

**34th CRC
Real World
Emissions Workshop**

**PEMS MEASUREMENTS OF TAILPIPE
EMISSIONS FOR BUILDING A VOLUNTARY
MOBILE SOURCE**

CARBON OFFSET PROGRAM:

A CASE STUDY FROM AFRICA

Presented by

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Who are DataCarbon Partners?

DCP is a Public/Private Partnership (PPP) initiative comprised of private sector, regulators, scientists, technicians, and economists with expertise in carbon emissions, markets, and public policy.

The objective of DCP:

- Develop methodologies and protocols to unleash a new stream of marketable decarbonization opportunities in the transportation sector
- Create a *compound solution* including energy/health cost reductions, international funding, and carbon credits

DCP's Mission:

- Engage the climate community in urgently needed new ideas – as global commitments for carbon reductions fall short.
- Promote and accelerate global and domestic climate action progress.
- Impact multiple mobile source industry and global visionaries, thought leaders, and decision makers.

Our plan is all about leverage!





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Current
Partners

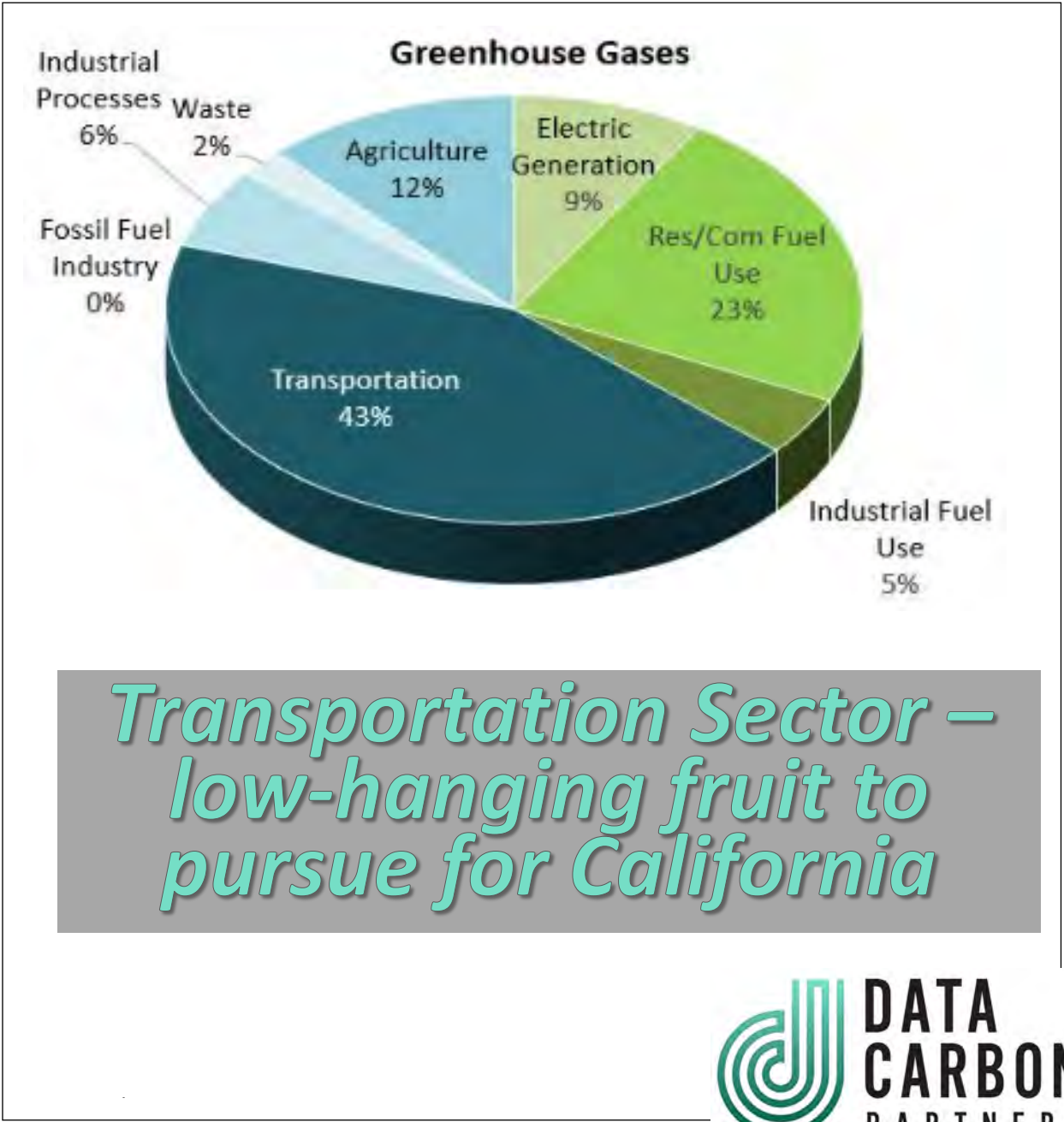
- *The authors identify as Data Carbon Partners (DCP), a public/private collaborative multidisciplinary experience and expertise in technology, vehicle emissions, and policy spaces.*
- **Learn more:** DataCarbonPartners.com



Western Countries were “Developing Nations” Once...

Smoke/Fog = “SMOG”

SMOG attacking Los Angeles circa 1965



Transportation Sector – low-hanging fruit to pursue for California



Transportation Sector

- ✓ The transportation sector is the *major source of air and climate pollution* around the world.
- ✓ Transportation sector light-duty vehicles (LDV) represent the *largest fraction of greenhouse gas (GHG) emissions*.

*Traditionally, control of these emissions has been accomplished by way of increasingly more stringent emission standards **through legislation** for new vehicles and engines, complimentary requirements for cleaner fuels, and inspections and maintenance programs targeting the in-use fleet.*

Legislation

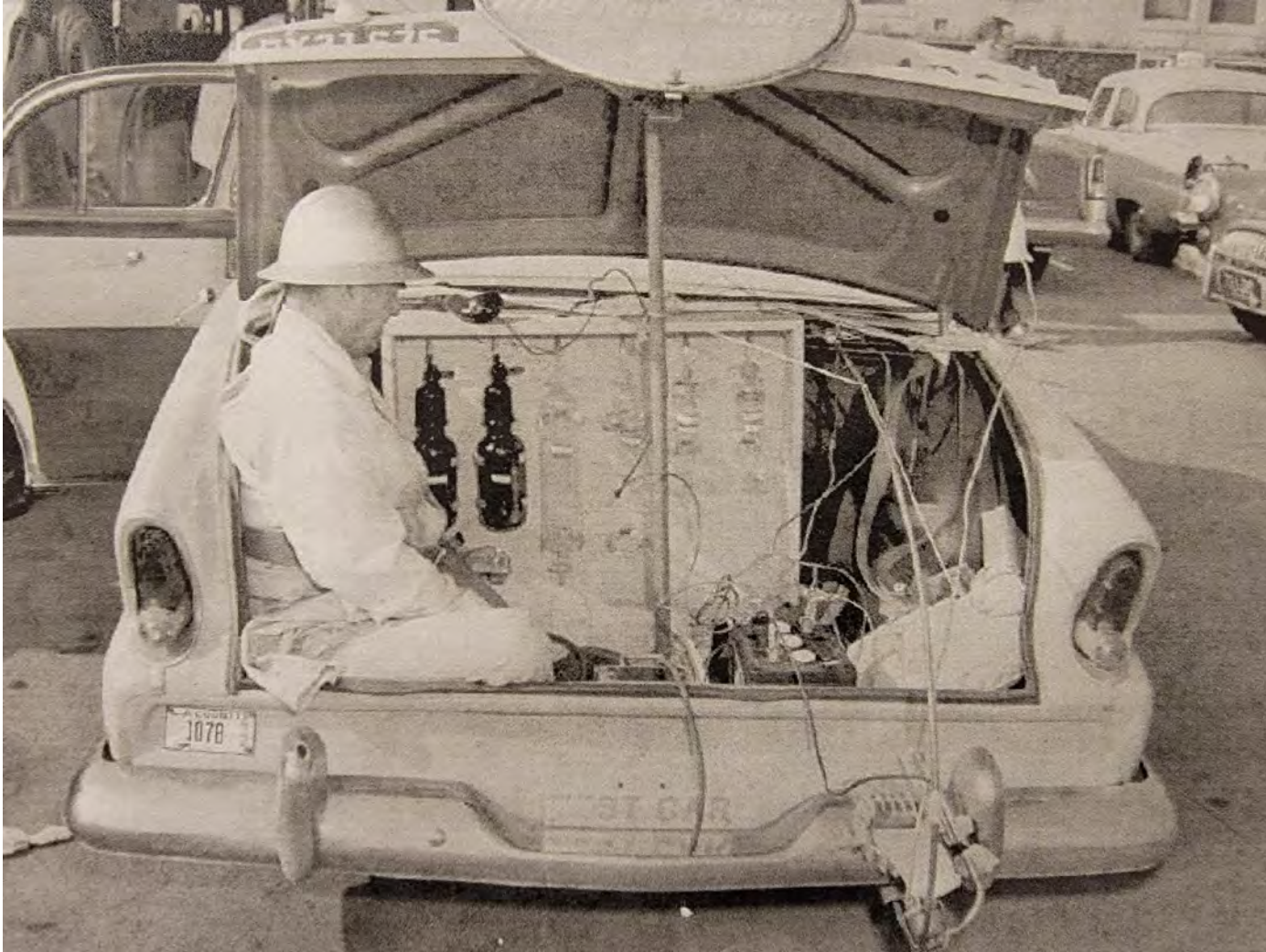
US milestones that got things rolling:

- *1966 California EPA led to...*
- *The 1970 Federal Clean Air Act and*
- *USEPA signed into law by President Richard M. Nixon*

Things began to pick up speed!



How it began in the U.S



**One week after Cal EPA
was formed...**

***The first ever PEMS unit
testing on a 1955 Chevy.***

(Kidding)

How it really began in the U.S

We didn't know
what we didn't
know



No techniques,
Standard Operating
Procedures (SOPs)
Reference methods



Priorities to measure?
Validation?



Lessons Learned

- Trial and error approaches have led to improved US and EU:
 - *Technology*
 - *Fuels*
- Improvements have included a consistent increase in upfront costs for consumers.
- Developing nations need funding to incentivize the transition to better and cleaner vehicles and fuels.
- Source of funding for fleet modernization in developing countries is a **mobile source decarbonization plan**. (offsets, savings, funding)

**Western Countries can now
Help Developing Nations**

**Lessons Learned
and Applied**

*Transportation
Sector: low-hanging
fruit to pursue for
Nigeria*

Nigerian Transportation Sector: Decarbonization Control Program (DCP)

- The DCP program is exploring the development of a new approach for reducing targeted emissions.
- One likely public health co-benefit is the reduction of conventional vehicle pollution.



Nigerian DCP - Progress

- Phase 1 (September 2023) more than 100 private vehicles in the states of **Abuja, Lagos, Kaduna, and Kano, Nigeria** have been recruited and tested successfully in-use using 3DATX parSYNC® FLEX iPEMS.
- Establish a baseline of fleet emissions, the identification of **potential options reduction, including vehicle scrap and replacement**, and to
- Build **necessary methodologies** to align with UN funding requirements and to generate **quality carbon offsets** for the global voluntary market.



Major financial firms predict...

The “picked over low-hanging-fruit” of GHG reductions from global regulatory compliance programs has contributed to recent volatility and low carbon prices.

Current market situation (2024):

Historic lows; volatile

poised for

long-term growth thru 2030

Carbon Credit Quality is Key



A new voluntary mobile source carbon offset program has a large potential to:

However: this is
MORE THAN JUST ABOUT
CARBON OFFSETS

- ✓ *Affect positive change* in jurisdictions with few options for addressing vehicle pollution.
- ✓ The new program can be **structured to meet all offset criteria** including additionality, permanence, enforceability, and verification.
- ✓ More importantly, the new program will **leverage several decades-worth of western development** to utilize recently developed equipment, software tools, database and AI solutions, to rapidly deploy solutions and to dramatically reduce pollution.

Global Financial Market (Random) Drivers Playing a Role:

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Sarbanes-Oxley Act (2002): restore public confidence in the U.S. financial markets by requiring disclosures that were accurate and a complete assessment of the *company's financial position including a description of any environmental litigation or issue.*

Climate-Related Disclosures Act for Investors
(March 6, 2024): *disclosure of climate-related risks* likely to have a material impact on business strategy, operations, or financial condition (Scope 1 and 2 emissions)

Finally:

*A More Holistic Fiscal View
Leads to Improved Health and
Climate in Developing Nations
and the World*

However: this is
**MORE THAN JUST ABOUT
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Countries assist each other!

- ✓ *Justifying the most efficient ways to reduce pollution*
- ✓ *Qualifying for Western funding and COP28 Loss & Damage monies*
- ✓ *Using big data sets and AI to rapidly, creatively, and economically identify problems and opportunities (LDVs, HDVs, Gensets, Construction, etc.)*

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Thank You!

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