DRINKING WATER PIPE REPAIR MARKET IS EXPECTED TO EXPAND AT A RATE OF 7% BETWEEN 2018 AND 2026.
- THE GLOBAL MARKET, AS OF 2018, IS VALUED AT OVER US\$56 BILLION.
- ONE MAJOR FACTOR CONTRIBUTING TO THE LARGE NUMBER OF DRINKING WATER PIPELINES CURRENTLY IN EXISTENCE AROUND THE WORLD, IS THE GROWING POPULATION.
- THE CAGR FORECAST OF THE SPOT ASSESSMENT AND REPAIR SEGMENT IS LIKELY TO INCREASE BY MORE THAN 6% DURING THIS FORECASTED PERIOD DUE TO THE DEMAND FOR DRINKING WATER PIPE REPAIR .
- BOTH NORTH AMERICA AND ASIA PACIFIC ARE PROJECTED TO BE LEADERS IN THE GLOBAL DRINKING WATER PIPE REPAIR MARKET DUE TO THE INCREASED DEMAND IN THESE REGIONS FOR SAFE AND CLEAN DRINKING WATER.
- AS CHINA BECOMES THE STRATEGIC CENTER FOR THE DEVELOPMENT OF DRINKING WATER PIPE REPAIR, THE ASIA PACIFIC REGION IS EXPECTED TO BE THE MORE PROMINENT REGION IN THIS MARKET FOR THE FORECASTED PERIOD AND THE VERY NEAR FORESEEABLE FUTURE





# HDD Market Segments



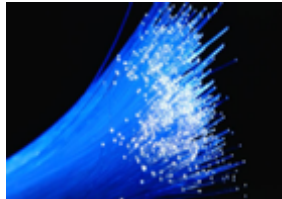
**Electrical**



**Natural Gas**



**Water**



**Telecommunications**



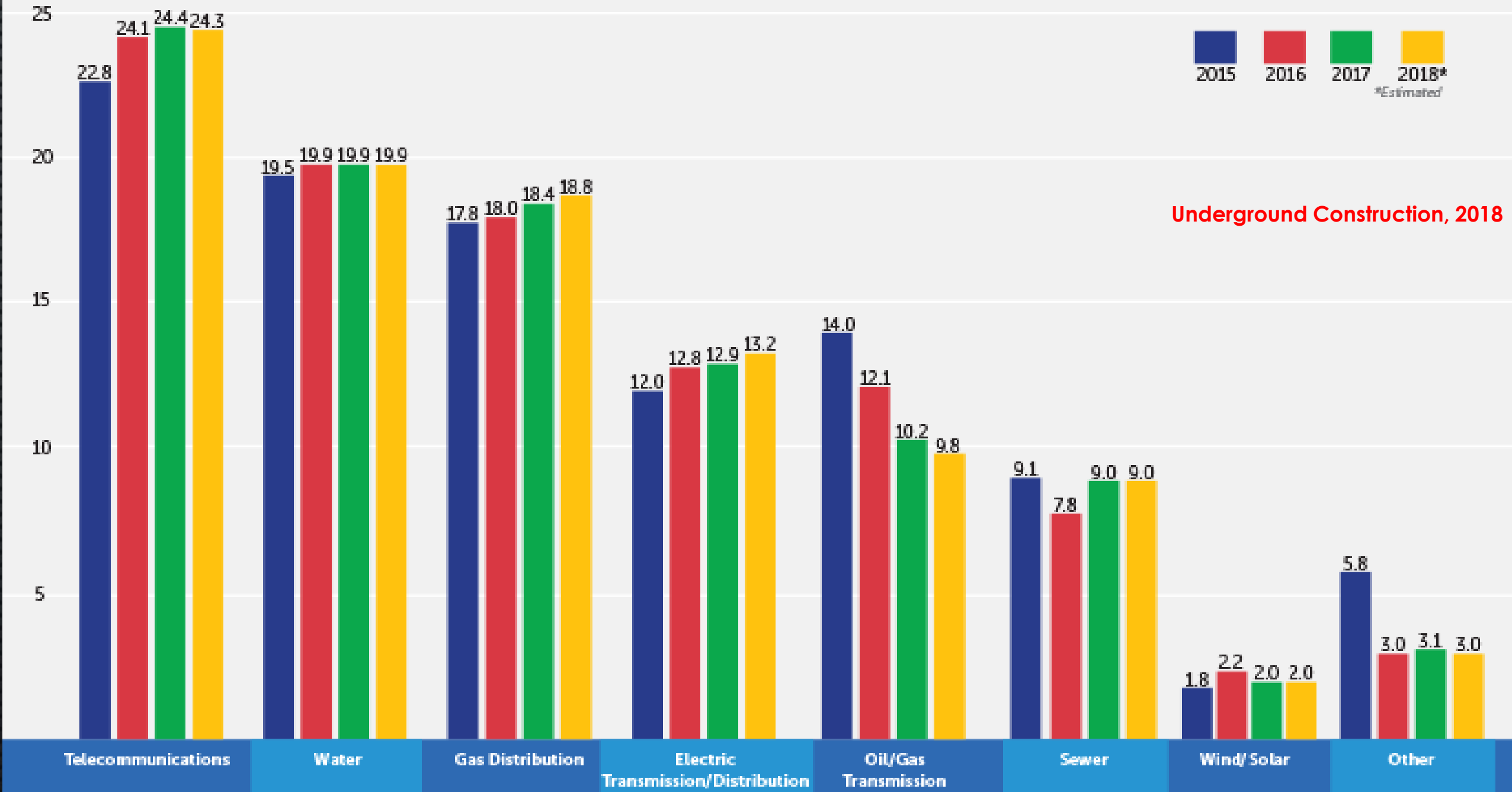
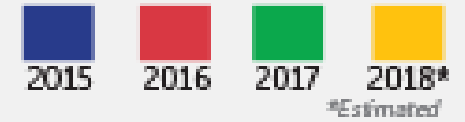
**Oil Product**



**Wastewater**



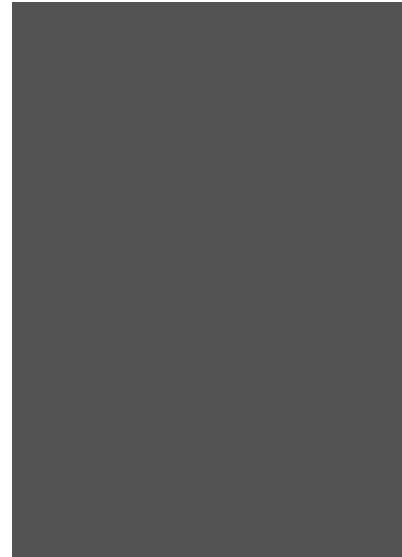
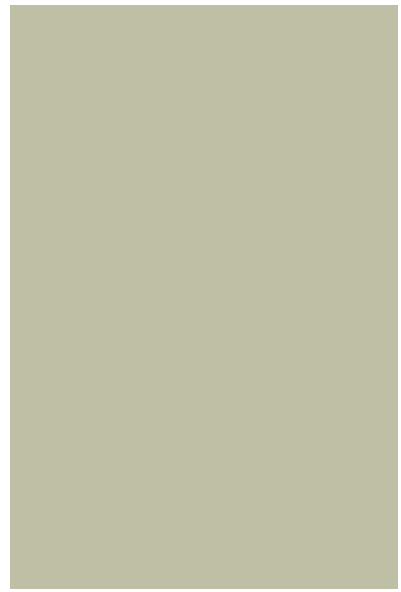
## Primary HDD Markets (% of total)





# CONCLUSIONS

- THE GLOBAL PIPELINE REHABILITATION MARKET WILL CONTINUE TO GROW DUE TO AGING PIPES
- NORTH AMERICA AND CHINA CONTINUE TO DOMINATE CURRENT AND FUTURE MARKETS
- INNOVATION WILL CONTINUE TO DRIVE ADOPTION
- EDUCATION IS KEY!





# CONTACT INFORMATION



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