

**GLOBAL HARMONIZATION of GASEOUS
FUELS for TRANSPORT:
PAVING THE PATHWAY for
COMMERCIALISATION**

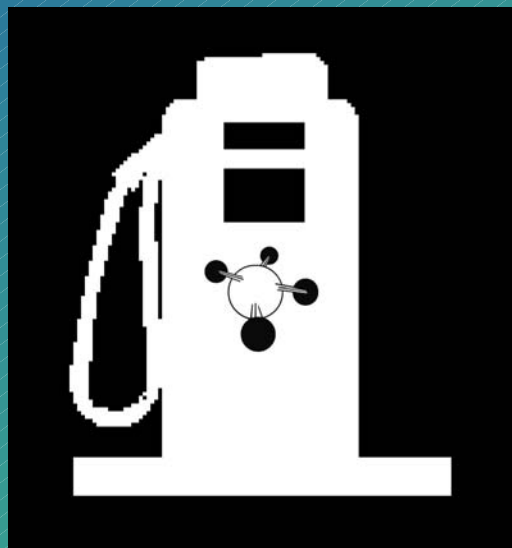
**Dr. Jeffrey M. Seisler
United Nations WP29
Geneva**

10 March 2004



REALITY & VISIONS

NGVs & H2Vs



WORLDWIDE NGV MARKETS ARE GROWING

- ~3.1 million NGVs
- Argentina leads the world
 - 1.1 million
 - 30,000 conversions per month
- N.America = 150,000
- Asia-Pacific = 700,000



China



Korea



India

WORLDWIDE NGV MARKETS ARE GROWING

- **Europe 514,000 NGVs: 1550 fuel stations**
 - Italy = 400,000+ & 400+ fuelling stations
 - Germany, Italy, France have public/private agreements and strategies
- **European Commission Transport Policy: target NGVs to replace 10% of transport sector petrol/diesel by 2020**



France



Italy



Germany



LNG Ferry, Norway

EUROPEAN ALTERNATIVE FUELS POLICY

**% Fuel Replacement, Transport Sector, 15 EU
Countries by 2020**
[] = Optimistic

Year	Biofuel	CH4	H2	Total %
2005	2			2
2010	6	2		8
2015	[7]	5	2	14
2020	[8]	10	5	[23]

ALTERNATIVE FUELS CONTACT GROUP REPORT

- “Natural gas is the only alternative fuel with the potential for significant market share well above 5% by 2020 which could potentially compete with conventional fuels in terms of economics of supply in a mature market scenario.”
- Main driving force for the large-scale introduction of natural gas as a motor fuel is concern for the security of supply

“HYDROGEN IS A POLITICAL PRIORITY”*

- Production from renewable sources foreseen...in the future
- Significant government funding
 - U.S. ~\$1.7 billion FY 04–08
 - Japan ~\$250 mil FY 03-07
 - Europe ~€900 mil... ‘into the future’
- H₂ & fuel cells have *sex appeal* (like electric cars in the 1980s)

*Bernard Gauvin, GRPE meeting, 15 January 2004

THERE ARE FUNDAMENTAL LINKS BETWEEN NGVs & H2Vs

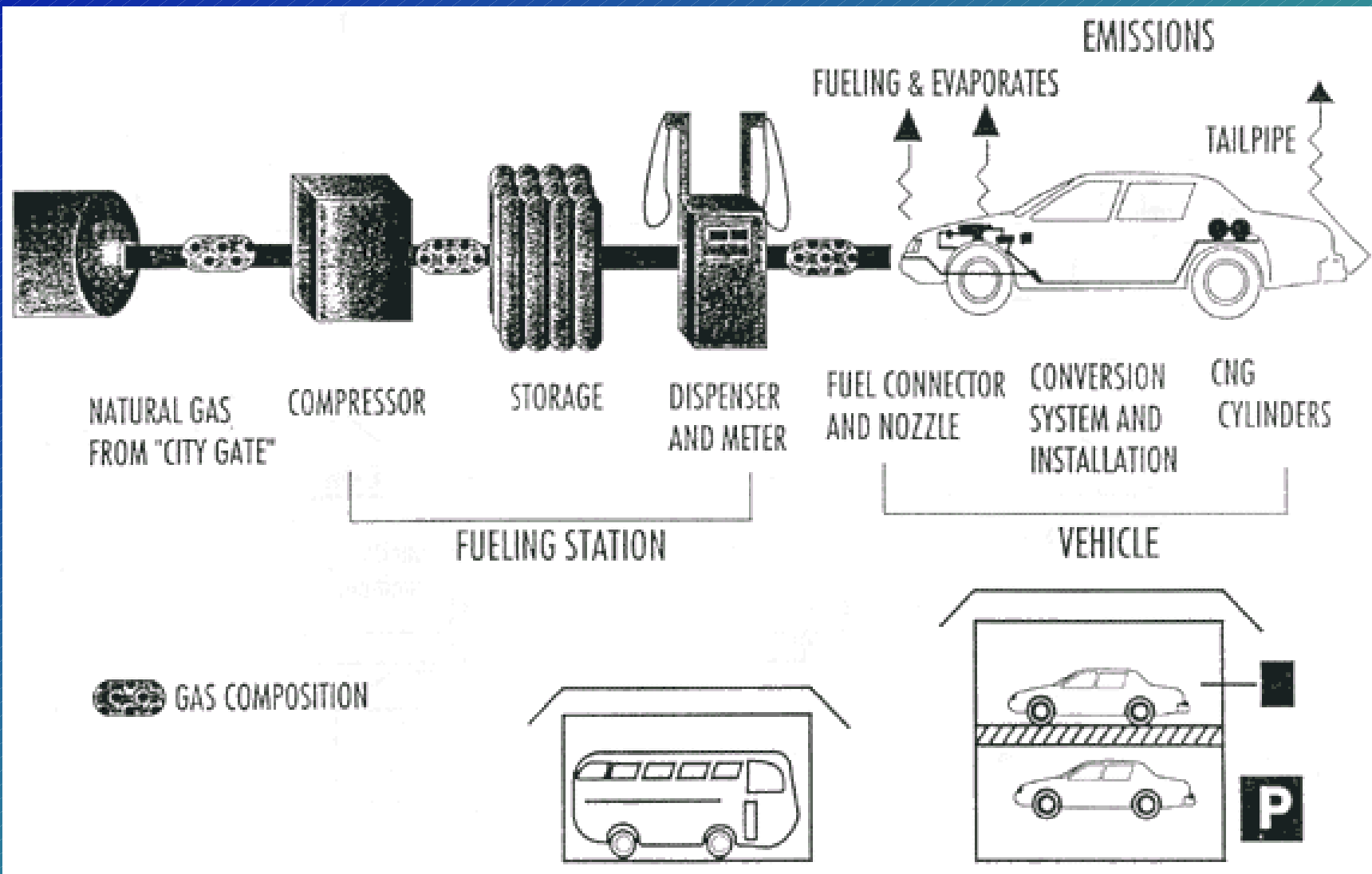
- Natural gas (**CH₄**) is the principle source of hydrogen for the foreseeable future
- CNG fuelling stations likely will be the pathway to the H₂ fuel infrastructure in the future
- *Many* equipment manufacturers are the same: vehicle systems & fuelling
 - Compression: CNG & C-H₂
 - Liquefaction: LNG & L-H₂
 - (Biogas....Renewable source H₂)

THERE ARE FUNDAMENTAL LINKS BETWEEN NGVs & H2Vs

The market introduction & commercialisation of both fuels and the vehicle technologies are (and) will be affected by the complexity and pace of the standards and codes process...(but the goals are important & necessary)

NGV Standards Universe

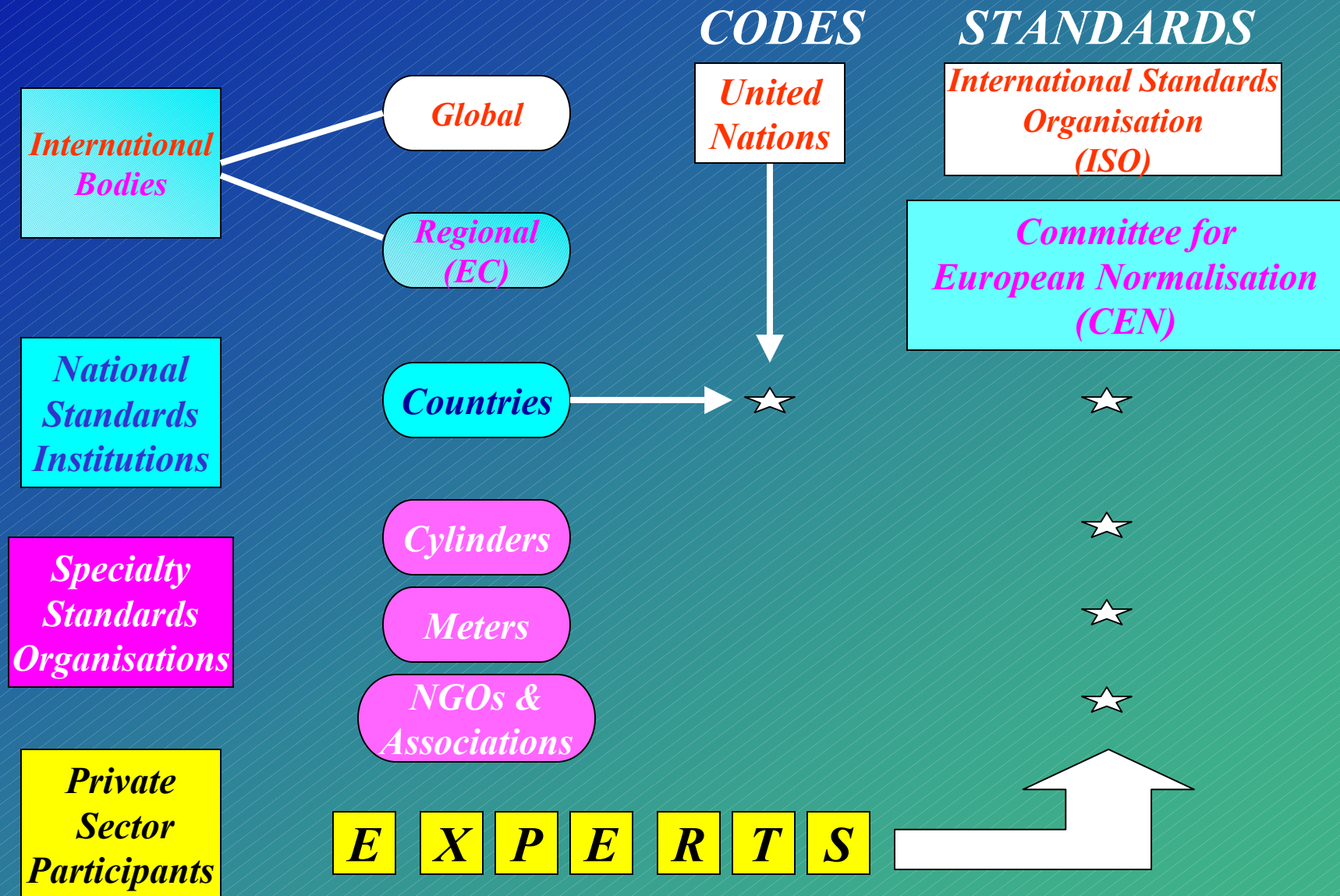
From City Gate to Tailpipe



STANDARDS & CODES ARE AT THE HEART OF VEHICLE (& TECHNOLOGY) COMMERCIALISATION

- **Facilitates development of equipment**
 - Should be same for different [all?] markets
- **Facilitates country certification**
 - Vehicle homologation/type approval
 - Equipment certification/patent protection(?)
- **Speeds market entry**
- **Costs to ultimate consumer is less**
- **Promotes uniformity... & safety**

LEVELS OF CODES & STANDARDS (The Patchwork Quilt)



WORLD-WIDE STANDARDS HARMONIZATION: *THE OBJECTIVES*

- **Produce new and additional standards (NGV & H2) as required (but avoid international overlap/duplication)**
- **Harmonize existing standards**
- **Expedite H2 & H2V standard development**
- **Facilitate codification of standards (codes & codes of practices)**

DIFFUSION of HARMONIZATION LEADERSHIP

2004(?)

- GRPE Roadmap for hydrogen and H2Vs (2003 & beyond)...but U.S. & Japan also moving forward
- ISO 15869 Joint H2 working group
- New CEN BT 149 on Harmonisation of Alternative (gaseous/liquid) Fuels
- *But...who is harmonizing the harmonizers?*

WORLD-WIDE STANDARDS HARMONIZATION PROCESS *OVERVIEW*

- Bring together representatives of all standards/code institutions
- Identify the *structure* of the standards institutions ...internationally & nationally
- Identify the *substance*: what exists and what is still needed
- Attempt to assign *institutional responsibility* (tough job)
- Identify *the expertise & experts needed*

(Action Plan)

World Conference on Harmonization of Standards for Gaseous Fuels for Transport

- **Objectives of conference**
 - **Develop strategy for harmonization**
 - **Assess need for new standards**
 - **Establish “permanent” Coordination Committee**
 - **Develop guidelines for action**
- **Attendance**
 - **Representatives from each standards organisation**

THE *STRATEGIC* **HARMONIZATION *PROCESS*** ***(Action Plan)***

- **For each topic (e.g. vehicles) create a small task force with a representative from each major standards working group**
 - **Compare existing standards**
 - **Define issues/problems raised by comparison**
 - **Develop strategy to resolve issues**
 - **Recommend actions by each standards working group**

THE *NEW* STANDARDS DEVELOPMENT *PROCESS*

(Action Plan)

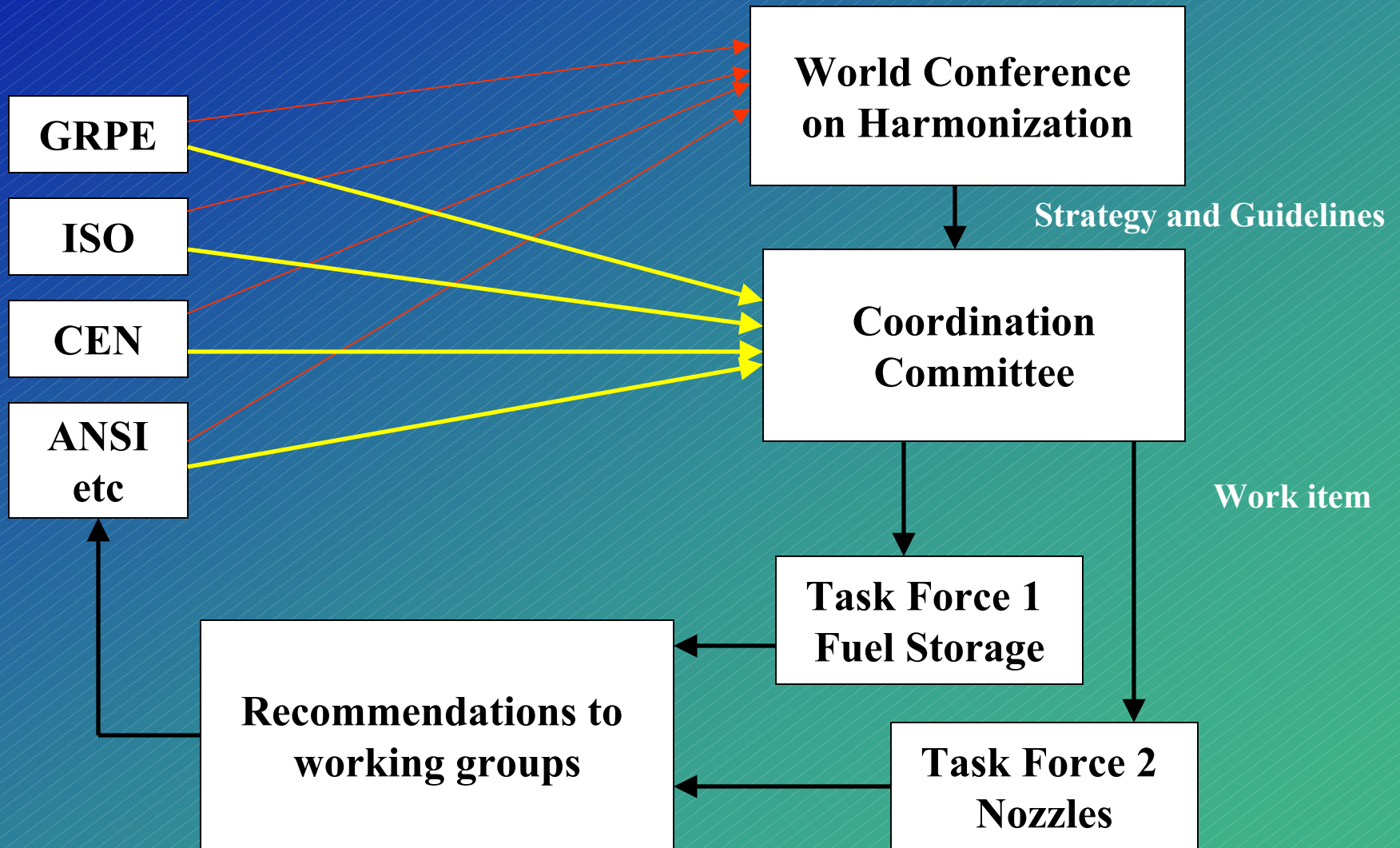
- Standards Coordination Committee
(same as Harmonization
Coordination Committee ?)
 - Assess need for new standards
 - Agree which standards working group
& who does the work
 - Ensure liaison *back* to various working
groups

WHAT CAN BE EXPECTED, *REASONABLY*

(Pick the 'easier' things 1st)

- **Standard fuel connectors: facilitate international vehicle travel (& equipment sales)**
- **Cylinder performance, testing, & lifetime**
.....then...
- **Vehicle Systems**
- **Fuelling Stations**

HOW THE HARMONISATION *PROCESS MIGHT WORK*



WHO TAKES RESPONSIBILITY FOR LEADERSHIP?

- United Nations ? (WP29..most likely?)
- Support required from regional/national governments & standards institutions
- *Funding* for private industry participation required
- International/Regional Associations & NGOs provide support

**WE CAN BE HOPEFUL
ABOUT WORLDWIDE
HARMONIZATION**

**CAN WE BE OPTIMISTIC?
(Good Question!)**

A LOT OF WORK TO BE DONE!!



GASEOUS FUEL STANDARDS: PAVING THE PATHWAY for COMMERCIALISATION

