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Avoid, reduce, compensate – CO2 compensation as a key lever in today's net zero strategies

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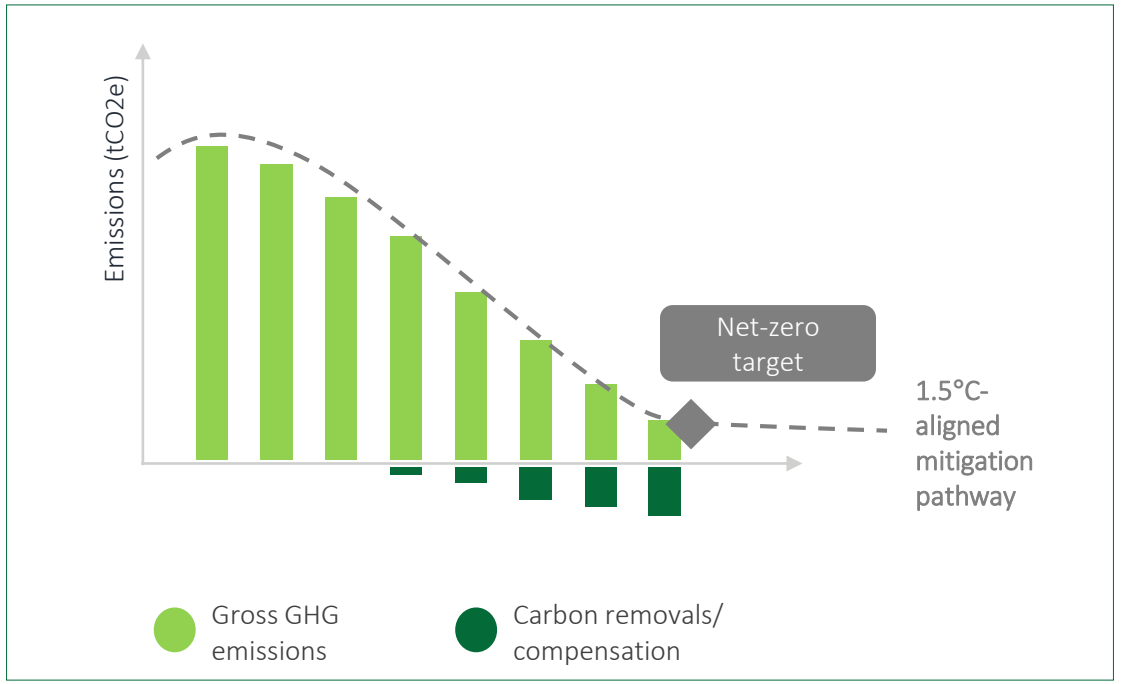
Increasing pressure to act and the capabilities offered by new technologies increase the importance of emissions trading for achieving climate goals and transforming the economy

Need to act

Changing Conditions

- The end of 2020 marks a fundamental change in the global governance of greenhouse gas emissions with the **shift from the Kyoto Protocol to the Paris Agreement**
- Under the Paris Agreement, however, all countries must formulate climate targets or actions in the form of **Nationally Determined Contributions** (NDCs)
- Organizations are taking action to both **reduce their emissions** and to **offset** those that remain via the use of **carbon credits**
- This new context poses important challenges and opportunities for **the role that voluntary offsetting can play in the future**
- **The race to become the central hub of the global voluntary markets** is already in full swing

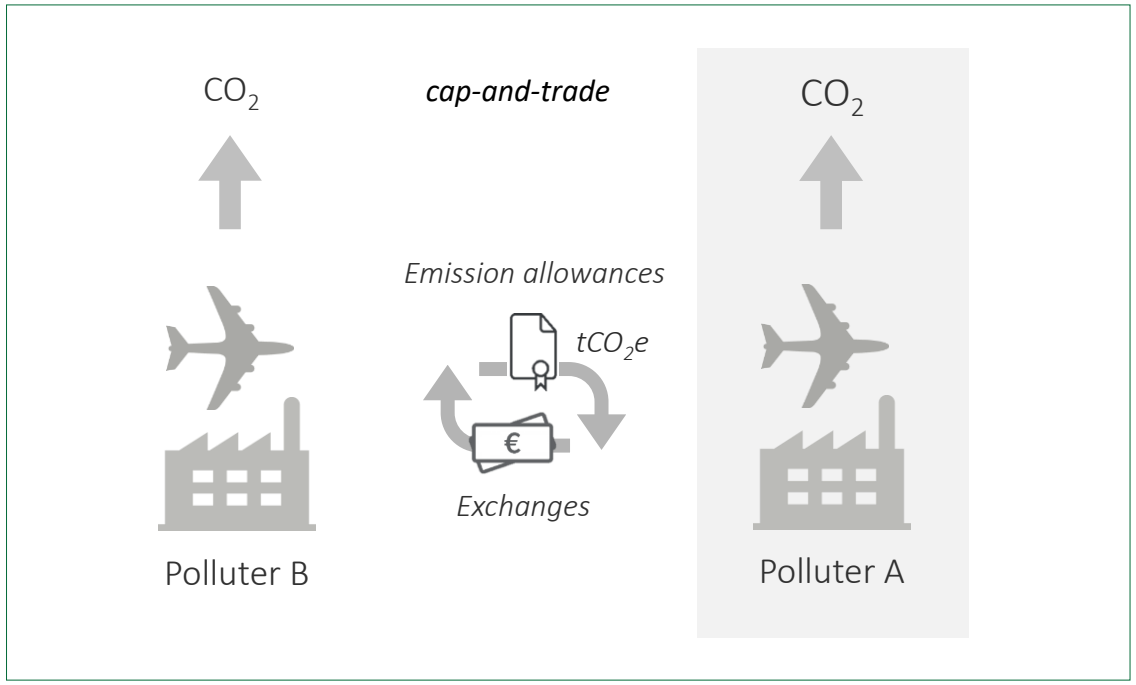
Avoid, reduce, compensate



Emissions trading is the most important financial instrument for reducing greenhouse gas emissions from companies and achieving political climate targets

In the compliance market, emission trading systems are based on the tradable rights to pollute. Carbon allowances are commonly used to achieve mandatory GHG goals or obligations by governments

Compliance Market



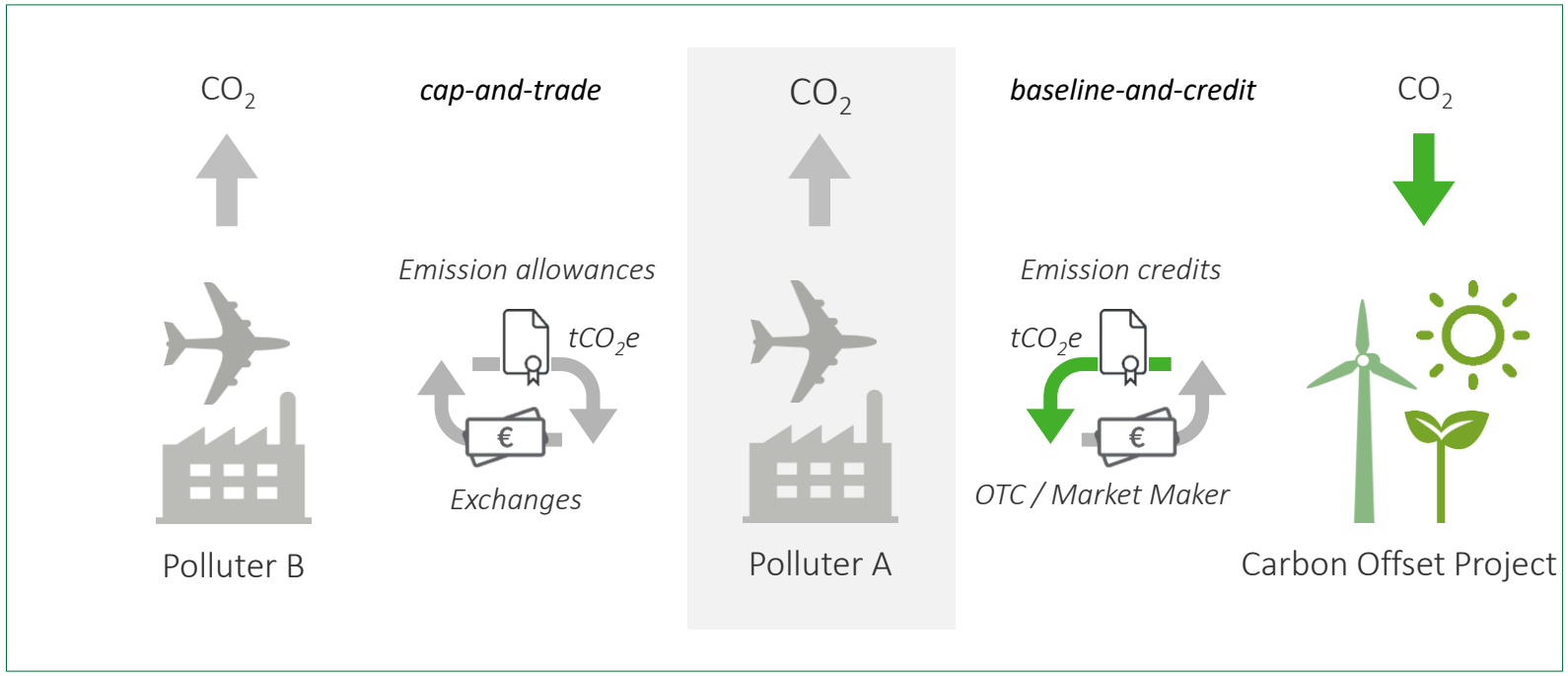
Levers to control GHG emissions

The world's first international emissions trading system is the European Union Emissions Trading System (EU ETS), which was set up in 2005. The European market represents about 90% of the overall global compliance markets value in 2020

Emissions trading is the most important financial instrument for reducing greenhouse gas emissions from companies and achieving political climate targets

In addition to the state-regulated exchange trading of emission allowances, companies can also purchase emission credits from emission-reducing climate protection projects on the voluntary carbon market (VCM) to reduce or offsetting their emissions.

Voluntary Carbon Market



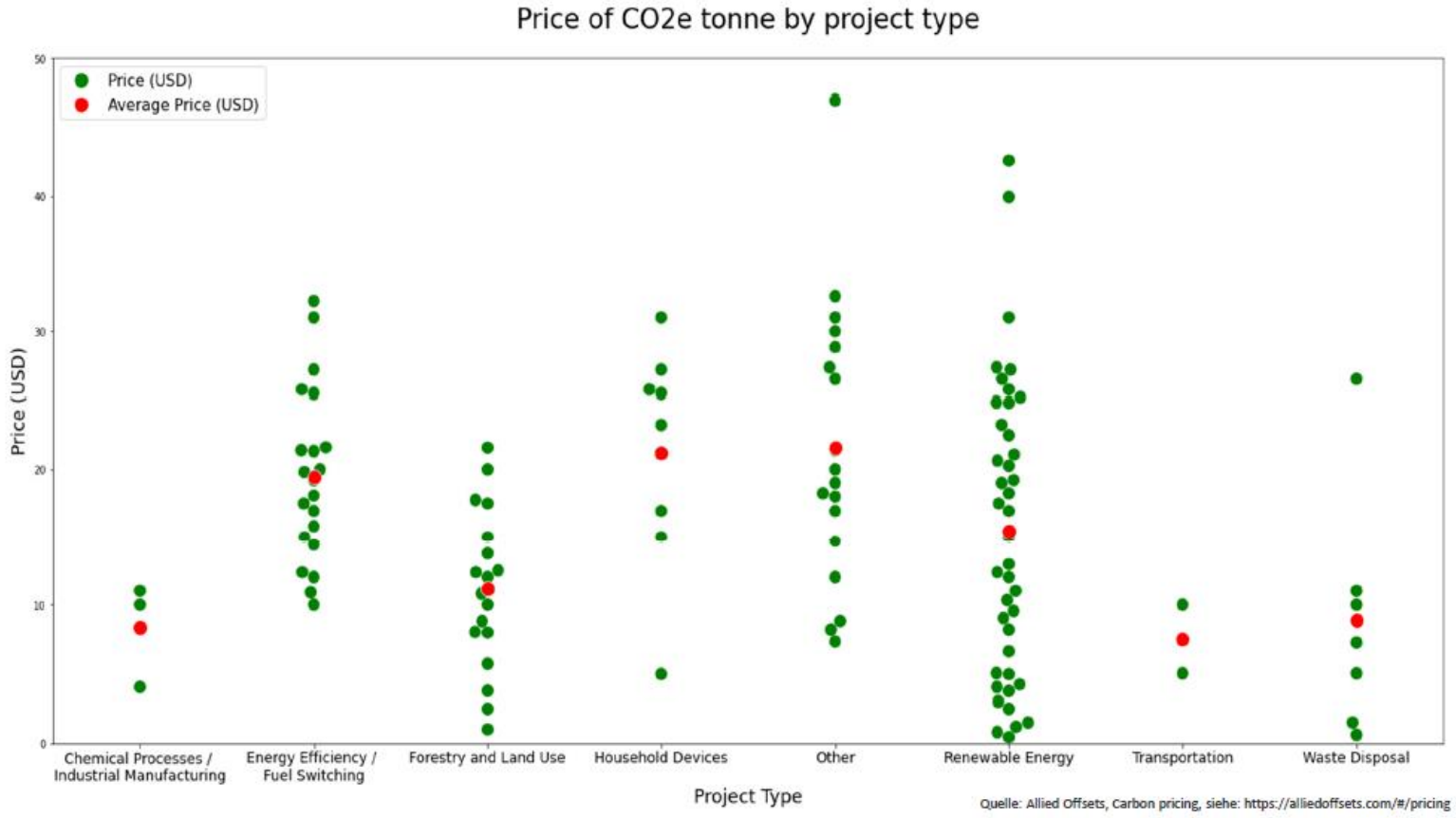
Current challenges

- Quality of the issued certificates
- Lack of standardization and transparency
- Insufficient transparency and structure for price discovery and taxation
- Insufficient carbon accounting methodologies and standards
- Incorrect parameterization of the CO2 share of projects
- Insufficient validation & verification processes
- Fraud and double counting of emission reductions

The new context of the Paris Agreement has important implications for the voluntary carbon market. The future design has to ensure that voluntary carbon credits does not disincentivise governments from increasing their climate mitigation efforts

Fragmentation and insufficient transparency lead to a great variance of prices across different geographical regions, project types, project maturities and even project certification standard

The Taskforce on Scaling Voluntary Carbon Markets (TSVCM) is working to scale an effective and efficient voluntary carbon market to help meet the goals of the Paris Agreement.

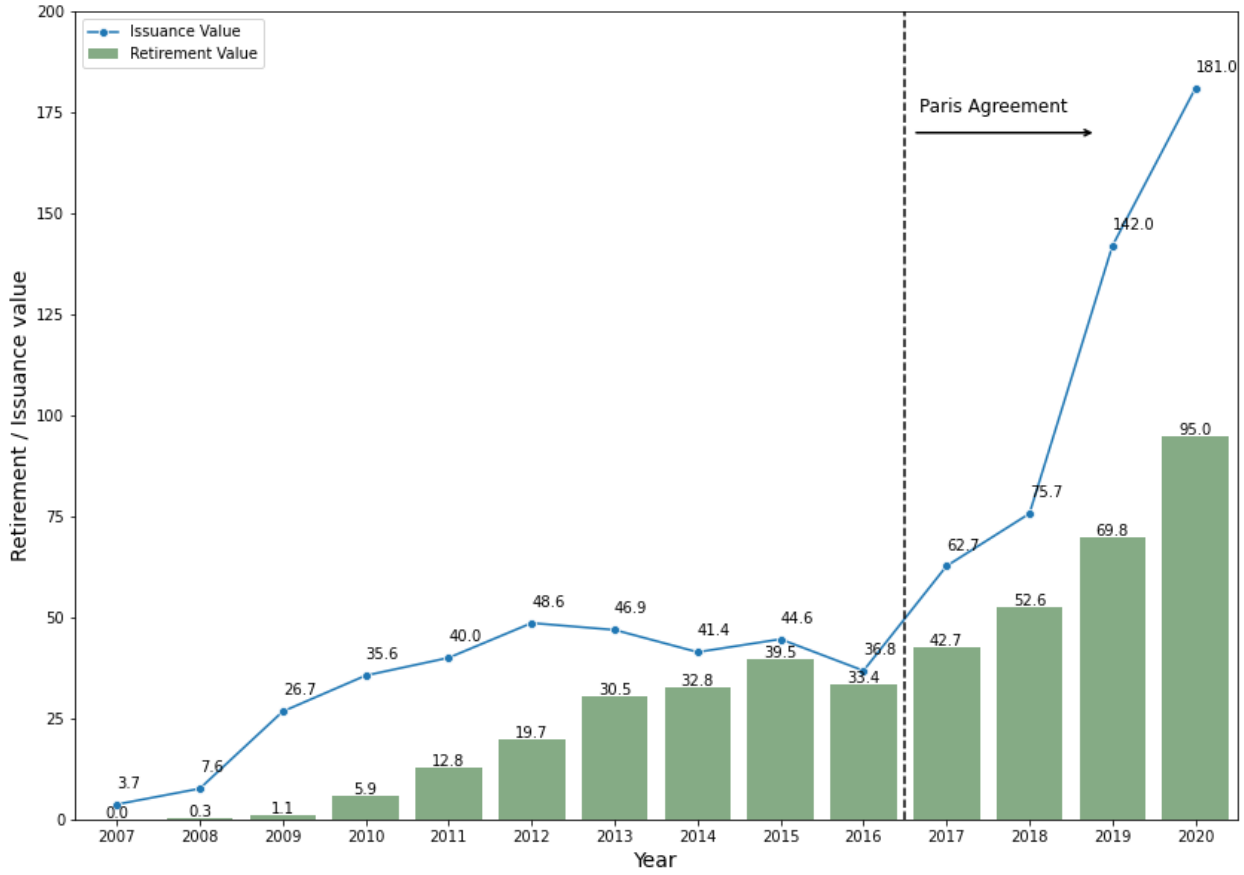


Upscaling of the voluntary credit market can only be attained if market participants have confidence in the fairness and equity of the conditions under which price formation processes take place

Achieving the 1.5-degree target by 2030 and the net-zero target by 2050 will require the voluntary carbon market to grow at least 15 times by 2030 and up to 100 times by 2050

The market for OTC-traded carbon credits has grown significantly in recent years. On the supply side, available credits increased 5 times since 2016 to a total volume of 181 MtCO2e in 2020. Supply has consistently outpaced demand. This development will continue.

Market development of OTC-traded carbon credits



Growth forecast until 2030 and 2050

- Mark Carney, co-founder of the Taskforce on Scaling Voluntary Carbon Markets (TSVCM), expects the market to grow to $50 billion to $100 billion per annum as a result of the transition to a net-zero economy
- A scenario analysis of supply and demand for carbon credits as well as expectations of the future price, conducted by McKinsey & Company, indicate a market size of more than $50 billion by 2030
- Paris Agreement emission reduction targets require carbon market size to increase at least 15 times by 2030 and up to 100 times by 2050
- Number of companies with a net-zero goal has doubled in the last 12 month

One of the most important functions of financial markets is to provide market participants with reliable information about the value and risk of the financial instruments that are being traded

Establishing a global trading platform that ensures clear and efficient processes, data transparency and integrity of all parties involved is a prerequisite for investors to gain confidence and engage in the market.

Requirements for a technology-based platform for emissions trading

- Reliable information on value, risk and pricing
- Avoidance of fraud and manipulation
- Highest possible transparency
- Confidentiality
- Data security & integrity
- Open system
- Compatibility with other trading platforms
- Avoidance of greenwashing
- Legal and regulatory compliance

Solution approaches

Only the **combination of a technical and institutional framework** manages to reconcile the needs for confidentiality and the prevention of misuse and manipulation

Blockchains are the outstanding technology when multiple participants are involved in the processes of data maintenance and updating according to binding predefined rules as well as traceable and transparent integrity of the data

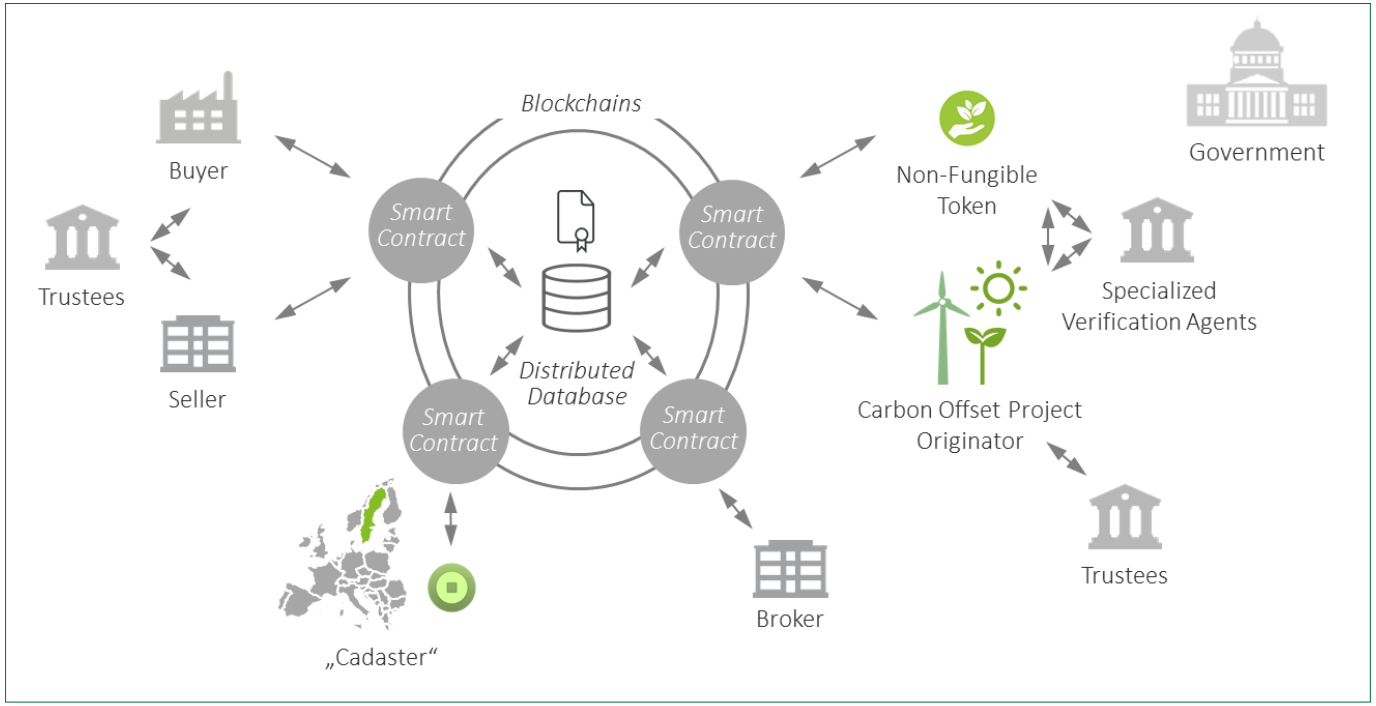
OTC-based carbon credit trading platform needs a **substantial support by national governments** as both the prevention of fraud and the achievement of national carbon reduction goals require a strict oversight

Blockchain technology can be used as an efficient means for keeping records on property rights (e.g. emission allowances and/or carbon credits) and the transfer of such rights between participating agents

A blockchain-based trading infrastructure ensures efficient processes, data transparency and integrity of all parties involved, thus gaining the trust of investors

"Trading infrastructure" is commonly used as a collective term for all institutional and technical arrangements that allow the placement, matching, execution, clearing and settlement of orders.

Blockchain-based trading infrastructure



Key benefits of blockchains

- Smart contracts regulate the interaction of market participants
- Blockchains ensure data integrity and security against manipulation
- Blockchains ensure transparency and prevention of fraud
- Identities are mapped in the form of a smart contract
- Data is stored in a distributed database whose elements are in a current and unique state at all times
- Via the blockchain, data is stored in a tamper-proof and forever unchangeable manner

Only the combination of a technical and institutional framework can reconcile the needs for confidentiality and the prevention of fraud and manipulation in OTC-based carbon credit trading

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