



Green Fuel Assurance

1st December 2023





Who We Are



Parent Company based in Shenzhen, China

Founded **2003**

Testing-Inspection-Certification

Across 18 different industries

150+ laboratories

70+ Branch Offices



Based in Singapore

Founded **1999**

Marine Fuel testing & solution

Acquired by CTI in **June 2020**

Consolidated all CTI's marine services and Fuel testing under **Maritec**

Includes **Environmental compliance services**



Who We Are

■ The leading third-party and 1st publicly listed TIC company in China

● 3,700,000+

Reports & certificates
per year

● 100,000+

Clients globally

● 77,000+

CNAS accredited
standards

● 140,000+

CMA accredited
standards

● 11,000+

Employees

● 540+

Contributions to regulatory
and industry standards

● 470+

Patents awarded

● 50+

Standardization & technical
committee memberships





01

Background

02

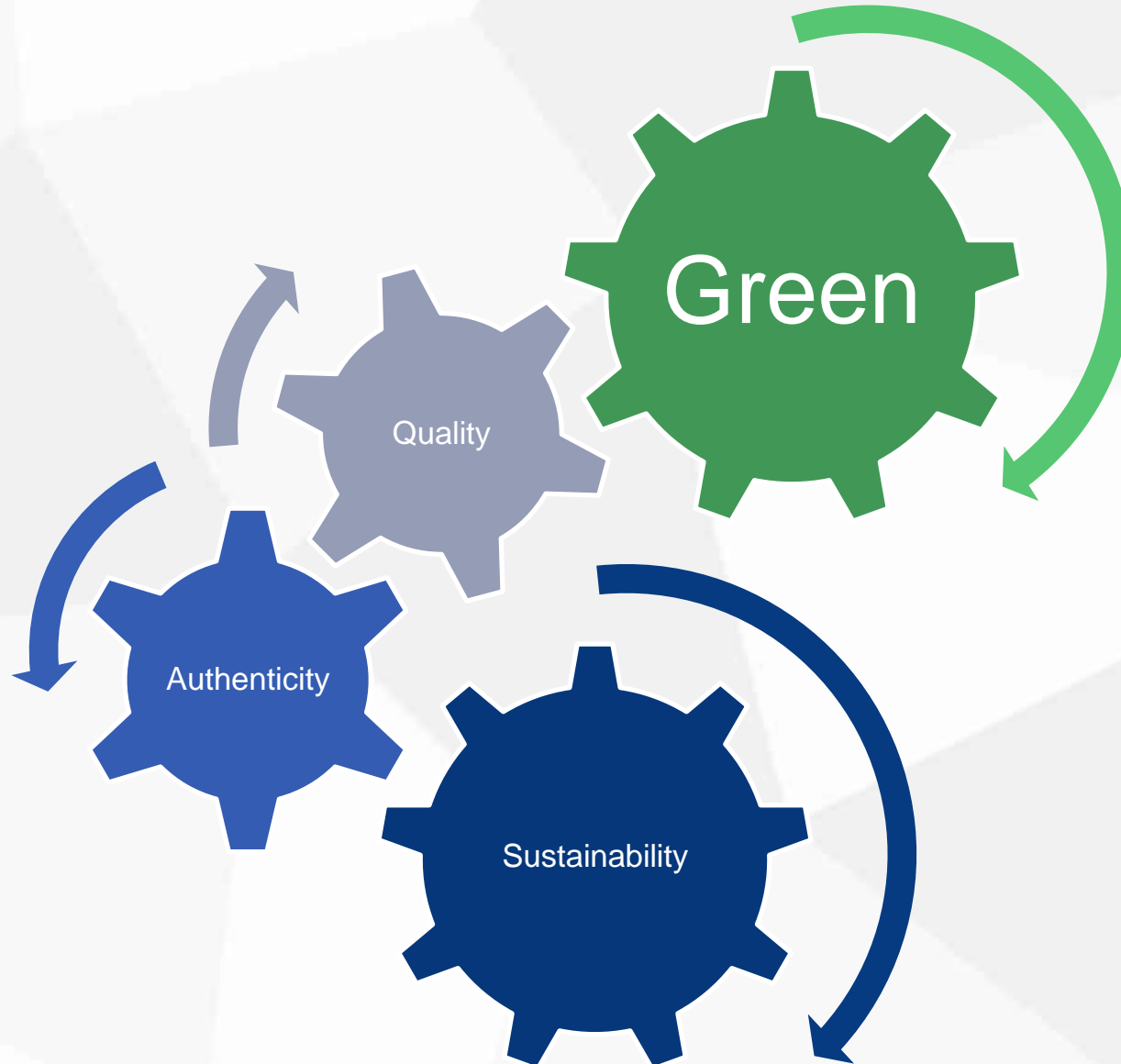
Quality Assurance

03

Sustainability Assurance

04

Authenticity Assurance





Validate that the fuel is suitable for use onboard (eg. not damaging engine)

Anticipate operational performance of the fuel (eg. LCV)

Assurance specific GHG emissions (eg. SOx)





Various Standards for Quality Assurance

Biofuels

a) B100, 100% biodiesel

- i) EN 14214
- ii) ASTM D6751

b) ISO 8217:2024, Biodiesel Blend

- i) Table 1 – Distillate and bio distillate marine fuels
- ii) Table 3 – Bio residual marine fuels (Note: the latest version will be released next year in 2024)

Methanol →

Not finalised by IMO yet

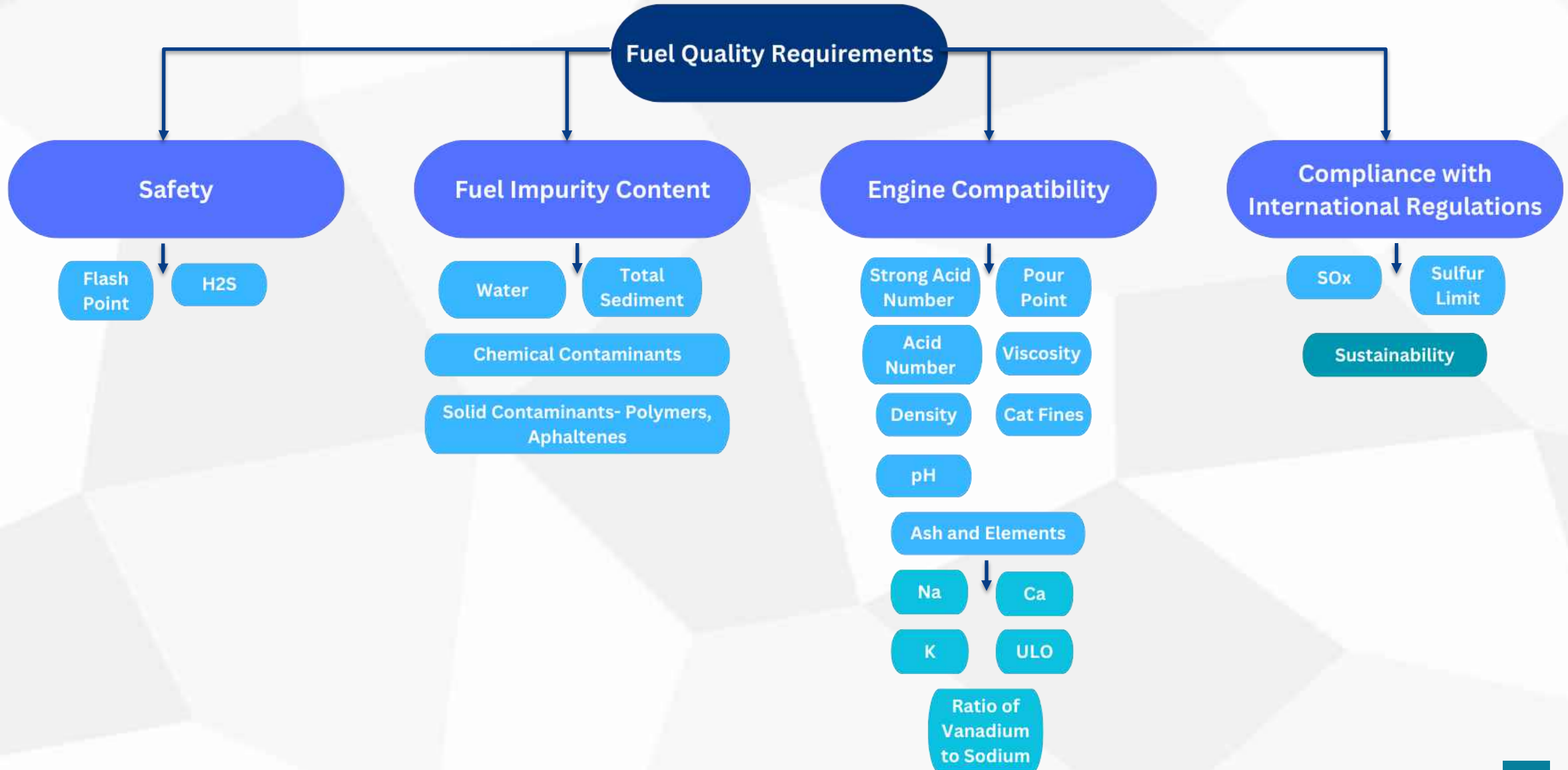
a) IMPCA METHANOL REFERENCE SPECIFICATIONS

b) IMPCA “METHANOL SAMPLING METHODS” 31 October 2014

Ammonia →

Not finalised by IMO yet

- Specs requirement still under development
 - MAN has a Guiding fuel spec. for NH3 – at engine inlet





Assurance that fuel produced in sustainable manner

Audits & Certification methodology is applied



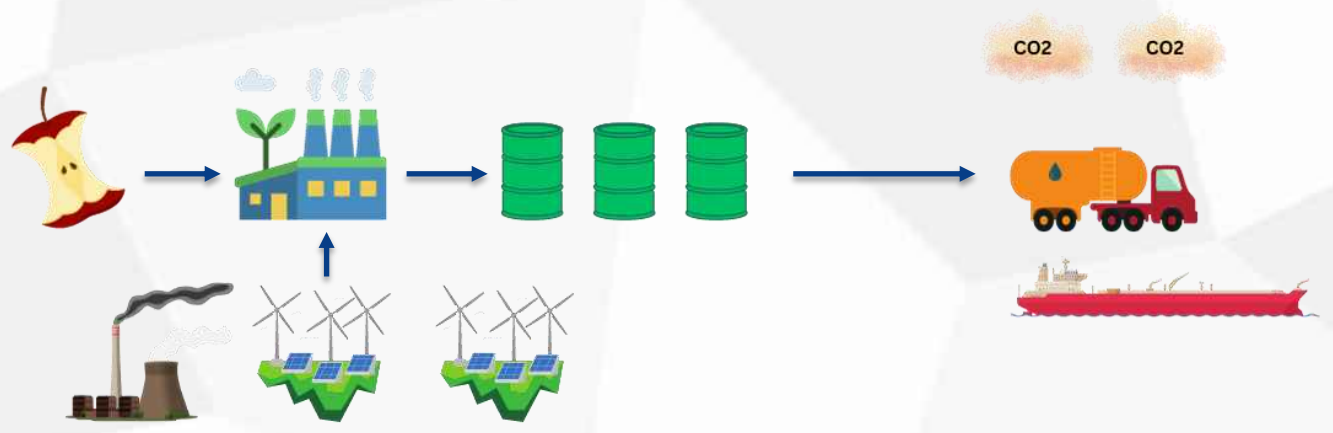


Sustainable Fuels



Not Sustainably Produced Fuel

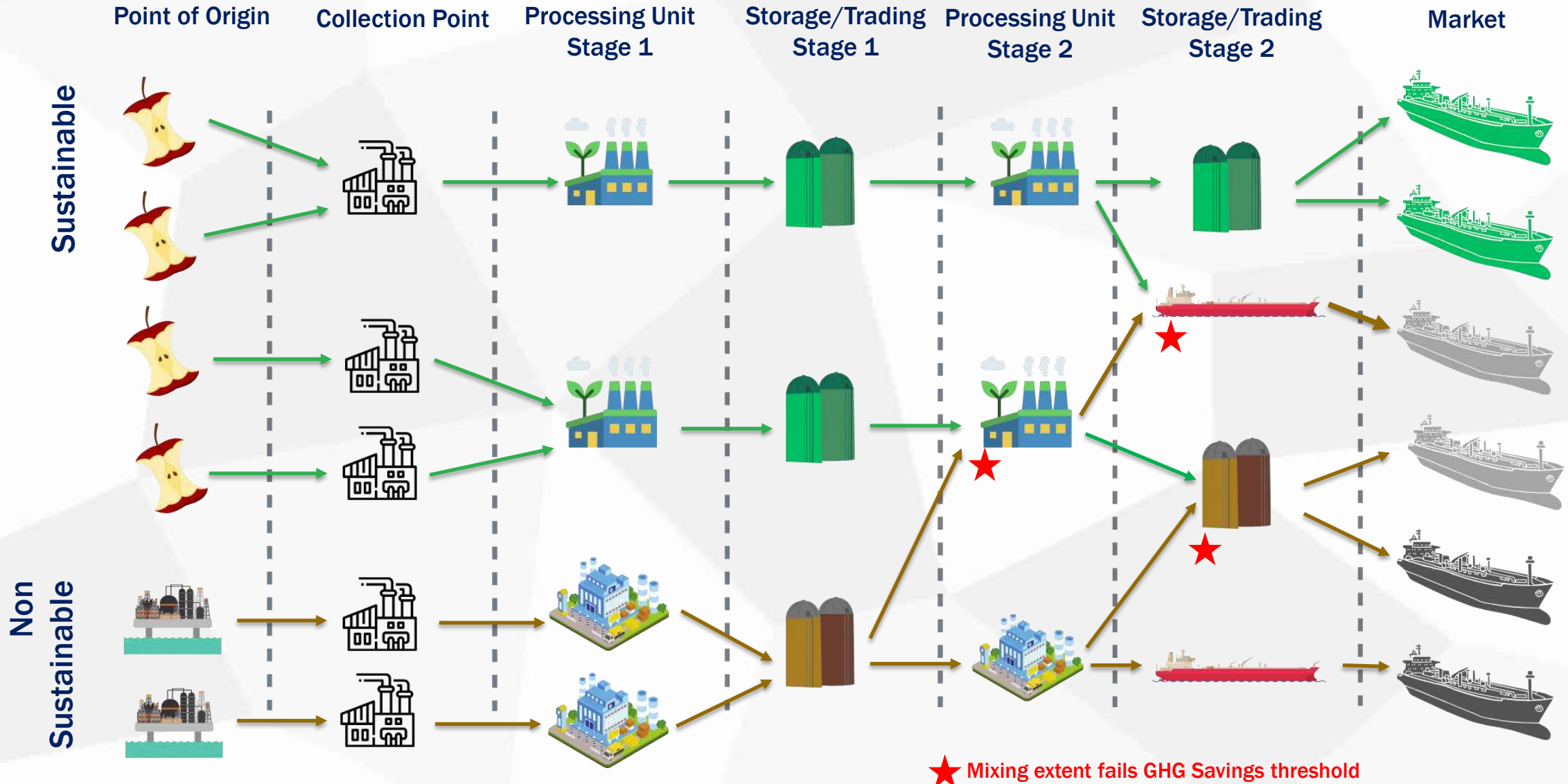
Production to Distribution



Sustainably Produced Fuel



Sustainable Fuels





Sustainability defined

A fuel complying to sustainability regulations and standards;
Non – food crop based
Meeting requirements of Land Use Change

Sustainability is measured from the Well-to-Wake boundaries
Saving a minimum threshold (65% - 70%) GHG emission (gCO₂e/MJ)

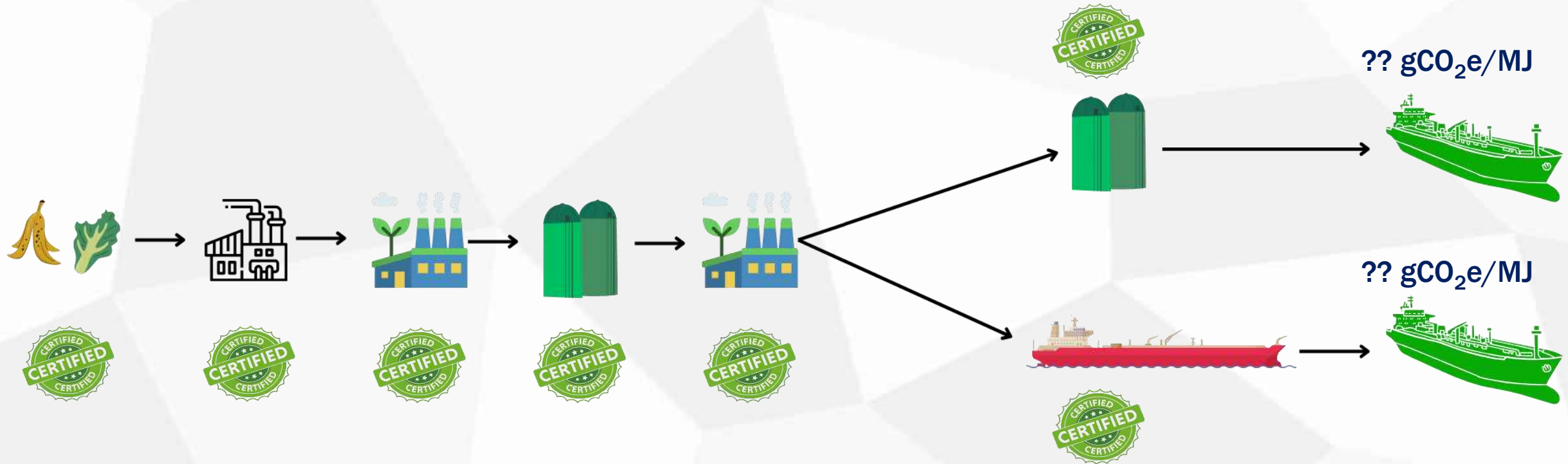
Validated supply chain
Conforms to recognized standards & schemes (eg. ISCC)

Fuel supported by batch specific documents
Proof of Sustainability (POS)



Sustainability Schemes

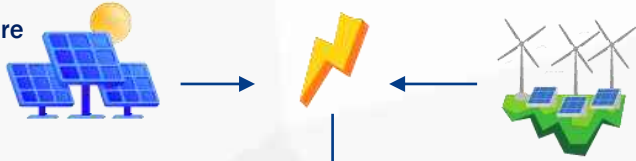
ASSURING & ENSURING sustainability every step of the way





Auditing for First Stage Process Unit

Details of Infrastructure and Equipment



Sustainable Feedstock in



Land Use



Sustainable Product out



Details of Infrastructure and Equipment



Feedstock in



Land Use



Product out



- **Sustainable** feedstock from 1 gathering point
- Feedstock is of **biological origin**
- Process unit is powered by means of **sustainable energy**



To differentiating fuel with 'varying sustainability'

Required Sustainability factors are not physically imprinted into fuel

Ensures sustainable fuel purchased reaches end user

Deter rouge fuel

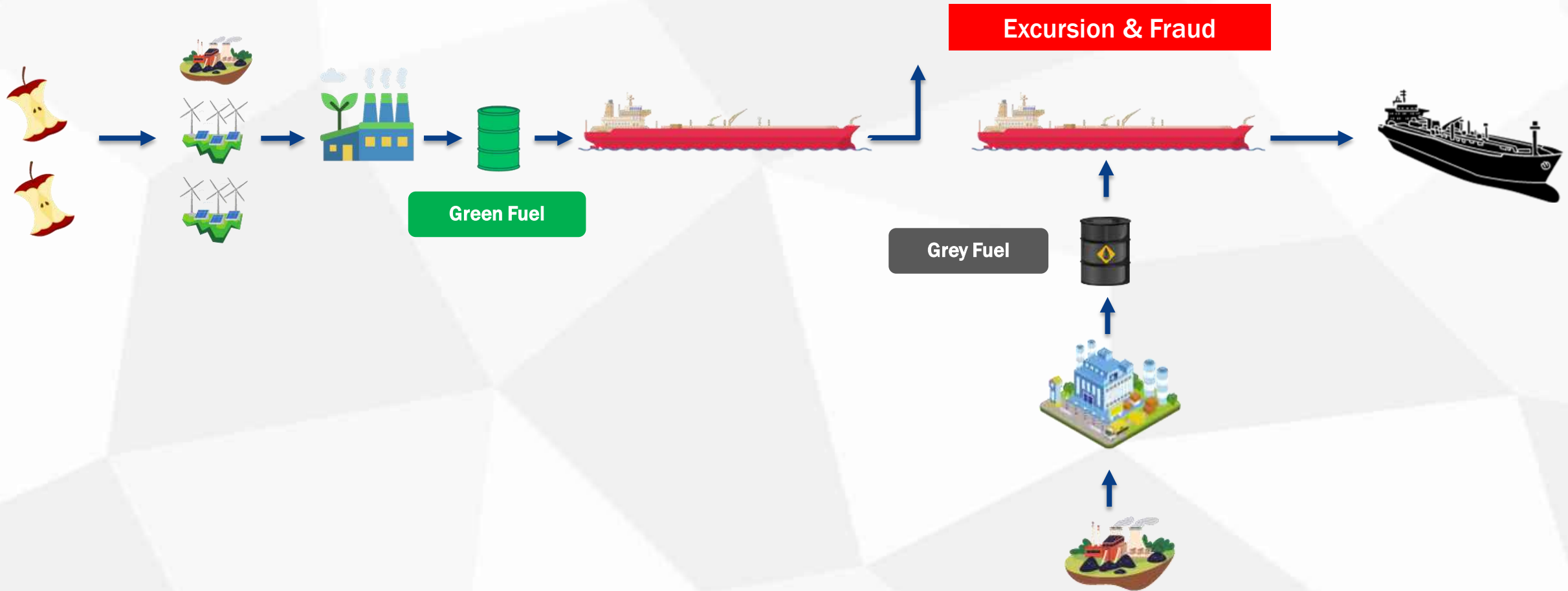
Displaces fossil fuel market share (rouge & legitimate)

Achieves the **IMPACT** intended by Regulations and Policy





Authenticity Assurance





Concept that is not yet widely used

Molecular tags added

Must not alter fuel properties

Detectable absence or dilution

Ratio of marker quantity to fuel quantity determines adulteration

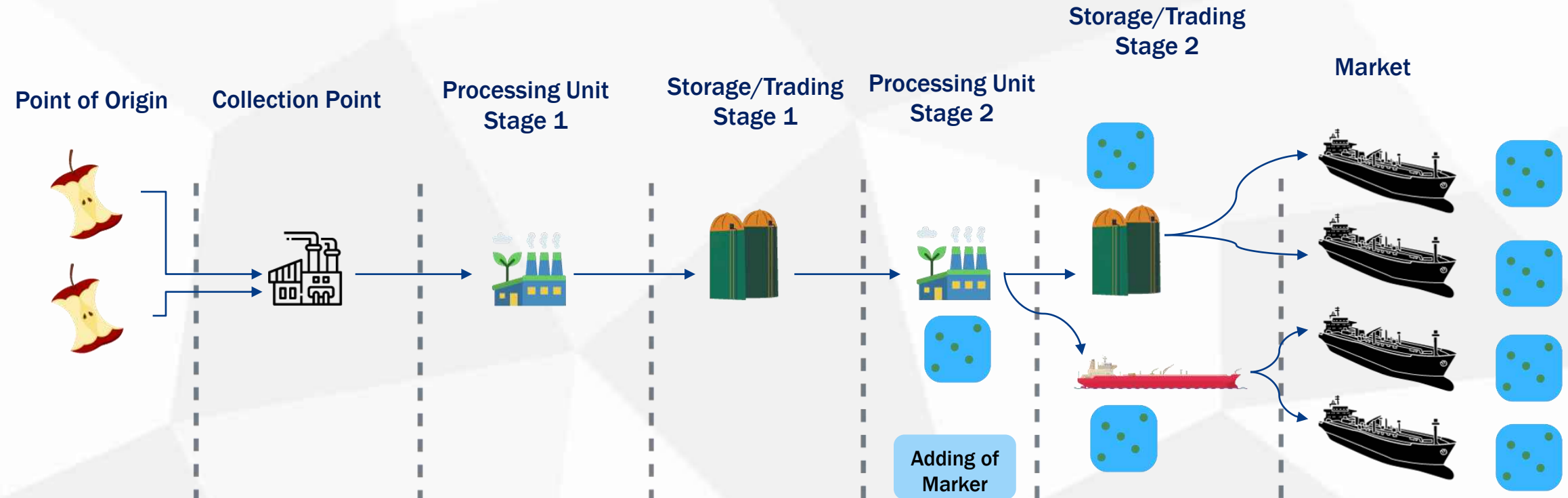
Depending on the availability of the technology:

Onboard Testing —by means of a handheld/portable device

Laboratory Analysis—for more detailed testing



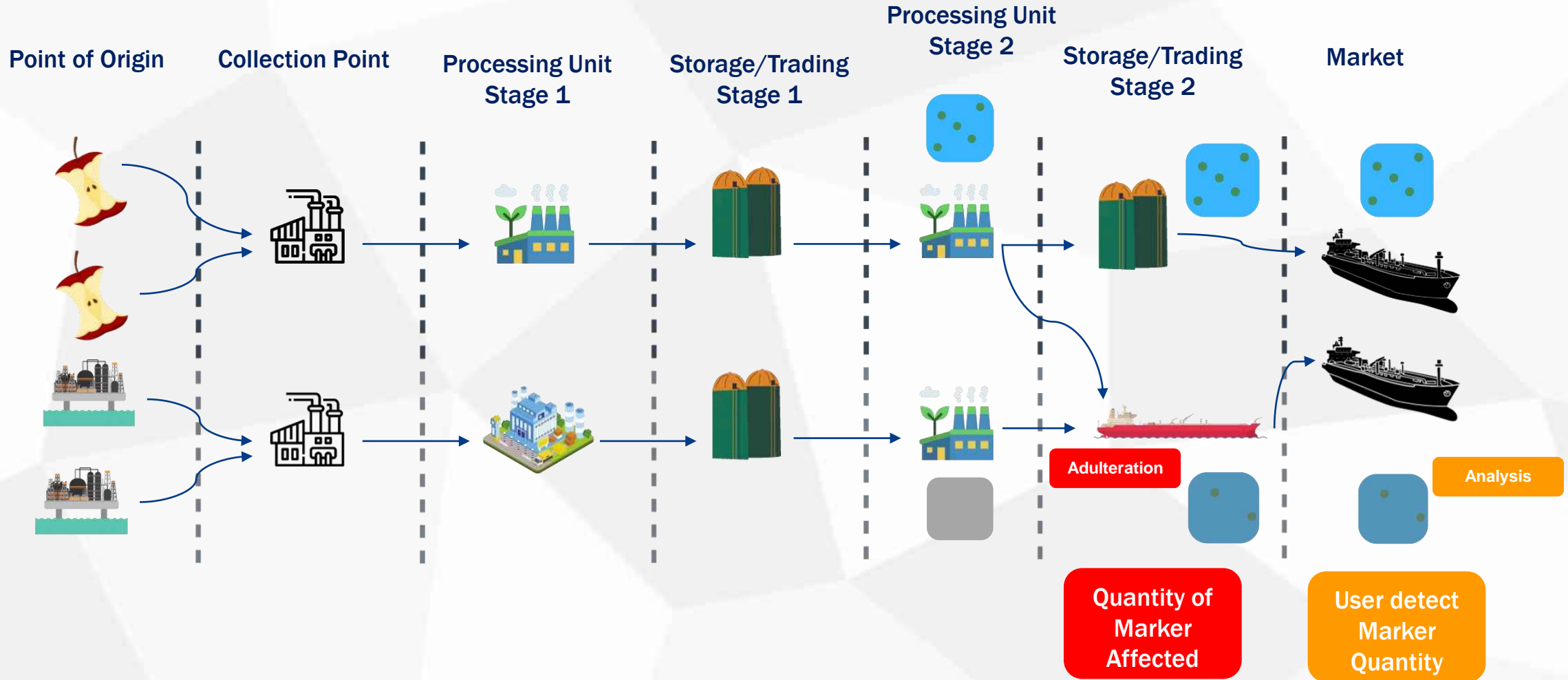
Authenticity Assurance- No Adulteration



Quantity of Marker Remains Unchanged



Authenticity Assurance- Adulteration





Green Assurance is achieved through joint efforts

Quality shall ensure operational efficiency

Sustainability determines impact on climate

Authenticity guards the growth of green & renewable fuel

Success of new fuels is a criteria to fight Climate Change

Demanding for Assurance is an entitlement & contribution



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