

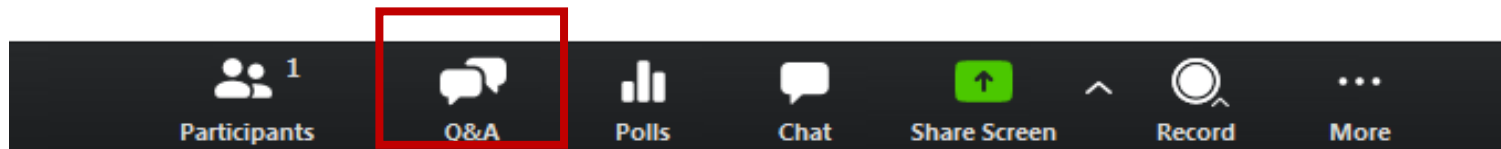
Circular Economy & The Water Sector in China

03 June 2021

15:40 – 17:00 (Beijing time)



Please use **Q&A button** on the button to raise your questions!



About the Centre

- The EU SME Centre is an **EU Commission** funded project which since 2010 **helps European small and medium-sized enterprises (SMEs)** get ready to do business in China → www.eusmecentre.org.cn
- Currently in its **third phase**, the project is scheduled to run from **October 2020 to March 2022**
- The Phase III is run by a consortium of four chambers of commerce and one business council (see the names below) with the China Italy Chamber of Commerce as the Coordinator
- The EU SME Centre is an official member of the **Enterprise Europe Network (EEN)**
- Partnered with over **270** government agencies and business support organisations in Europe and China
- We operate out of **Beijing**, P.R. China

Implementing partners

Our services



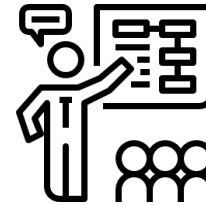
KNOWLEDGE CENTRE

Nearly 200
comprehensive
market reports,
guidelines and case
studies



ADVICE CENTRE

Practical and
confidential advices on
business development,
market access, legal
issues and HR



TRAINING CENTRE

Face to face and online
training program raise
EU SMEs' awareness of
China related business
issues



SME ADVOCACY PLATFORM

Providing coherent, consistent
and consolidated voice for EU
SMEs via the Inter-chamber
SME Working Group at the
EUCCC

Webinar Series on Urban Water Management

Collaboration with CEWP

 CHINA
EUROPE
Water Platform
www.cewp.eu

- **Blue-green sponge cities**
 - Efficiency of water infrastructure
 - Digitalisation
 - Carbon footprint of the Water Sector
-
- 300+ participants
 - 20 European countries

- Self Diagnosis Tool:
 - This online self-diagnosis tool will allow you to gauge your readiness in developing your business strategy in China.

The banner features a background of the Chinese and European Union flags. The text is white and yellow on a dark blue background.

ARE YOU READY FOR CHINA?

SELF-DIAGNOSIS TOOL

An online self-diagnosis tool that allows you to gauge your readiness in developing your business strategy in China.

- Assessment
- Evaluation
- Learn

TAKE THE QUIZ
Estimated duration: 10min

Take the quiz at: www.sdt.eusmecentre.org.cn

Do you have any questions
on the Chinese market?

Do you need
technical assistance?

Do you need **due diligence**
on potential Chinese partners?

Let us know through our free **Ask-the-expert** service!
<https://www.eusmecentre.org.cn/expert>

Upcoming activities- June

- 50+ **webinars and workshops** in both Europe and China
 - 09 Jun : Uncovering China's Dairy Sector [online]
 - 14 Jun : Intellectual Property in the E-mobility Sector: protecting innovation in Asian markets [online]
 - 22 Jun: Indirect Sales & Business Partners in China: How to identify, approach, select and secure them [online]
 - 25 Jun : EU-Shandong Export Commodities B2B Virtual Matchmaking [online]
- Monthly **working group meetings** and **policy briefs**
- One **new report** published: *"E-commerce Ecosystem in China: a Checklist for European SMEs"*
- Participation to **trade fairs** and **exhibitions** (European SME Pavilion @ China International Industry Fair)

About DCCC

- The **Danish Chamber of Commerce in China** is a non-profit organization established by a group of Danish businessmen in 1995 with strong support of the Royal Danish Embassy in Beijing. DCCC became officially registered with the Ministry of Civil Affairs in 2020
- **Three Chapters in China: North, East and South**
  
- Membership covers **170+ member companies** covering all sectors
- Implementing partner of the EU SME Centre's **Phase III**, running for **18 months from October 2020 to March 2022**
- **Main platform for the Danish business community in China**

Implementing partners

Upcoming activities – June 2021

- What is on the programme?
 - 07 Jun: Bridge the Gap: Understanding Chinese | Shanghai
 - 08 Jun: Online Chinese Consumer Trends in F&B | **Pan-China**
 - 08 Jun: InterChamber Summer Mixer | Shanghai
 - 12 Jun: Nordic Football | Shanghai
 - 12 Jun: Nordic Football | Beijing
 - 17 Jun: Employee Ref. Check and Prev. of Rel. Legal Risk | Beijing
 - 17 Jun: InterChamber Networking Drinks | Guangzhou* MOVED
- Danish Business Outlook on China Index Update

Learn more about **DCCC**...

www.linkedin.com/company/danish-chamber-of-commerce-china

<http://dccc.com.cn/>

WeChat



Observations on Circular Economy in the Water Sector

A common conceptual basis, different perspectives

- **Circular economy-based solutions**

- **Reducing carbon footprint in wastewater treatment**

- **Wastewater treatment plants to water resource recovery factories**

Observations on Circular Economy in the Water Sector

- Increasingly supported by digitalisation technology
- Reduce the impact of the existence of Silos

Procurement of water and energy solutions may not be well specified in tenders.

- Natural monopolies may need incentives

Recommendations

Regulatory frameworks.

- **Integrating infrastructure systems.**

- **Economic incentives.**

- **Data management, data integration and access to information.**

- **Standards for tender-based market requests.**

JINGJING MA

GENERAL MANANGER, NORDIQ GROUP CHINA

Ms. Jingjing Ma is the co-founder of NORDIQ Group Denmark and CEO of NORDIQ Group China. She developed the first Clean Development Mechanism Chinese based project methodology approved under UNFCCC from 2004-2006 as AM0058. She has a strong understanding of the political agenda in China specifically within sustainability as she has on various occasions acted as trusted advisors for high-level politicians and officials. She has over 17 years of professional experience in climate change, low carbon city planning, sustainable urban planning framework development, slow traffic mobility system advice, ecological regional framework development and built environment projects. She is a senior sustainability urban planner, certified urban and green building consultant, Germany DGNB certificated consultant and PHI consultant. She has worked with +80 renewable energy projects in China, Thailand and Egypt.

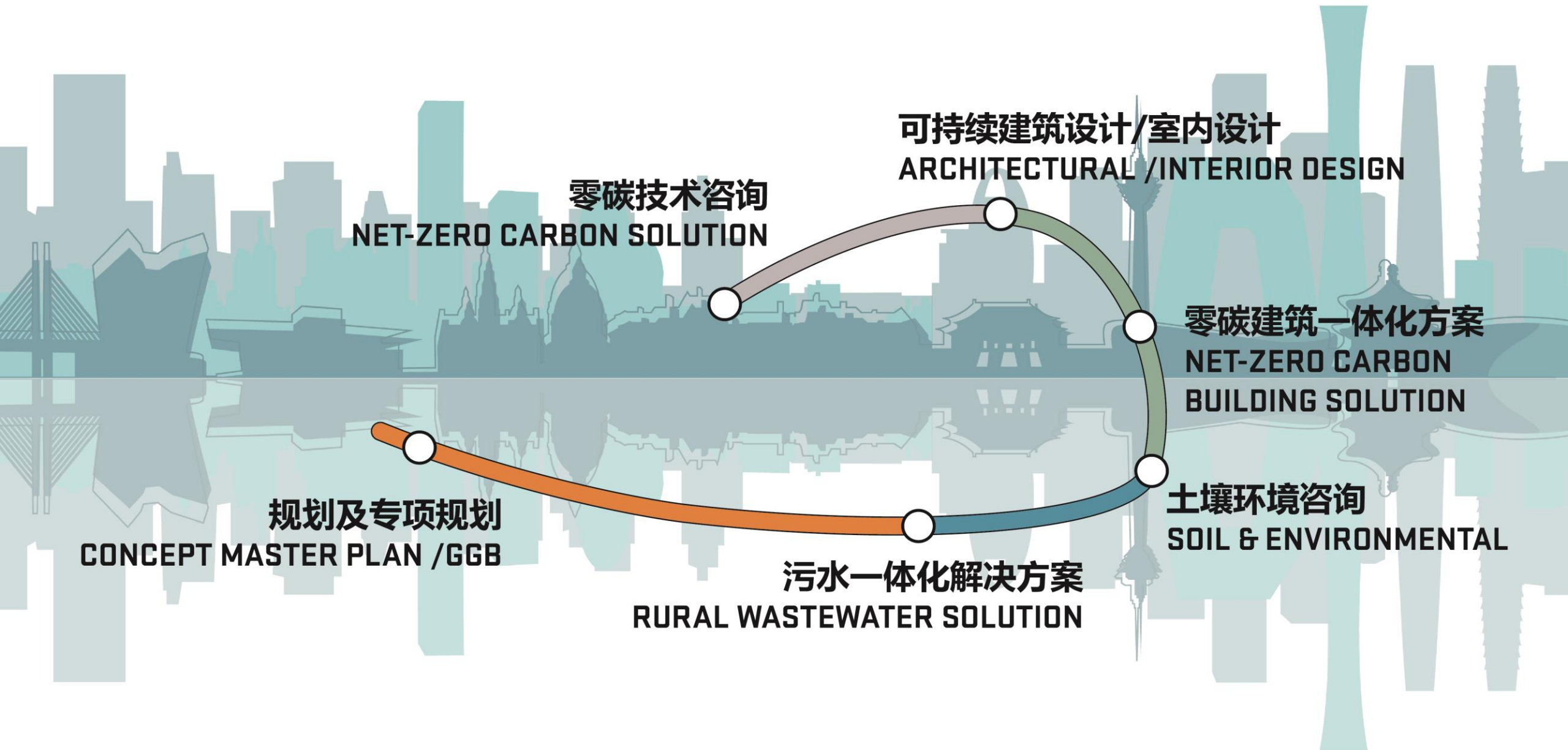


中国污水行业的2030/2060碳中和路径 China Carbon Neutrality 2030/2060 of the Wastewater Sector

NORDiQ

2021-06-03





Agenda

1. Chinese Green Transition toward Carbon neutrality 2030/2060 strategy
2030/2060年碳中和政策下的中国绿色转型
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2010-2020年中国水务行业碳足迹
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中国城市污水处理工业的潜力
4. Green opportunities post COVID19 period in China
中国新冠疫情后的绿色机遇
5. From WWTP to WRRF
从污水处理厂向水资源回收厂转型

China's climate protection targets 2030/2060



Step 1 (announced in 2009*)

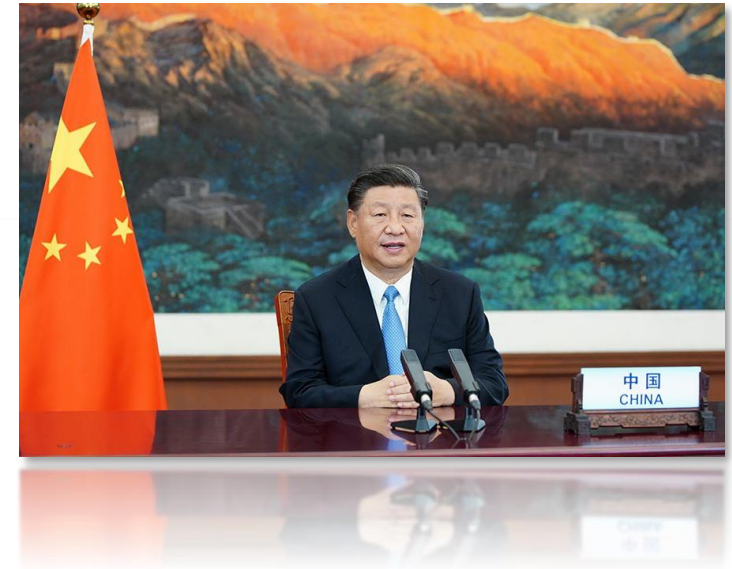
- By 2020, lower carbon dioxide emissions per unit of GDP by 40%-45% from 2005 level
- By 2020, increase share of non-fossil fuels in primary energy consumption to around 15%
- By 2020, increase forested area by 40 million hectares
- By 2020, increase forest stock volume by 1.3 billion cubic meters from 2005 level

- By around 2030, achieve peaking of carbon dioxide emissions and make best efforts to peak early
- By 2030, lower carbon dioxide emissions per unit of GDP by 60%-65% from 2005 level
- By 2030, increase share of non-fossil fuels in primary energy consumption to around 20%
- By 2030, increase forest stock volume by 4.5 billion cubic meters from 2005 level

Step 2 (announced in 2015**)

Step 3 (announced in 2020***)

- Before 2060, achieve carbon neutrality
- Before 2030, achieve peaking of carbon dioxide emissions
- By 2030, lower carbon dioxide emissions per unit of GDP by over 65% from 2005 level
- By 2030, increase share of non-fossil fuels in primary energy consumption to around 25%
- By 2030, increase forest stock volume by 6 billion cubic meters from 2005 level
- By 2030, increase total installed capacity of wind and solar power to over 1.2 billion kilowatts



* Announced as part of the 2009 United Nations Climate Change Conference (Copenhagen Summit) held from 7-18 December 2009

** Announced as part of China's NDCs submitted to the UNFCCC Secretariat on 30 June 2015

*** Announced during the General Debate of the 75th session of the UN General Assembly on 22 September 2020 & the Climate Ambition Summit 2020 held on 12 December 2020

The 14th Five-Year Plan and 2035 targets

14th FIVE-YEAR PLAN & 2035 TARGETS

Targets through 2035

- ▶ China's economic and technological strength, and composite national strength will increase significantly.
- ▶ New industrialization, IT application, urbanization, and agricultural modernization will be basically achieved.
- ▶ The modernization of China's system and capacity for governance will be basically achieved.
- ▶ China will become a strong country in culture, education, talent, sports and health.
- ▶ Eco-friendly ways of work and life will be advanced to cover all areas of society.
- ▶ The opening-up will reach a new stage with substantial growth of the country's strengths for participating in international economic cooperation and competition
- ▶ The per capita GDP will reach the level of moderately developed countries.
- ▶ People will lead a better life, and more notable and substantial progress will be achieved in promoting well-rounded human development and achieving common prosperity for everyone.

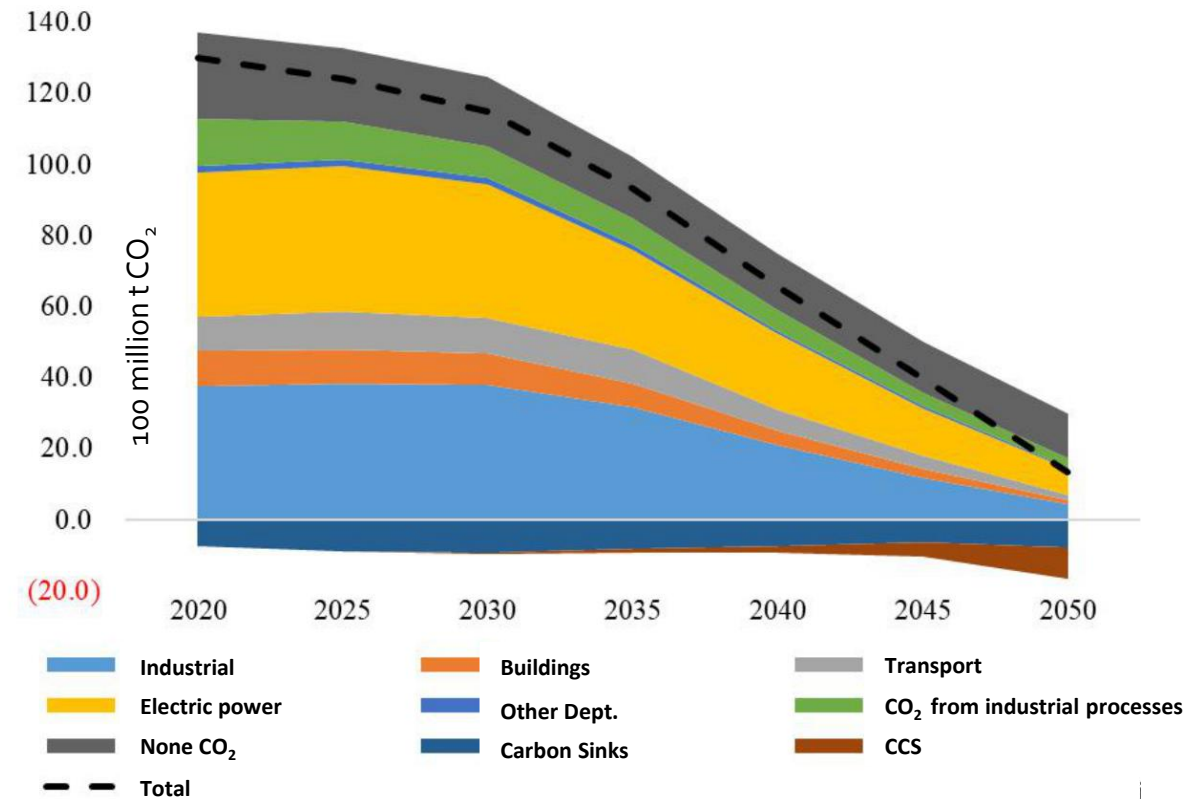
National Energy Administration NEA, has called for public comments on its 14th FYP renewable energy plan, layout the sever priority areas: :

- ✧ **Guaranteeing energy security through diversifying the supplies, developing sufficient storage capacity and infrastructure and improving logistics;**
- ✧ **Green and Low Carbon development in support of China's pledge to peak CO₂ emissions before 2030. This could involve "market-based trading of the rights to use energy" and carbon emissions;**
- ✧ **Construction of smart energy systems, energy digitization;**
- ✧ **Coordinated development of energy regions, optimization of regional supply and demand with a focus on rural energy reform;**
- ✧ **Energy technology innovation: capacity building and key core technology innovation and application]**
- ✧ **Market-oriented reforms**
- ✧ **International cooperation**

1.5°C target driven green investment analysis

- To achieve the 2 °C target and guide the transition path, the energy system will need an additional investment of about CNY ¥**100** trillion from 2020 to 2050, about 1.5~2.0% of GDP per year;
- Achieving the 1.5°C target will require an additional investment of about CNY¥ **138** trillion, about 2.5% of GDP per year.
- To achieve <Europe Green Deal> 's target with reduce emissions by 50~55% by 2030, will need an annual investment of EUR€**260** billion , about 1.5% of GDP in 2018;

Total greenhouse gas emissions and composition under the 1.5°C target



Source: institute of climate change and sustainable development, Tsinghua University

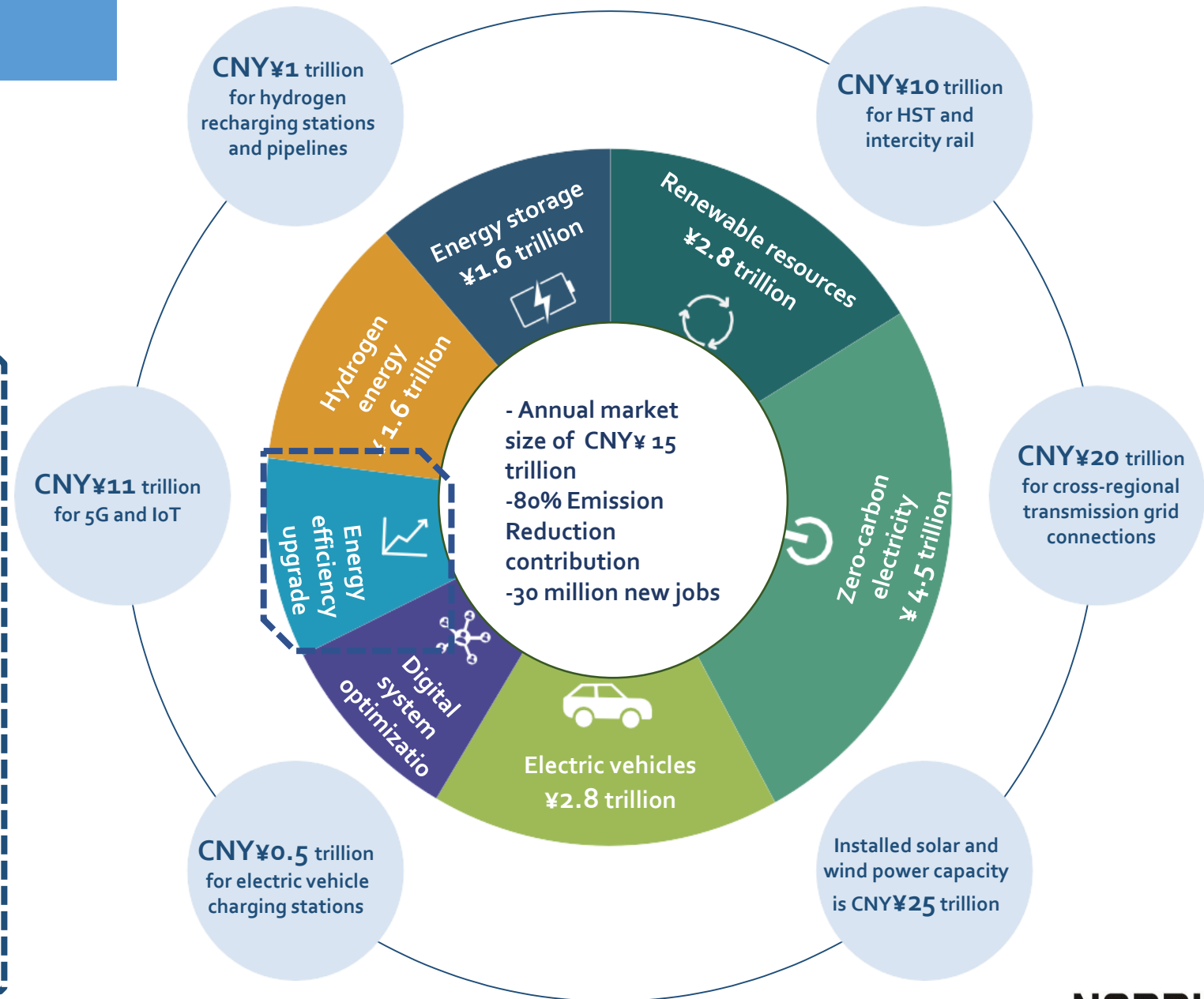
Green investment in 7 sectors

70 trillion investment in New Green Infrastructure

Seven areas, including:

1. Renewable resource utilization,
2. End-consumption electrification,
3. Zero-carbon power generation technology,
4. Energy storage,
5. Hydrogen energy
6. Energy efficiency,
7. Digitization system

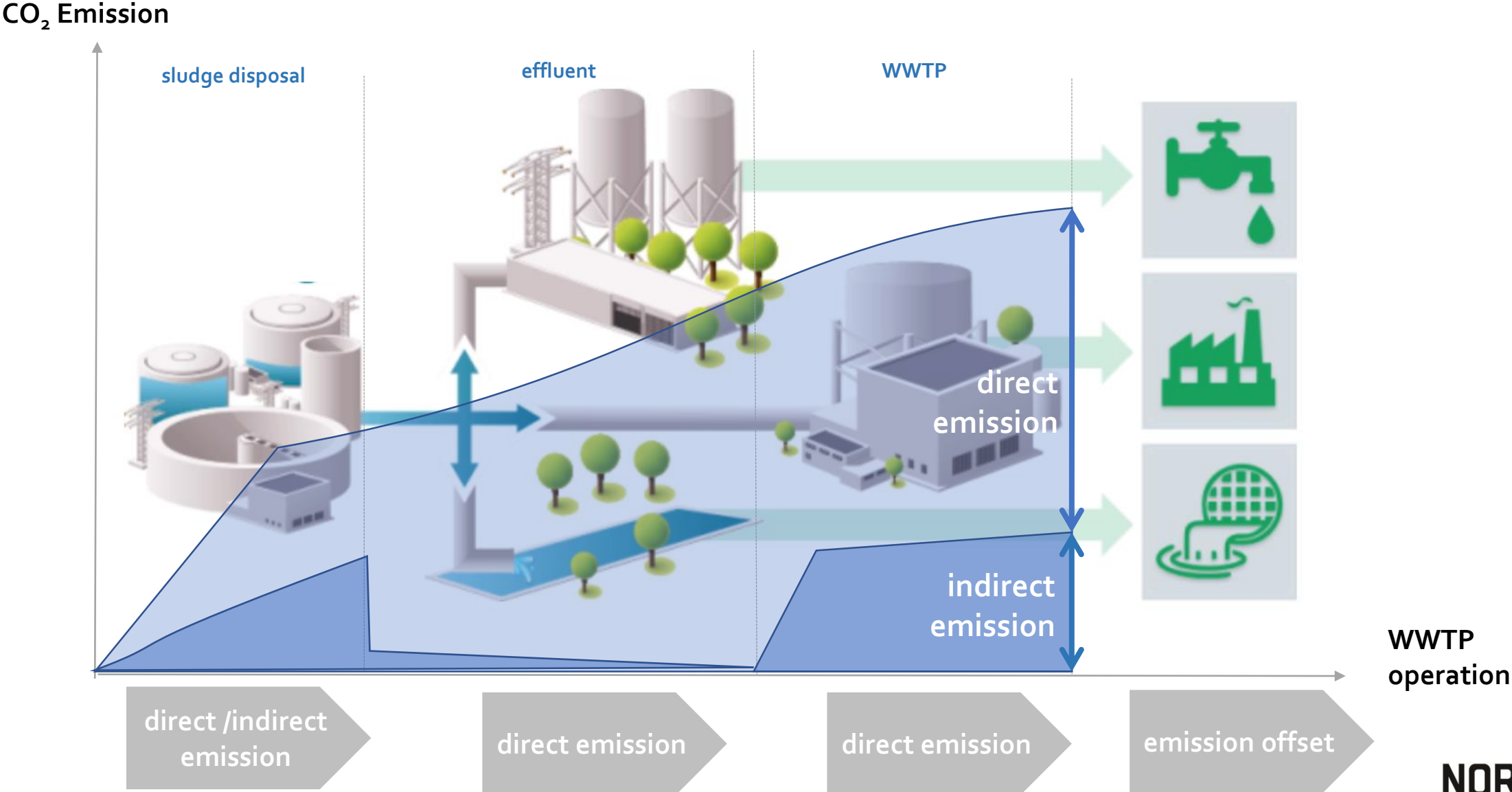
By 2050, the market size of these seven sectors is expected to reach nearly 15 trillion yuan that year and contribute 80% of China's cumulative emissions reduction to achieve zero carbon emissions target.



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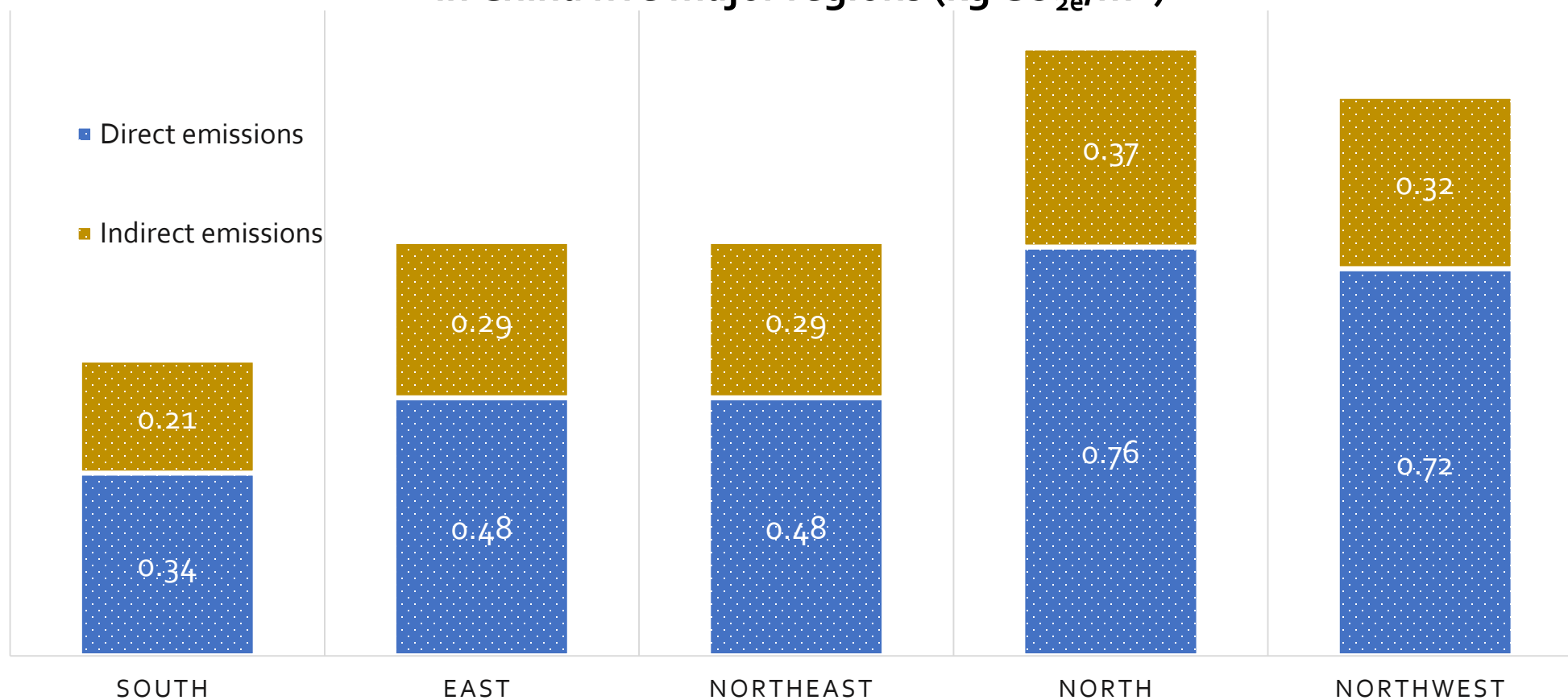
Chinese wastewater sector's carbon footprint



Chinese wastewater sector's carbon footprint

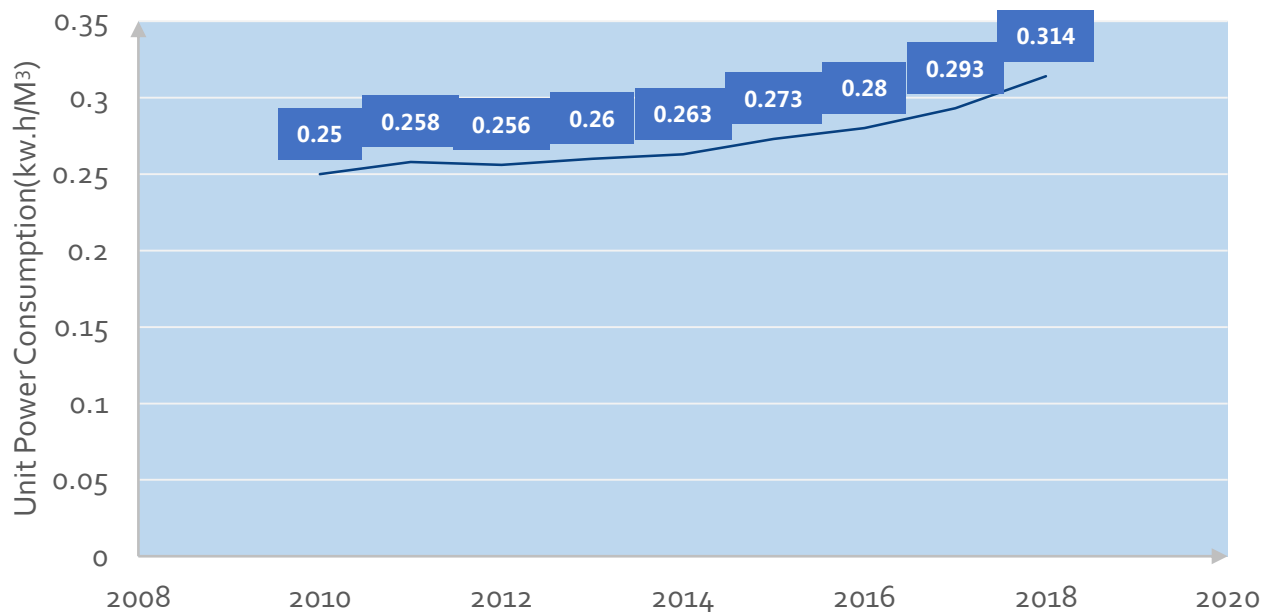
European
Commission

2015 Carbon emission intensity of wastewater plant
in China five major regions (kg CO_{2e}/m³)



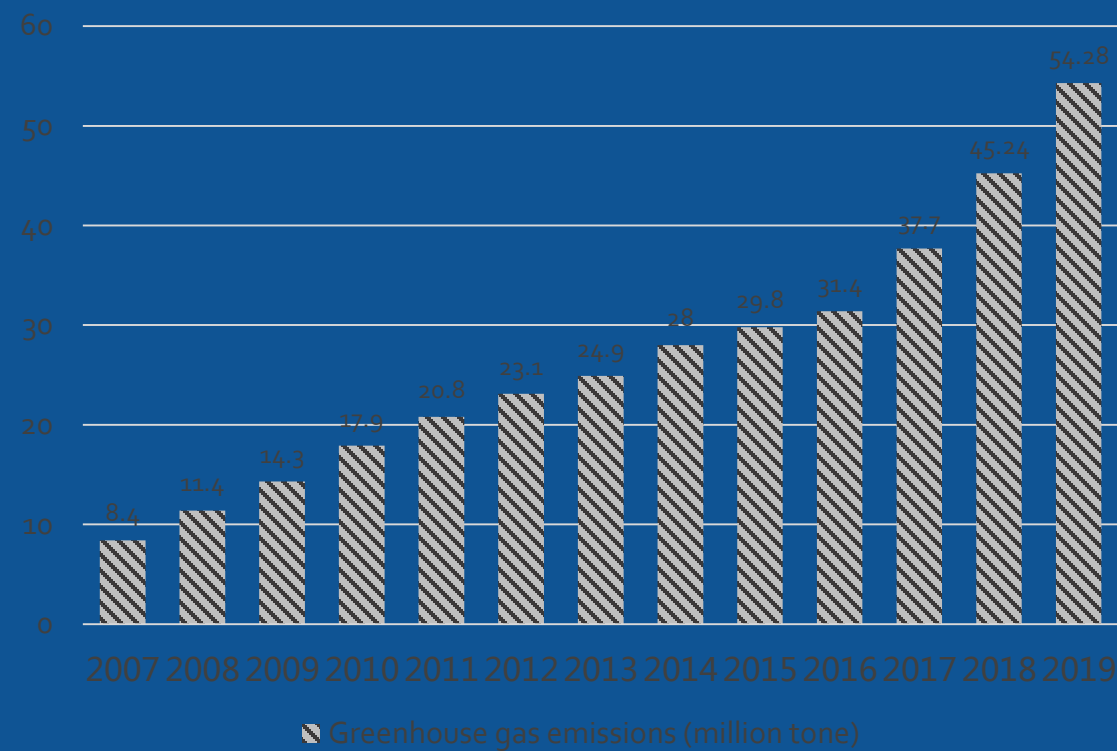
Source: Ministry of Housing And Urban-Rural Development

**Average power consumption of WWTP per m³
2010-2018**



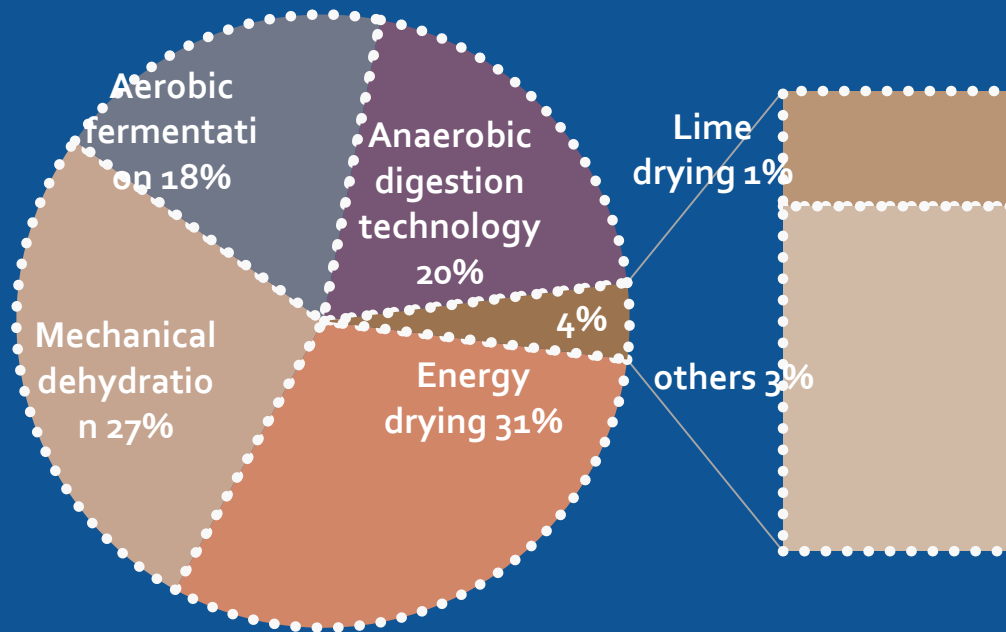
Source: Urban wastewater Treatment Management Information System

**Total greenhouse gas emissions of municipal WWTP
in China 2007-2019**



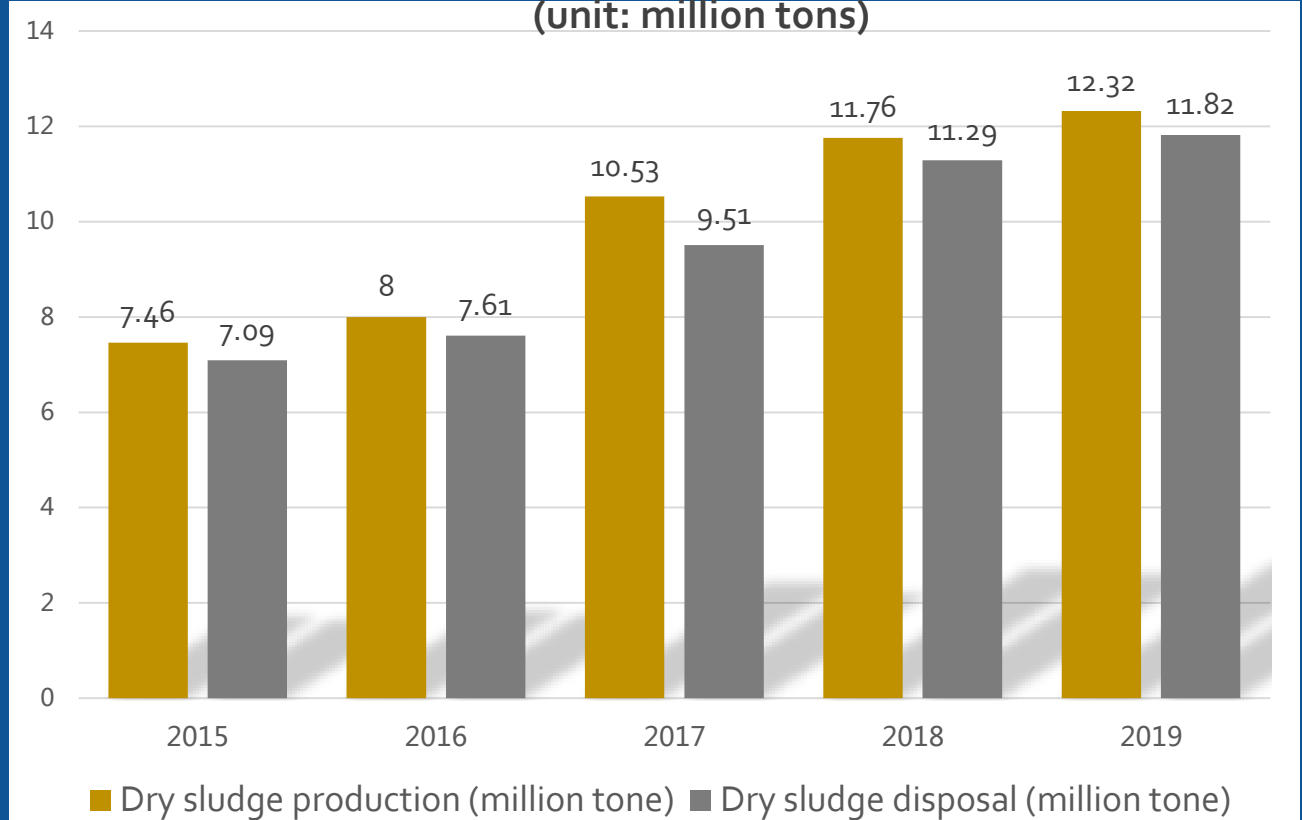
Source: Urban wastewater Treatment Management Information System

2018 Diagram of proportion of sludge treatment technology in China



Source: Urban wastewater Treatment Management Information System

Urban dry sludge production and disposal status
(unit: million tons)



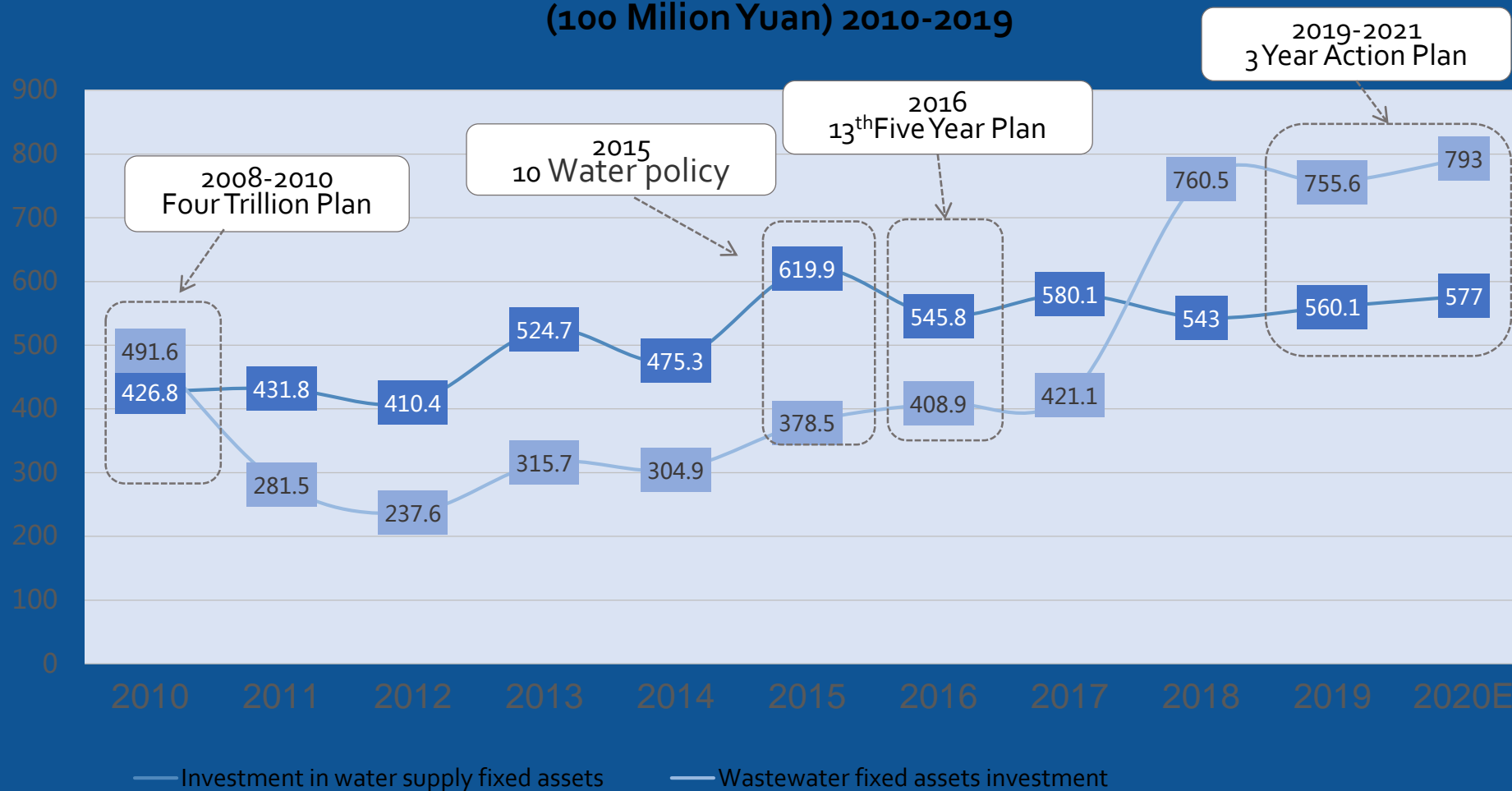
Source: Ministry of Housing And Urban-Rural Development

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development

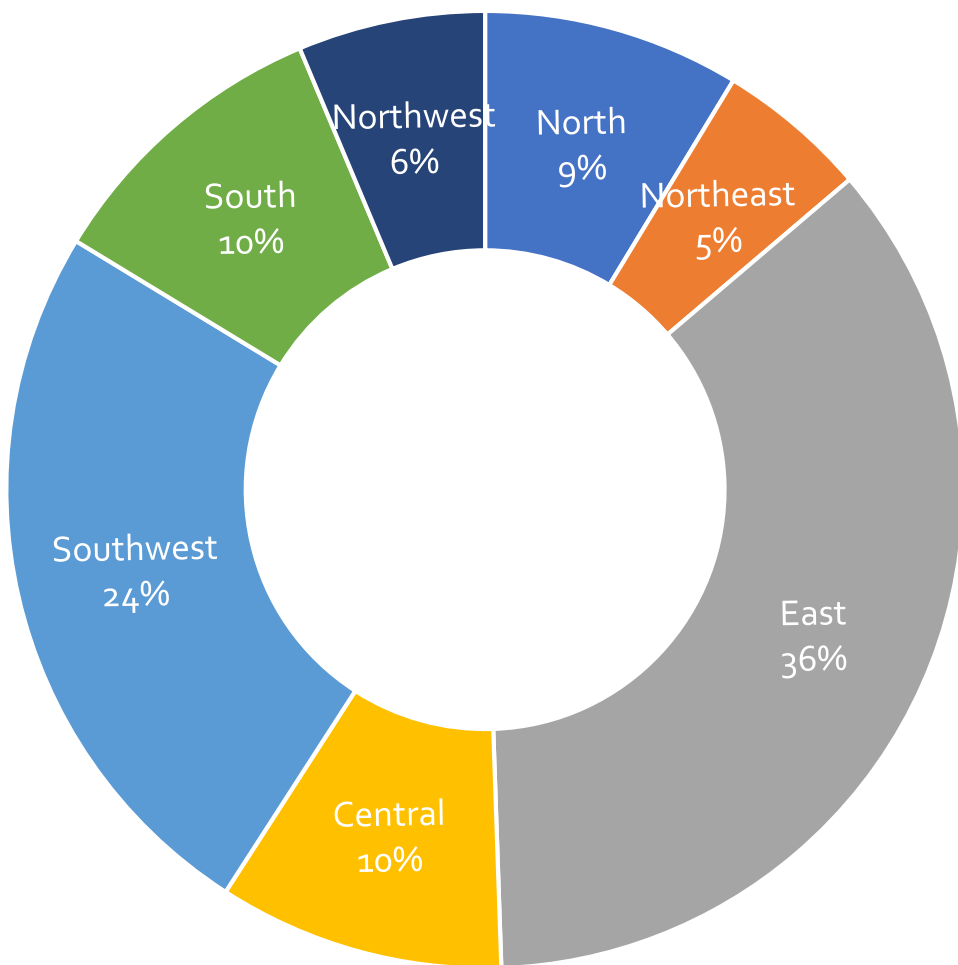
Investment of fixed assets of China's water industry (100 Milion Yuan) 2010-2019



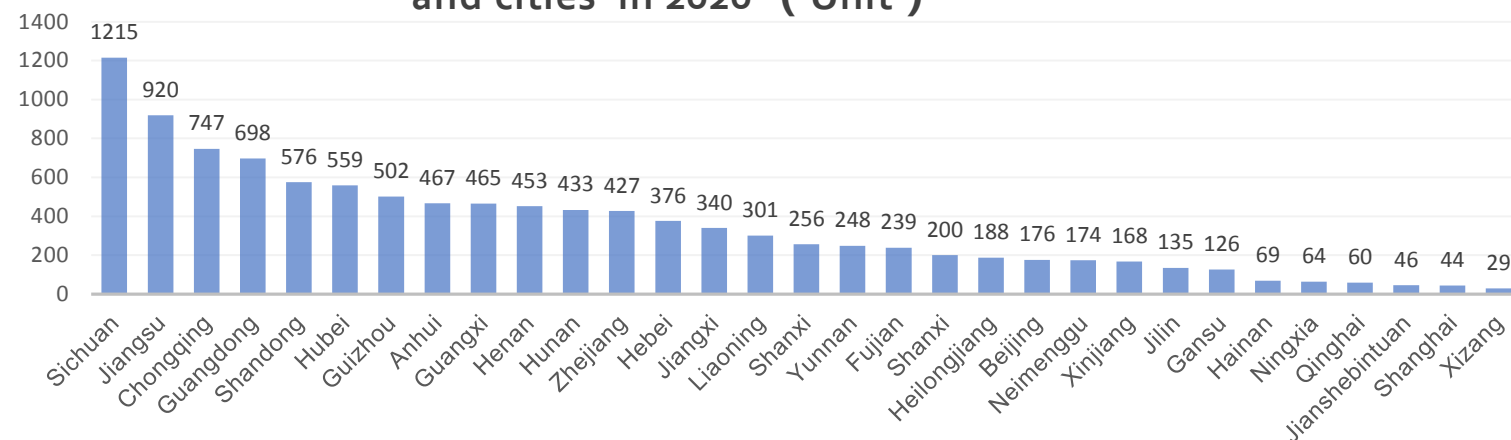
Source; China Urban and Rural Statistical Yearbook



Distribution of WWTP in China
(Unit, %)



Ranking of WWTP in China by provinces
and cities in 2020 (Unit)



Total power consumption of wastewater treatment plants in 6 regions of China (10⁶kWh)

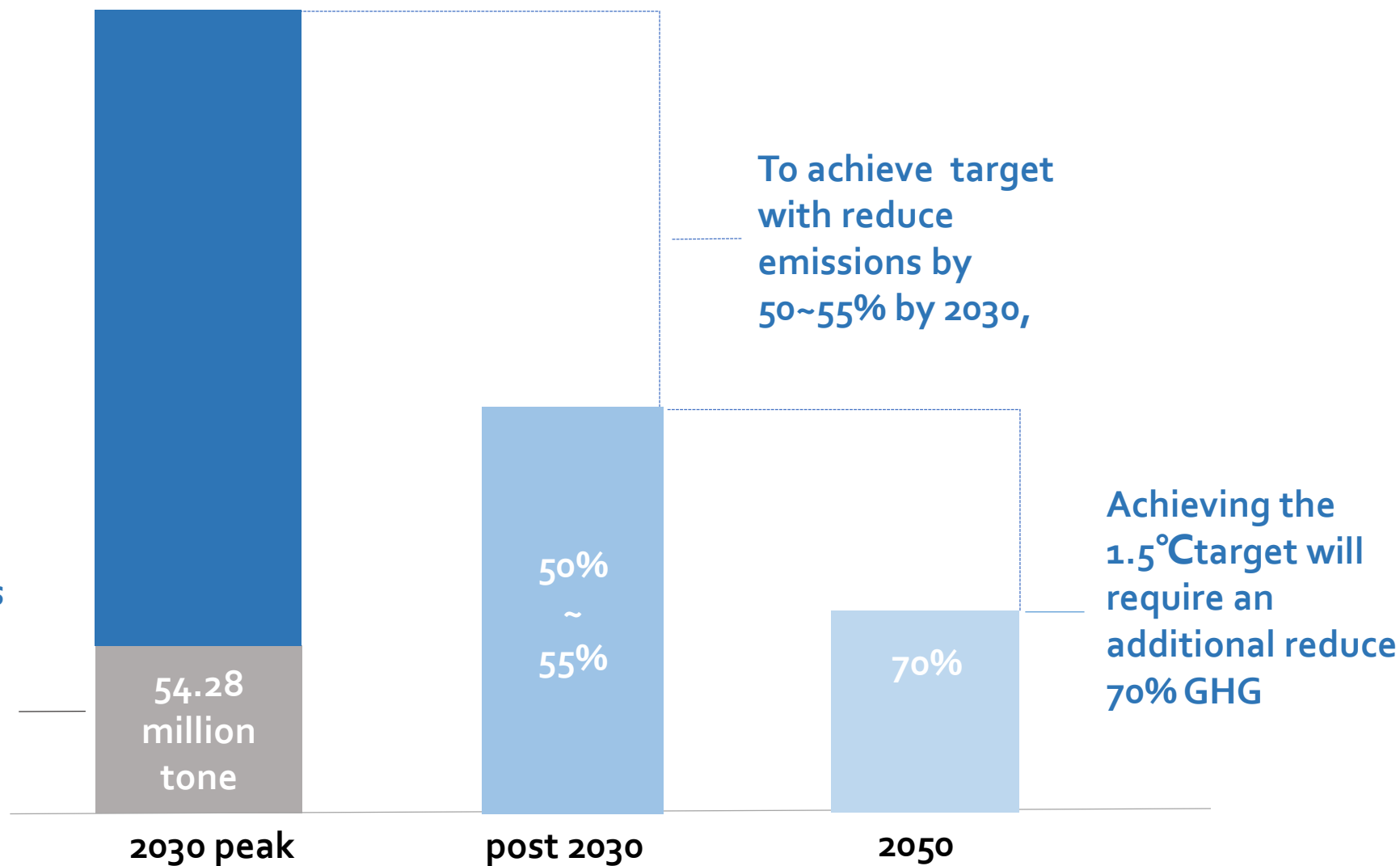
6 Region of China	2010	2011	2012	2013	2014	2015	2016	2017	2018
The Central of China	2.17	2.54	2.70	2.85	3.20	3.54	3.93	4.32	4.76
The East of China	0.51	0.65	0.73	0.79	1.00	1.06	1.17	1.34	1.57
The North of China	2.45	2.77	2.94	3.24	3.74	3.67	3.99	4.33	4.7
The Northeast of China	1.62	1.82	1.98	2.15	2.38	2.61	2.86	3.20	3.59
The Northwest of China	0.37	0.44	0.50	0.58	0.68	0.82	0.94	1.09	1.26
The South of China	1.23	1.68	1.90	1.96	2.12	2.30	2.44	2.75	3.09

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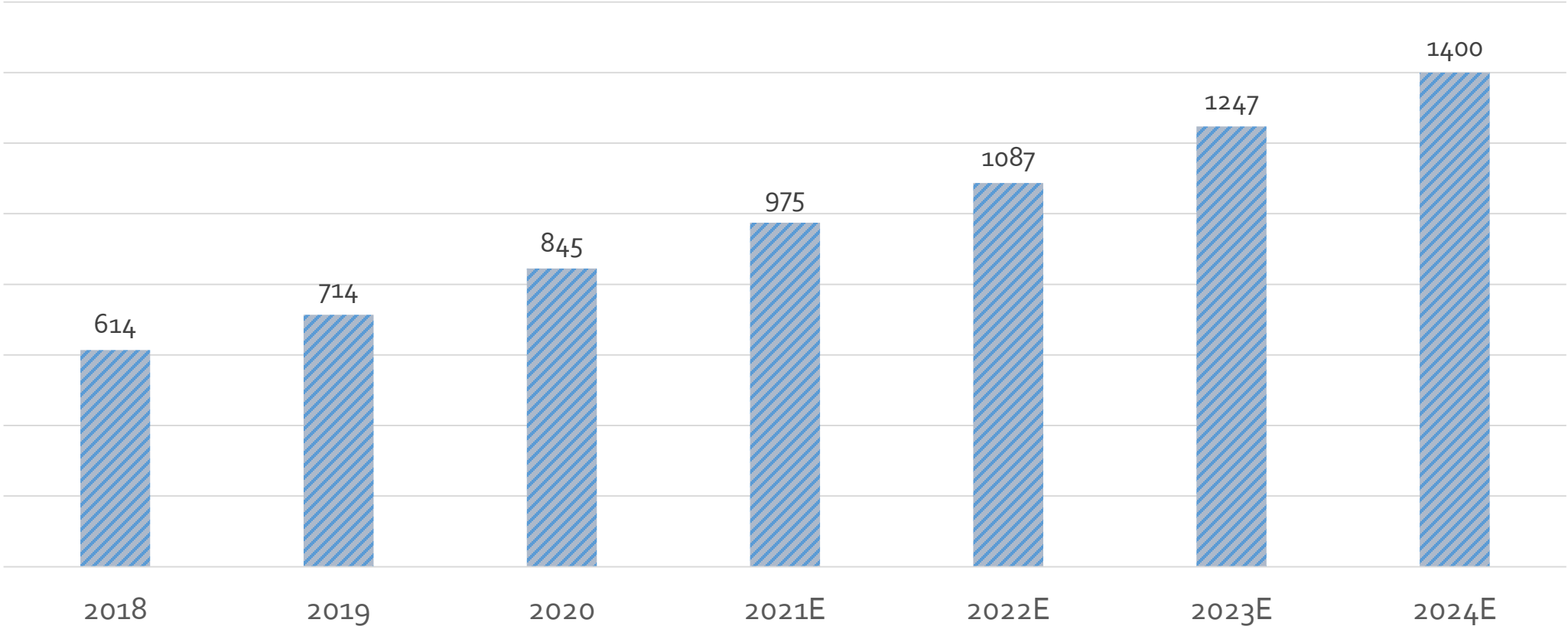
Wastewater Carbon neutrality 2060 target

The carbon emission of China's WW treatment industry in 2019 was 54.28 million tonCO₂e.



Green recovery post COVID-19 period in China

Statistical Situation and Forecast of Rural Wastewater treatment investment from 2018 to 2024 (100 million Yuan)

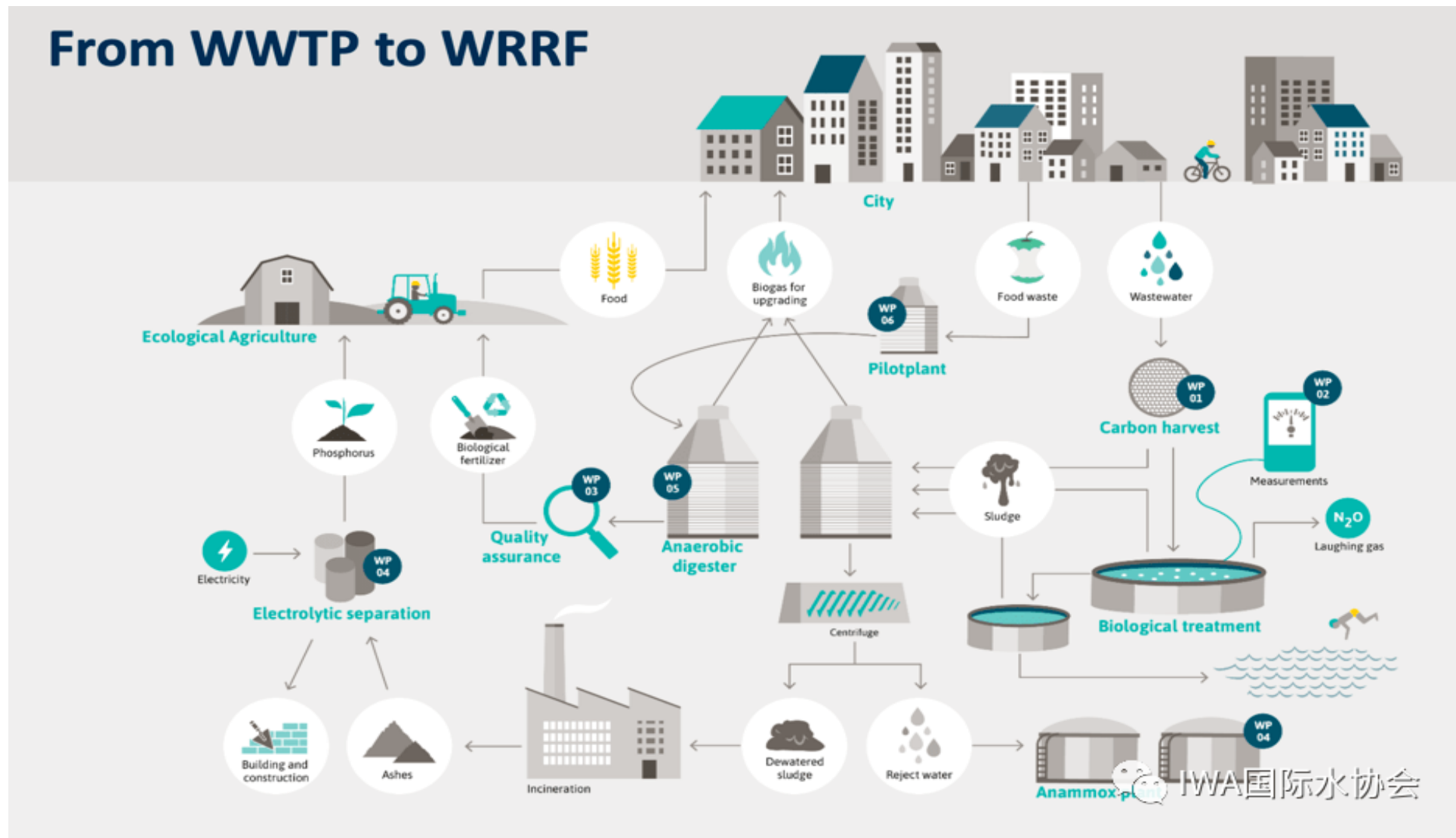


Source: Ministry of Housing And Urban-Rural Development

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From WWTP to WRRF



Source: IWA

Thank you!



Contact **NORDiQ**
Ma

Ms. Jingjing



MATIAS ZUBIMENDI

IP BUSINESS ADVISOR, CHINA IP SME HELPDESK

Mr. Matias Zubimendi is the IP Business Advisor at China IPR SME Helpdesk, where he advises European SMEs on intellectual property rights matters. Mr. Zubimendi holds a Master's degree in Chinese Civil and Commercial Law from Peking University as well as a Master's degree in Intellectual Property Law from Austral University in cooperation with the World Intellectual Property Organisation. Mr. Zubimendi has a strong background in both business development and intellectual property rights protection, having previously worked as a China Business and Legal Consultant at Terragene, where he focused on business development and as a Director of Legal Affairs at Conquer Europe. Previously, he has also worked as a Patent and Trademark Attorney at Phoebus Abogados and Mazzeo & Canet, where he represented SMEs as well as Fortune 500 companies.



IPR Protection for Circular Economy

Matias Zubimendi 3 June 2021



China IP SME Helpdesk

ABOUT US

Helpdesk Free Services

Enquiry Helpline



question@china-iprhelpdesk.eu

Training Workshops



Webinars



Website & Blog



<https://eu.europa.eu/ip-helpdesk>

Guides & Factsheets



01

How to choose the best IP strategy to protect your inventions?



1.1

Invention patents

- Products
- Process

1.3

Design patents

- Only ornamental aspects

1.2

Utility models

- Products
- Process

1.4

Trade secrets

- No registration needed
- Protection techniques



Case study

– Patent or trade secret protection?

- Italian water filter company
- New product



Factors analyzed

- Reverse engineering (impossible to dismantle parts)
- Costs of registration
- Costs of enforcement
- Protection during registration vs technology life-cycle



Lessons learnt

- ✓ If reverse engineering is not possible, it is safe to protect your product with trade secrets
- ✓ Patent litigation is very expensive and takes several years
- ✓ Fixed protection term can eliminate patents as an effective way of IP protection if technology has long life-cycle

03

Don't forget your brand!



REGISTRATION

3.1

Importance of trade mark registration

- Trade mark squatting

3.2

What to register?

- Company name
- Product name
- Other signs

3.3

How to start the registration?

- CNIPA
- Madrid system

3.4

Trade mark translation

- Phonetical
- Conceptual

Stay connected!



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CHINA
IP SME HELPDESK

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**European
Commission**

DI (DONALD) NING

CHINA TECHNICAL LEAD, ARVIA TECHNOLOGY LTD

Di Ning (Donald) is the China Technical Lead of Arvia Technology Ltd. (UK), managing Arvia's process plant design, build and installation operations in China. With years of research and industrial experience in environmental engineering, project management, corporate operation, business development in both U.S. and China, Donald has been leading the technology and business development of Arvia in China since Year 2019.



Case Sharing

Arvia Technology & Circular Economy in China Water Treatment Sector

**Water Technology and Market
Access Seminars**

Aquatech Shanghai - 3 June 2021 - 14:00-17:00

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Arvia Introduction
公司介绍



Technical Introduction
技术介绍



Circular Economy
循环经济



Case References
参考案例





公司介绍

Company introduction

公司介绍

Company introduction

Arvia Technology Ltd.

- Advanced tertiary water and wastewater treatment provider
- 先进的三级水和污水处理技术供应商
- Based in the North West of the UK
- 总部位于英国西北部
- Team of expert water engineers and scientists, all specialists in tertiary water treatment
- 团队现有专业的三级水处理技术工程师和专家
- Projects deployed globally in a variety of water treatment applications
- 项目遍布全球，可应用于多种水处理领域

Water Reclamation
and Reuse



水回收再利用

Wastewater
Treatment



污水处理

Drinking Water
Treatment



饮用水处理

Point of Entry
Treatment



预处理

Advance Treatment
Capabilities



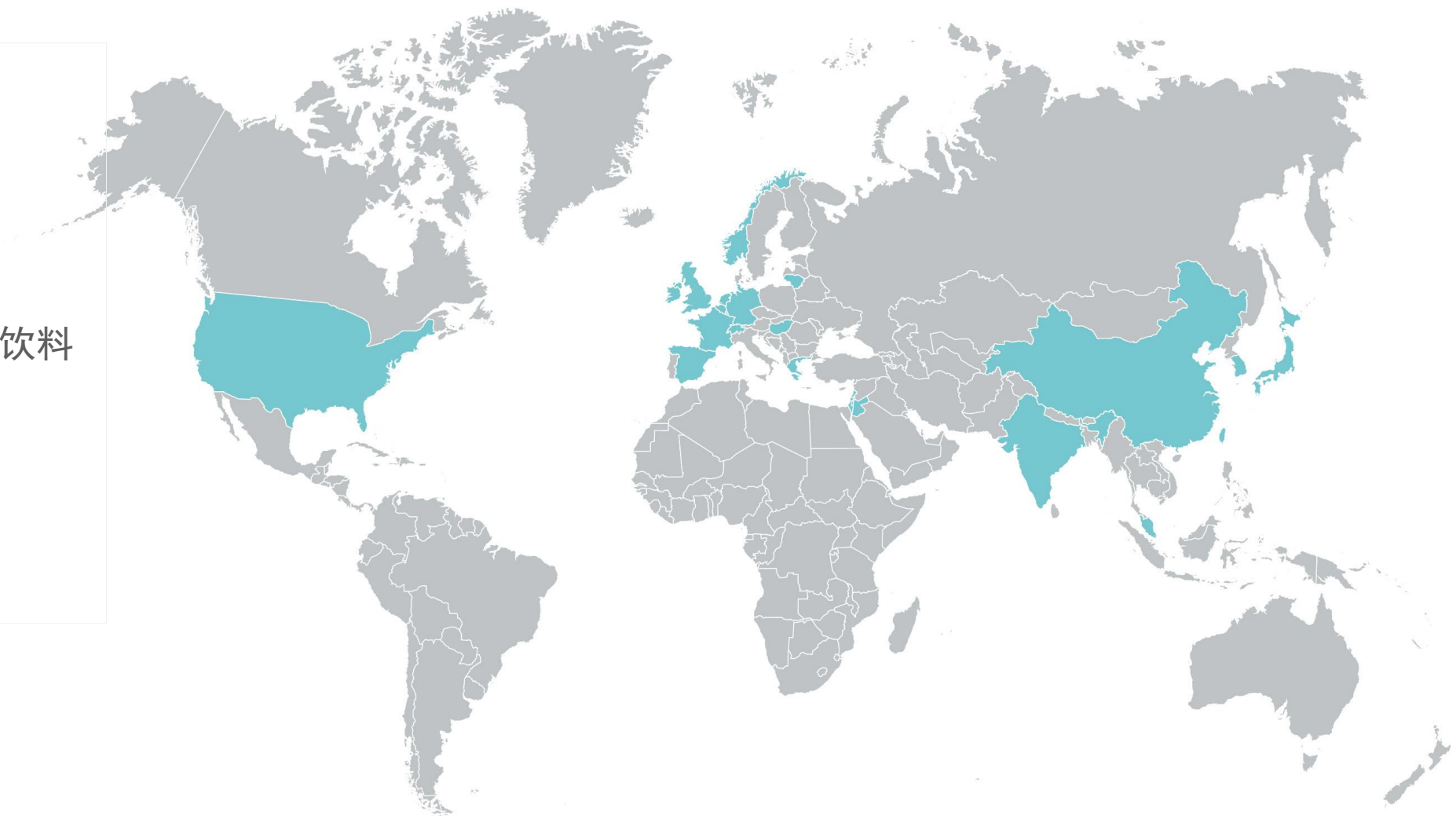
深度处理

公司介绍

Company introduction

Sectors领域

- Pharmaceutical 制药
- Chemical 药剂
- Utilities 公用事业
- Food and Beverage 食品饮料
- Petrochem 石化
- Oil and Gas 油气
- Textiles 纺织业
- Pulp and Paper 造纸

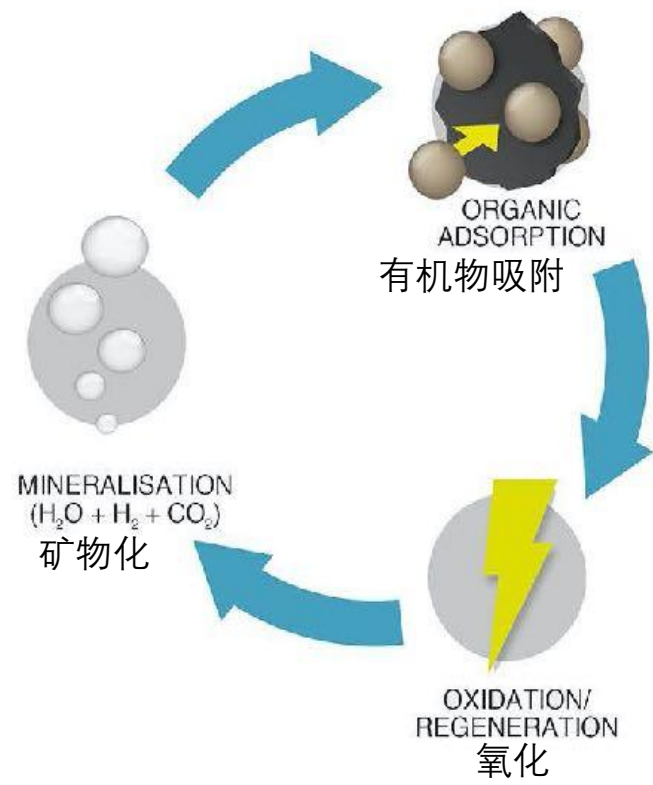
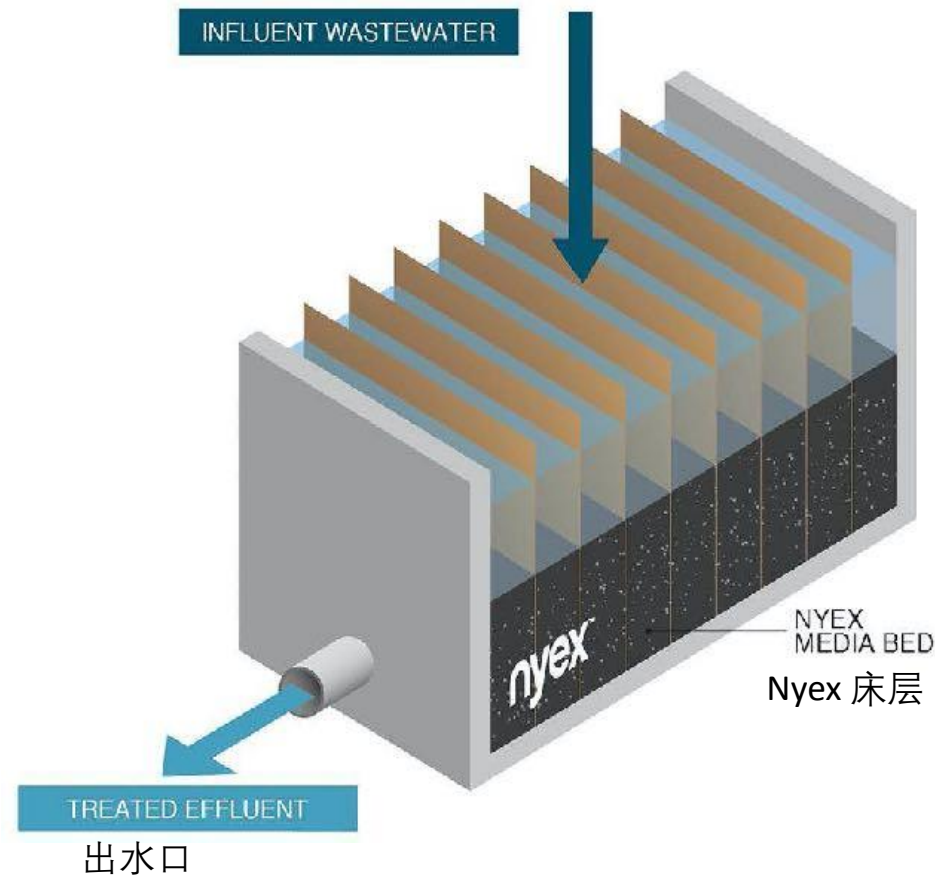




Nyex 技术介绍





Technical Introduction

Nyex-a Treatment Process
Nyex-a 处理工艺







Nyex 应用领域 Nyex Application Areas










Applications 适用废水类型

-  Low biodegradability
-  High in salt/chlorine
-  High Color
-  High Toxicity

Solving Problems 解决问题

-  Recalcitrant COD
-  Ammonia-N, TN
-  Micropollutants
-  Color

Industries 涵盖行业

-  Industrial Parks
-  Petro & Coal Chemical
-  Dye
-  Pesticide, Pharma
-  Coking
-  Pulp and paper
-  Landfill Leachate
-  Surface water
-  Municipal/drinking

Honors 荣誉奖项

2016年**美国水环境联合会**创新技术奖；
Water Environment Federation – Innovative Technology Award, 2016
2016年WEX创新论坛奖；
WEX Innovation Forum Award, 2016
2016年WssTP水创新中小企业奖
WssTP Water Innovation SME Award, 2016
2018年入围**阿克苏诺贝尔**想象化学奖
2018 finalists in the AkzoNobel Imagine Chemistry Award
2020全球工业互联网双创大赛优胜奖
Global Industrial Internet Entrepreneurship competition Award 2020

Nyex 应用领域

Nyex Application Areas

- **Recalcitrant COD** 顽固COD

Reduction from 1000's mg/L to below 30 mg/L for reuse or discharge

使COD从1000mg/L或以上降低至30mg/L以下，处理后的废水可以回用或达标排放

- **Micropollutants/CECs** 微污染物

Removal, including pesticides and hazardous chemicals

去除包括杀虫剂和有害化学物质在内的微污染物

- **Colour** 颜色

Removal from raw water and process water, including dyes, tea/coffee wash and natural organic material (NOM/CDOM)

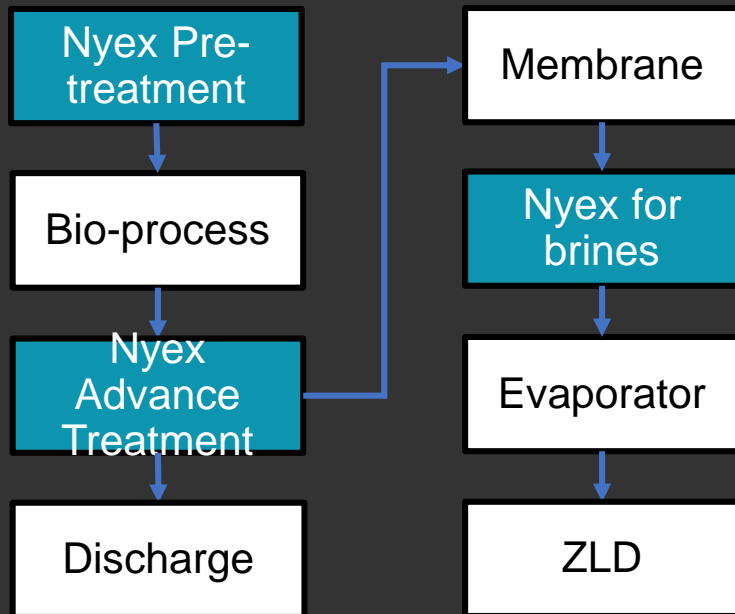
含有染料、茶/咖啡和天然有机材料（NOM/CDOM）的原水和生产用水的除色

Nyex 技术应用场景

Nyex Applications

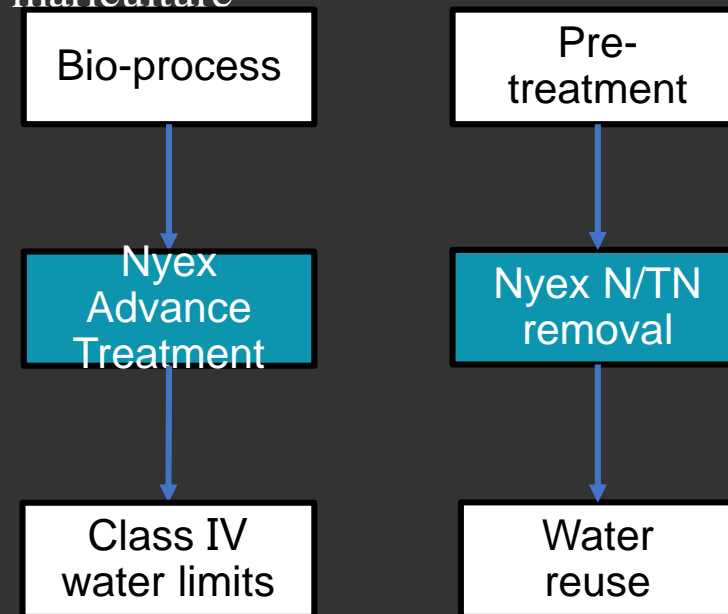
Industrial 工业

Discharge, Reuse, ZLD



Municipal 市政

WWTP Upgrade, Surfacewater, Seawater mariculture



Nyex技术对比优势

Nyex Technological comparative advantage

Nyex advantages:

- Environmentally friendly: only electricity, no chemical added, no sludge, no secondary pollution;
- Low maintenance cost: no material consumption, no need for ectopic disposal or regeneration
- Low operating cost: high degradation speed, low power consumption, no cost of chemical agents, no cost of sludge disposal
- Safe and simple operation: operating under normal temperature and pressure, modular design, easy installation, automatic design, easy operation and maintenance

	常规三级处理技术局限性
芬顿（类芬顿） Fentons	需要加药，并且产生有害污泥，污泥处置费用高，对环境影响大且有安全问题 Requires chemical dosing & produces toxic sludge & high disposal cost & high environmental costs & safety issues
铁碳微电解 Fe/H ₂ O ₂ &Electric	需要投加药剂以及补充铁屑，容易板结，对环境影响大且有安全问题 Requires chemical dosing & supplement iron filings & easy to harden & environmental costs & safety issues
臭氧（催化） 氧化 (Catalytic) Ozonation	臭氧在水中溶解度有极限导致降解能力有限，能耗高，附加设备多，运维复杂，填料更换成本高 High residence time & energy consumption
活性炭吸附 GAC Adsorption	需要再生，定期更换，运行成本高，容易导致二次污染 GAC need regeneration & regular replacement & high operating costs, easy leading a secondary pollution

The background of the slide features a dynamic water splash on the left side, with blue and white droplets and bubbles. The right side of the slide is a solid yellow rectangle. The text is centered on the yellow background.

中国水处理领域中的
循环经济

Circular Economy
in China Water
Treatment Sector

Circular Economy in Wastewater Treatment



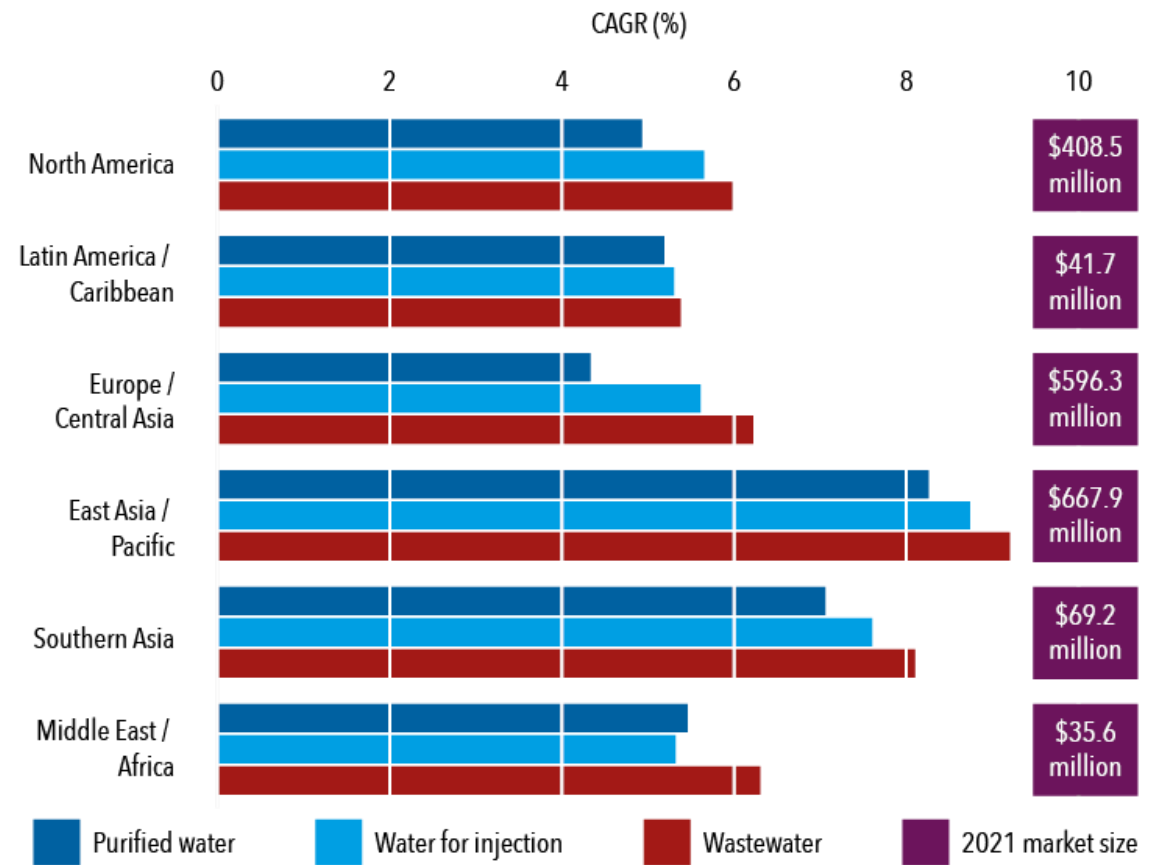
- ❖ In 2016, Nalco/Ecolab's strategic alliance with Microsoft
- ❖ Since 2017, growing similarity in waster sectors in China, US and Europe - creating value from waste streams.
- ❖ Technical development and patents for water recycling systems with focuses, such as on removing ammonia nitrogen and nitrogen-containing organic compounds.

Cost- and time-saving technologies

The water-intensive pharmaceutical manufacturing sector is responding rapidly to the challenges of the COVID-19 pandemic.

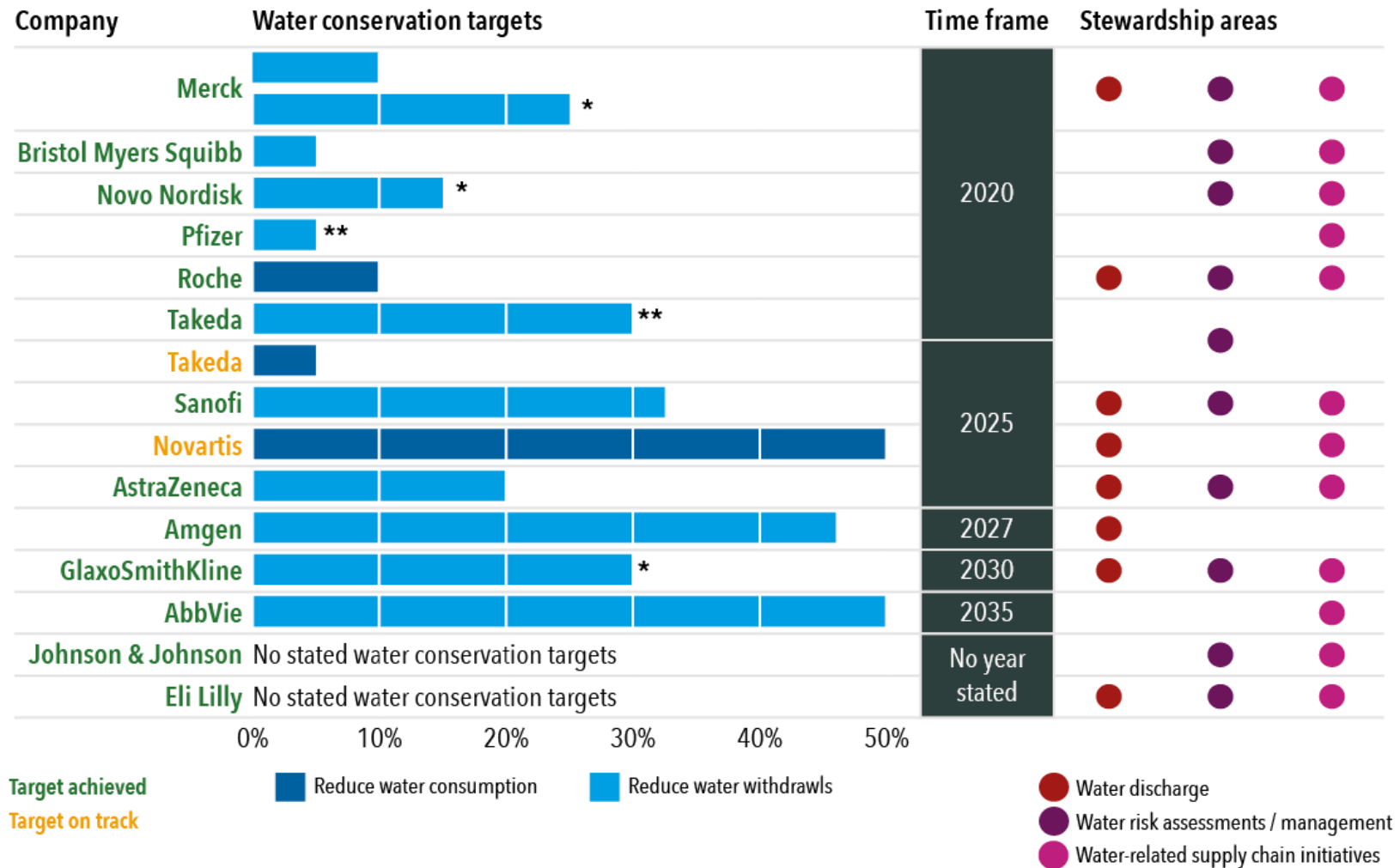
Meanwhile, cost- and time-saving technologies are gaining acceptance and issues around pollution and sustainability are coming into sharper focus.

- Data from GWI March



NB: Compound annual growth rates (CAGRs) are for the 2021-2026 period.

Attention and Investment in pharmaceuticals industry



* At high-risk or water-stressed sites

** Excluding non-contact cooling water

New directions for the circular economy

The recovery of nutrients, energy or bioplastics hogs the limelight for water's contribution to the circular economy, but patent applications this month cover adsorbents and chemicals derived from waste that could go some way toward helping battle water pollution.

Patent title	Description	Organisation	Patent office
Methods, Systems And Apparatus For Treating Fluids Using Thermal Gradient Osmosis	Water desalination through formation of a thermal gradient across the semi-permeable membrane	Battelle Energy Alliance	USPTO
A method and system for predicting urban drainage	Modelling system to predict quantities of sewage generated in a city	Beijing Institute of Air Computing and Communications	CNIPA
Device For Controlling Thermal Hydrolysis Decompression And Process Plant Comprising Such Device	Controlling steam explosion of biomass in a pressure relief vessel thereby causing cell destruction and larger bioavailability of the biomass	Cambi	WIPO
Adsorbent For Municipal Wastewater Treatment	A particulate carbon adsorbent obtained from pyrolysis of the organic fraction of waste screenings	Carbogenics	WIPO
Selective Removal Of Scale-Forming Ions For Water Softening	Use of porous carbon aerogel materials as CDI electrodes to remove scale-forming ions such as magnesium and calcium	Lawrence Livermore National Security	USPTO
Functionalisation Of Electrodes With Electricigenic Microorganisms	Creating bioelectrodes with electricigenic microbes tailored to efficiently oxidise substrates, such as the fermentative inhibitors, in wastewater	Michigan State University	USPTO



Arvia 典型案例

Arvia Typical Cases

案例:工业园区综合废水

Case Study: Industrial Park Wastewater

The wastewater discharged in the park is mainly composed of chemical wastewater, municipal sewage and etc. The industrial wastewater has the characteristics of high concentration of organic matter, complex composition, poor biochemical property, difficult for degradation, high toxicity and unstable pH value, which makes it difficult to treat.

园区内排出的废水主要是由化工类废水、市政生活污水等组成。而其中的工业废水具有有机物浓度高、成分复杂、生化性差、难降解、毒性高、pH值不稳定等特点导致难以处理。

Nyex工艺优势

深度氧化生化尾水，可使COD水平低于各类排放标准
作为预处理提前氧化后提高B/C比，然后进入生化系统

序号	废水类型	进水 COD(mg/L)	出水 COD(mg/L)	能耗 (kWh/m ³)
1	扬州某农药园区污水	105	20	1.4
2	河北某制革园区污水	304	<50	1.3
3	常州某化工综合园区污水	107	42	3.01
4	江西某染料园区污水	252	50	7.1



案例:石油化工、煤化工行业废水

Case Study: Petrochemical & Coal Chemical Wastewater

Coal chemical wastewater mainly comes from washing, condensing and fractionating sections. It is characterized by high concentration of pollutants, high phenols, oil and ammonia-N, many of which are biochemical toxic and inhibitory substances, and it is difficult to achieve complete degradation of organic pollutants in biochemical treatment.

煤化工废水主要来源于洗涤、冷凝和分馏工段。其特点是污染物浓度高，酚类、油及氨氮浓度高，生化有毒及抑制性物质多，生化处理中难以实现有机污染物的完全降解，是一种典型的高浓度、高污染、有毒、难降解的有机工业废水。

Nyex工艺优势

深度氧化生化尾水，可使COD水平低于各类排放标准
作为预处理提前氧化后提高B/C比，然后进入生化系统
零排放工艺中处理RO浓液保护膜和后端的蒸发器

序号	废水类型	进水 COD(mg/L)	出水 COD(mg/L)	能耗 (kWh/m ³)
1	某煤制气企业反渗透浓水	90	<40	1.8
2	某石化企业循环水排污水反渗透浓水	150	135	1.5
3	某石化企业反渗透浓水	250	<60	4



案例:焦化行业废水

Case Study: Coking Wastewater

焦化废水主要来自焦炉煤气冷却、洗涤、粗苯加工及焦油加工过程中的生产用水以及蒸汽冷凝废水，含有酚、氰、油、氨及大量有机物，是一种典型的有毒难降解的有机工业废水。

Nyex工艺优势

作为预处理提前氧化后提高B/C比，然后进入生化系统深度氧化生化尾水，可使COD水平低于各类排放标准用于RO浓液的处理，提高水回收率，保障膜系统运行

序号	废水类型	进水 COD(mg/L)	出水 COD(mg/L)	能耗 (kWh/m³)
1	某焦化企业生化前预处理	378	55	2.75
2	某焦化企业生化前预处理	409	<80	6.5
3	某焦化企业生化前预处理	650	<100	12
4	某焦化企业生化尾水	96	<10	4.0
5	某焦化企业反渗透浓水	275	<40	8.8



案例:农药行业废水

Case Study: Pesticides Wastewater

Due to the wide variety of pesticides and the complex water quality of pesticide wastewater, its main characteristics include: high pollutant concentration, COD concentration up to thousands or tens of thousands; Toxic, in addition to pesticides and intermediate in vitro, the waste water also contains phenol, arsenic, mercury and other harmful substances as well as many substances that are difficult to biodegrade; Water quality and quantity are unstable.

因农药品种繁多，农药废水水质复杂，其主要特点有：污染物浓度高，COD浓度可达几千或上万；毒性大，废水中除含有农药和中间体外，还含有酚、砷、汞等有害物质以及许多难以生物降解的物质；水质、水量不稳定。

Nyex工艺优势

深度氧化生化尾水，可使COD水平低于各类排放标准
各工艺段高浓度废水快速氧化提高B/C比，然后混合处理

序号	废水类型	进水 COD(mg/L)	出水 COD(mg/L)	能耗 (kWh/m³)
1	某农药企业除虫剂废水	3000	<1000	6
2	某农药企业生化尾水	350	<50	2.53
3	某农药企业生化尾水	255	<100 <50	0.9 1.7



案例:医药行业废水

Case Study: Pharmaceutical Wastewater

化工制药废水包括生产中的各类洗涤废水，提取废水，副产废水，溶剂废水等等，由于化工企业涉及的药物种类繁多，废水成分复杂，含盐量高，含有有毒物质，可生化性能差，导致难以处理。

Nyex工艺优势

深度氧化生化尾水，可使COD水平低于各类排放标准
各工艺段高浓度废水快速氧化提高B/C比，然后混合处理

序号	废水类型	进水 COD(mg/L)	出水 COD(mg/L)		能耗 (kWh/m³)	
1	某医药企业BAF出水	148	<50	<20	3.42	10.6
2	某医药企业反渗透浓水	130	<40		3.8	



案例:染料行业废水

Case Study: Dying Wastewater

染料生产废水含有酸、碱、盐、卤素、烃、硝基物、胺类和染料及其中间体等物质；有的还含有剧毒的联苯胺、吡啶、氰、酚，以及重金属汞、镉、铬等。这种废水组分复杂，具有生物毒性，难于处理。

Nyex工艺优势

深度氧化生化尾水，可使COD水平低于各类排放标准
各工艺段高浓度废水快速氧化提高B/C比，然后混合处理

序号	废水类型	进水 COD(mg/L)	出水 COD(mg/L)	能耗 (kWh/m³)
1	某染料企业生化尾水	200	25	1.6
2	某染料企业生化尾水	252	<80 <50	2.51 8.1



案例:造纸行业废水

Case Study: Dye and Paper Wastewater

造纸废水根据制浆方法、原料、制浆得率等工艺区别，其污染物成分差别很大，但基本上都含有大量的悬浮物、有机污染物及有毒物质，成分复杂，可生化性差，属于较难处理的工业废水

Nyex工艺优势

深度氧化生化尾水，可使COD水平低于各类排放标准
用于RO浓液的处理，提高水回收率，保障膜系统运行

序号	废水类型	进水 COD(mg/L)	出水 COD(mg/L)	能耗 (kWh/m³)
1	某造纸生化出水	65	<30	1.6
2	某造纸生化出水	110	<50	2.6
3	某造纸厂反渗透浓水	150	<40	1.26
4	某造纸厂反渗透浓水	210	<50	5.58
5	某造纸厂反渗透浓水	240	<50	5.81



案例:垃圾渗滤液

Case Study: Landfill Leachate

The leachate contained low molecular weight fatty acids, humus and sallow - flavacin organic compounds. Water quality fluctuates greatly, with high concentrations of COD, ammonia nitrogen and heavy metals, deep chroma and odorous odor. It belongs to the type of wastewater that is very difficult to treat.

渗滤液中含有低分子量的脂肪酸类、腐殖质类及灰黄霉酸类有机物。水质波动大，COD、氨氮、重金属浓度高，有较深的色度且散发恶臭，属于非常难以处理的废水类型。

Nyex工艺优势

- 处理NF清液，解决废水最终端的排水COD微超标问题
- 处理NF浓缩液，保护后续膜系统及蒸发器的运行
- 处理MBR出水，采用高级氧化+脱氮工艺取代NF+RO

序号	废水类型	进水 COD(mg/L)	出水 COD(mg/L)	能耗 (kWh/m³)
1	某垃圾渗滤液NF出水	190	<50	5.76
2	某垃圾渗滤液NF出水	135	<50	5.43
3	某垃圾渗滤液NF出水	560	<100 <50	8.45 9.37
4	某垃圾渗滤液MBR出水	740	<200 <50	11.5 15.6



案例:河道水及海水

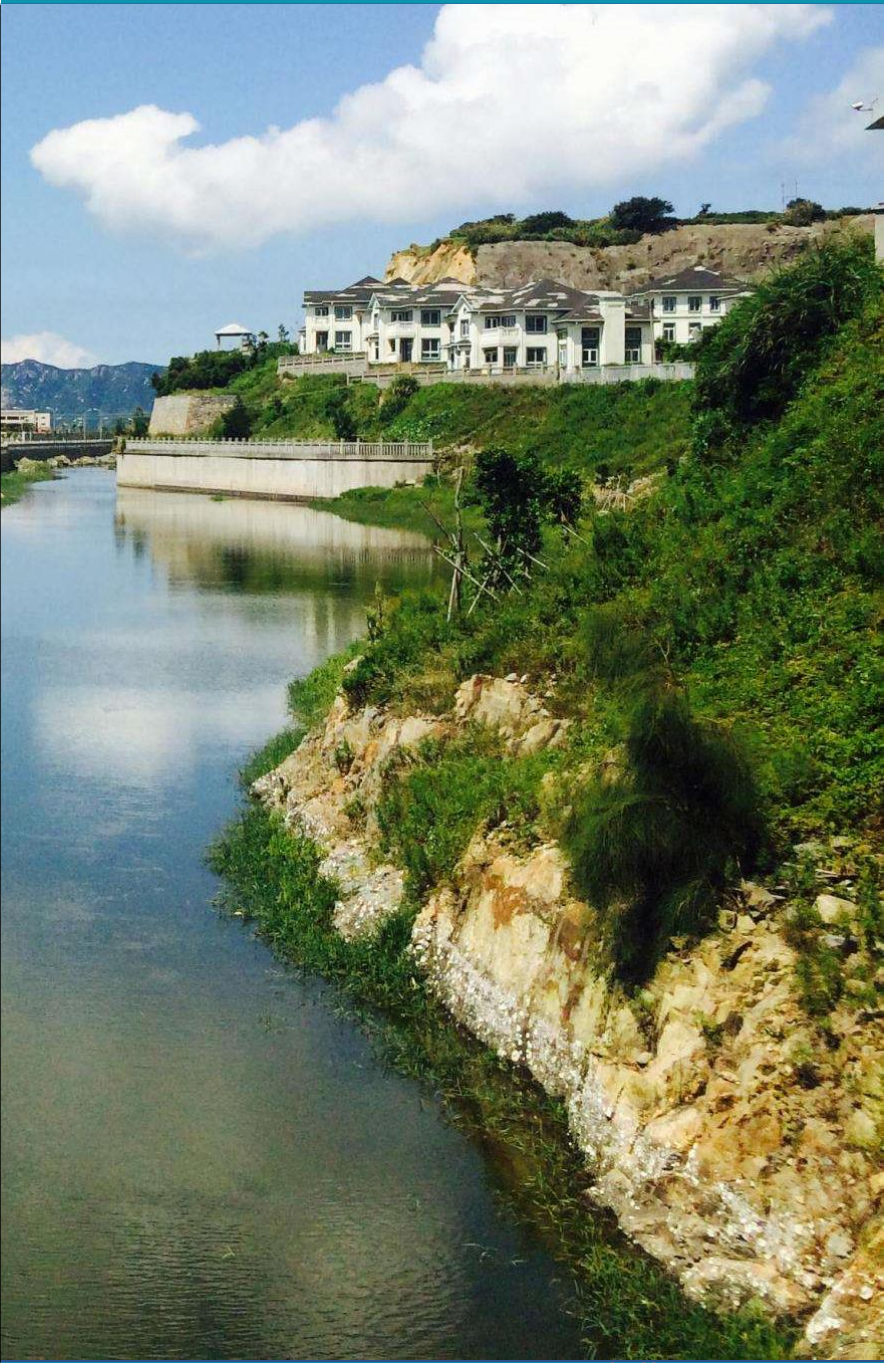
Case Study: Ground Water & Sea Water

自然水体中发现的难以处理的微污染物包括多种抗生素、医药残留物等可能会威胁人体健康。同时生化难以降解的微污染物产生的COD及氨氮无法达到IV类水体要求。

Nyex工艺优势

去除水中微污染物，降至纳克水平，达到欧盟饮用水标准

序号	项目	客户需求	备注
1	德国某地区河流	去除微污染物	磺胺甲异唑、卡巴咪嗪、坎地沙坦、双氯芬酸、美托洛尔
2	欧洲某地区河流	去除微污染物	苯并芘、卡巴咪嗪、布洛芬、环丙沙星、三丁基锡
3	欧洲某海域	去除微污染物	林可霉素、安替比林、洛沙坦、利多卡因、美托洛尔
4	江苏某河道水体	IV类水体达标	进水COD30mg/L，氨氮3mg/L 出水COD4mg/L，氨氮0.6mg/L
5	海南某海水养殖厂	氨氮去除	进水氨氮5mg/L，出水氨氮1mg/L



案例:市政饮用水

Case Study: Municipal Drinking Water

饮用水中发现的难以处理的污染物包括病原体、有机物污染物及有害重金属等，可能会影响水的味道、气味、颜色和浑浊度，威胁人体健康。

Nyex工艺优势

去除细菌及病毒，用于杀菌消毒，达到欧盟饮用水标准

序号	项目	客户需求	备注
1	英国某市政饮用水厂	杀菌消毒	运行时间2年
2	德国某市政饮用水厂	杀菌消毒	运行时间1.5年
3	苏格兰某市政饮用水厂	杀菌消毒	运行时间1年

谢谢 Thank You

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arvia
Safer water for future generations

Panel Discussion

Q&A

Conclusions

The challenges facing the Water Sector could to a very large extent be addressed, if already existing solutions were fully utilized.

Although need for technological innovation still exists, the main needs are for systemic innovation reg water management and market functioning.

Q&A

We value your feedback, hope you may take a few minutes to take the webinar feedback form by scan the QR code below.





Contact us



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