

Historical Perspectives, focusing on Regulation Review



Aki MARUTA

Technova

Japan

maruta@technova.co.jp

Technova | Inc.

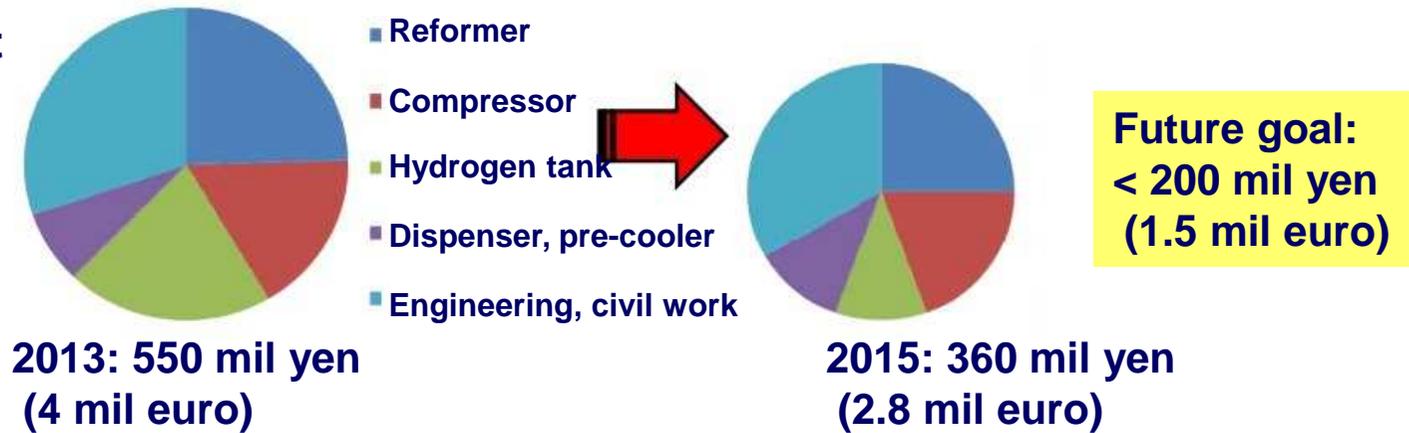
Why We Need Regulation Review

Technova | Inc.

Why We Need Regulation Review

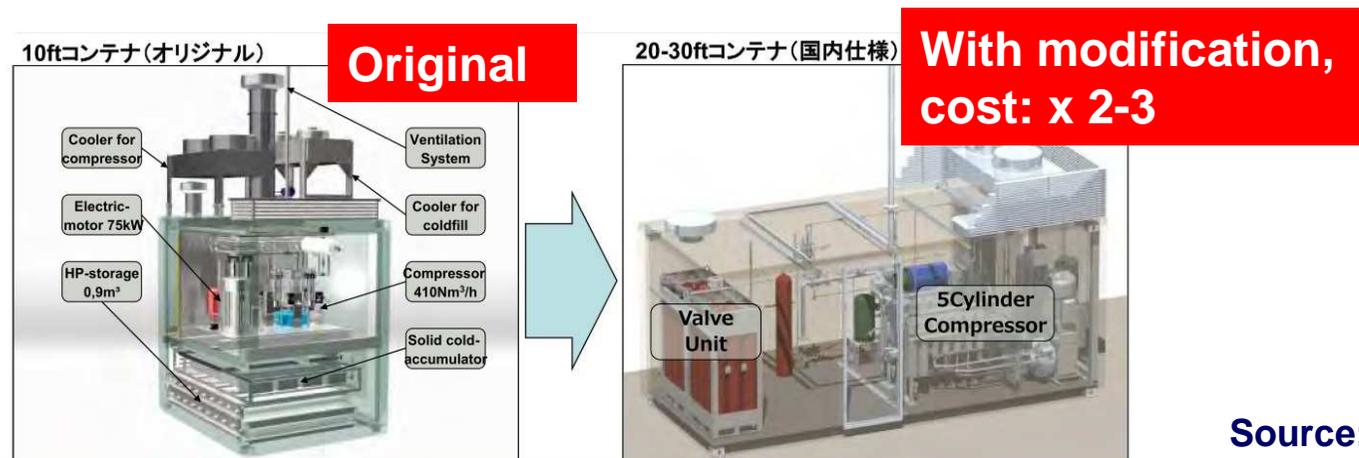
- Because of several regulations, our hydrogen refueling stations (HRS) are costly.

Current HRS cost and target



Source: METI

Even imported one becomes costly



Source: FCCJ



PAST



Technova | Inc.

JHFC Project (~2011.3)

□ Period

- 2002.4 – 2006.3: Phase 1
- 2006.4 – 2011.3: Phase 2

□ Objective:

- To clarify the remaining issues under the actual use conditions
- **To collect data to develop regulations, codes, and standards**
- To formulate and implement public relations and education strategies for dissemination and promotion
- To verify the energy saving (fuel economy) and environmental impact
- To identify technology and policy trends

**JHFC defined the way to go.
(identified regulation items for revision)**

Identified the regulation issues (=barriers)

| 見直し前(一例) | 2005~2008年度 | 2009年度~将来の姿 |
|--|---|--|
| <ul style="list-style-type: none"> ・離隔距離 ・5m ・併設可 ・工業(専業)域のみ ・貯蔵量 不足 ・35MPaステーションの見直し前と同じ状況 ・70MPaステーションの事例 | <ul style="list-style-type: none"> ・離隔距離 ・併設可 ・準工業、商業、準住居地域可 ・貯蔵量 不足 ・35MPaステーションの見直し前と同じ状況 ・70MPaステーションの事例 | <ul style="list-style-type: none"> ・本検討の目標、課題 ・普及へ影響の大きい法規制面の課題の整理 ・見直しの道筋策定(課題が、いつまでに、何のデータ...) ・適時・適地で安全で安価な水素を提供できる水素インフラ整備 ・前掲・安全性確保(充填作業) ・蓄圧器の地下/屋上設置 コンパクト化 等 |

水素インフラに関する規制見直しの重点課題

| 重点ランクの考え方 | ランク | 重点課題 | 法令 |
|---|-----------------|------------------|---------|
| <ul style="list-style-type: none"> ・特A: 2015年までに見直しされなければ、普及に重大な支障がある項目 ・A: 2015年までに見直しされなければ、コスト高など商用ベースでの運用面で支障がある項目 ・B: 普及の過程で必須項目となる可能性がある項目 | 70MPa法整備 | 保安距離の見直し | 高圧ガス保安法 |
| | 特A | 保安統括者の常駐義務見直し | 高圧ガス保安法 |
| | | ガススタンドの併設可 | 高圧ガス保安法 |
| | A | ガススタンドの併設不可 | 消防法 |
| | | 用可能容積の拡大 | 建築基準法 |
| | A | 設計基準(耐圧安全係数)の見直し | 高圧ガス保安法 |
| | | 容器側の複合容器の範囲拡大 | 高圧ガス保安法 |
| | A | 市街地における保有量の増加 | 建築基準法 |
| | | NCVガスと保安距離不適合見直し | 高圧ガス保安法 |
| | A | 保安距離の縮小 | 高圧ガス保安法 |
| 保安距離の更なる見直し | | 高圧ガス保安法 | |
| B | 改質器の無人運転の許可 | 高圧ガス保安法 | |
| | 防振性能の見直し | 高圧ガス保安法 | |
| B | 蓄圧器の地下/屋上設置 | 高ガス法、消防法 | |
| | 蓄圧器の並列設置 | 消防法 | |
| B | 公道でのFCVへの充填 | 高ガス法、道交法 | |
| | 基準温度の見直し/海外との整合 | 高圧ガス保安法 | |

成果: 重点課題17項目がリストアップされた。関係者間の共通認識が図れ、具体的活動の始まるきっかけとなった

Source: FCCJ

Technova Inc.

Government's Priority List & Roadmap (2010.12)

- Government (METI) released the priority list and roadmap for regulations to be reviewed.

| Item | Law |
|---|-----------------------|
| 1. Technical standard for 70 MPa HRS* | High Pressure Gas Act |
| 2. Combined HRS* & CNG standard | |
| 3. Safety inspection of high pressure H2 vessel | |
| 4. H2 stockpile at HRS | Building Act |
| 5. Design coefficient | High Pressure Gas Act |
| 6. Metal material | |
| 7. Maximum pressure for H2 transportation | |
| 8. Pressure relief valve | |
| 9. Engraving of CFRP vessel for FCV | |
| 10. CFRP vessel for HRS | Fire Service Act |
| 11. Combined HRS and petrol station | |
| 12. Safe distance between H2 dispenser and road | High Pressure Gas Act |
| 13. Refueling by driver | |
| 14. Explosion-proof area around H2 dispenser | |
| 15. Refueling on road for FCV out of H2 | |
| 16. Temporary higher pressure for 70MPa refueling | |

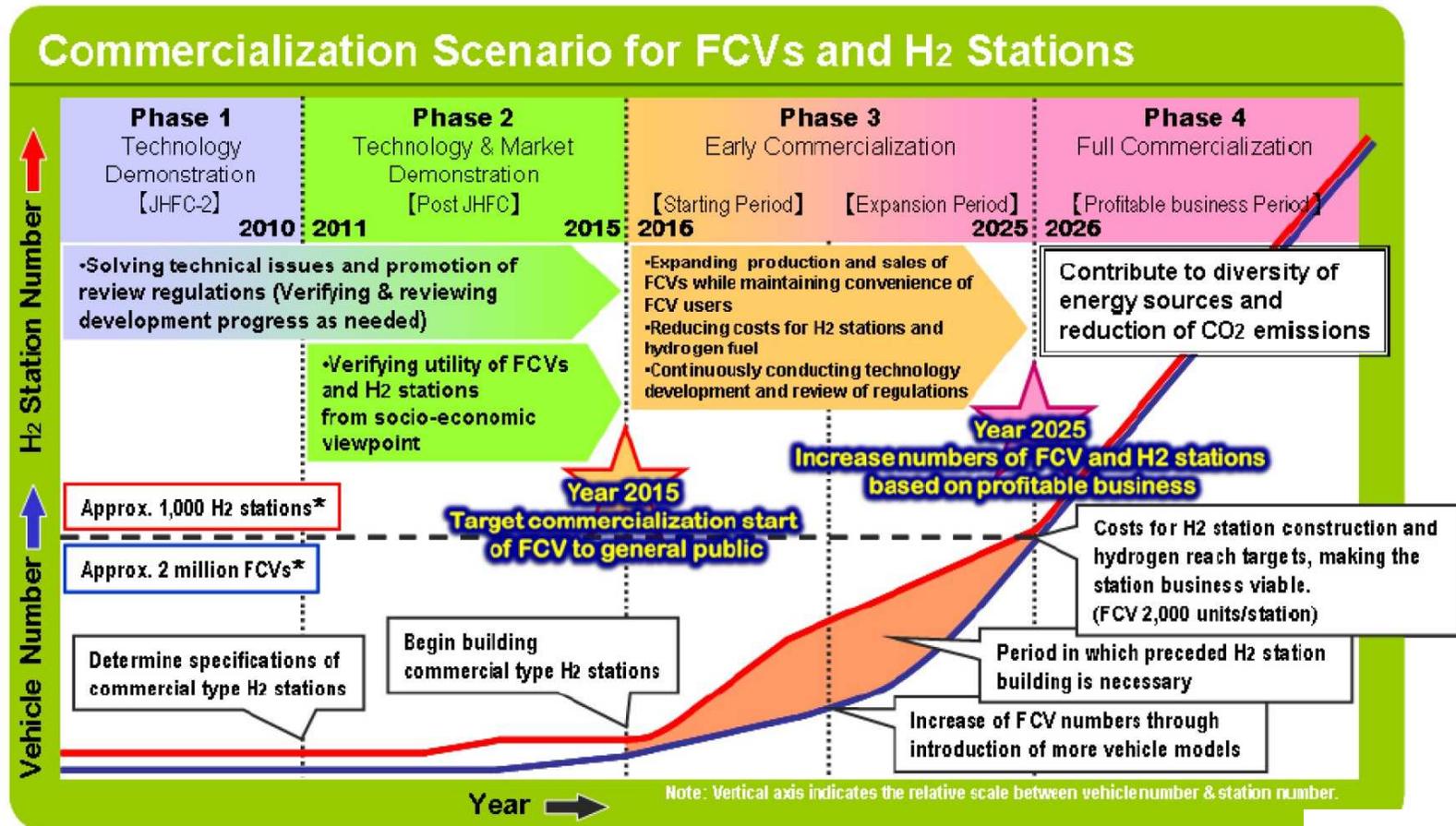
HRS: Hydrogen Refueling Station*

11

Source: NEDO

Now, it became official task.

FCCJ Commercialization Scenario (2010.3)



* Precondition: Benefit for FCV users (price/convenience etc.) are secured, and FCVs are widely and smoothly deployed

Source : Fuel Cell Commercialization Conference of Japan (FCCJ)

Industry made the vision.

Industries' Joint Announcement (2011.1)

➤ Thirteen Japanese companies jointly announced the following related to mass-produced FCVs and a hydrogen infrastructure.

1. Automakers are aiming to launch FCVs in the Japanese market—mainly in the country's four major metropolitan areas in 2015.
2. Hydrogen fuel suppliers are aiming to construct approximately 100 hydrogen refueling stations (HRS) by 2015.
3. Automakers and hydrogen fuel suppliers will work together to expand the introduction of FCVs and develop a hydrogen supply network throughout Japan.



With mentioning the importance of regulation review for HRS development

Source: NEDO

Auto: Toyota, Nissan, Honda

Oil: JX, Idemitsu Kosan, Showa Shell, Cosmo

Gas: Iwatani Sangyo, Taiyo Nissan, Tokyo Gas, Osaka Gas, Toho Gas, Seibu Gas

**Industry made the commitment,
with mentioning importance of regulation review**



Today



Technova | Inc.

Top-level support (2013.5)

- PM clearly stated the need for regulation review for FCVs .



PM Shinzo Abe (May 17, 2013)

I support companies which make challenges toward innovation.
The keyword is “regulation review”.

One example is **FCV, which is an eco-friendly, innovative vehicle with no CO2 emission**. However, there are so many regulations over **hydrogen tanks and hydrogen stations**. (SNIP)

Too many discussions already. Time to go. Toward new innovations, Abe Cabinet will promote regulation review.

(unofficial translation)

Top leader committed regulation review.

Japan Revitalisation Strategy (2013.5)

Japan Revitalisation Strategy - Japan is Back (June 14, 2013)

Support for introduction of hydrogen refueling stations and review of regulations relating to fuel cell vehicles and hydrogen infrastructure

In preparation for the release of **fuel cell vehicles to market in 2015**, **review regulations** relating to fuel cell vehicles and hydrogen infrastructure, at the same time, through support for introduction of hydrogen refueling stations, the government aims to achieve **world's fastest dissemination of fuel cell vehicles**.

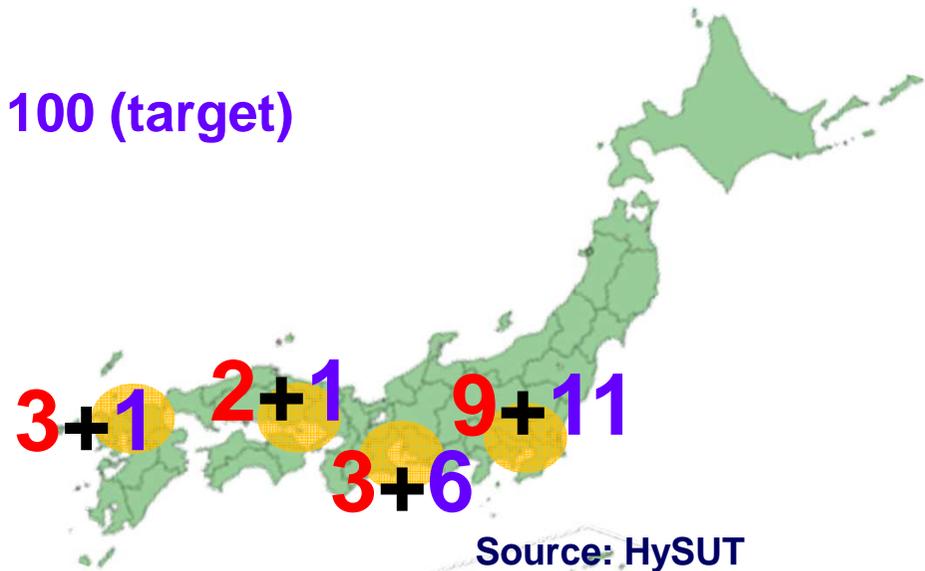
Source: Japan Revitalisation Strategy - Japan is Back (June 14, 2013)
http://www.kantei.go.jp/foreign/96_abe/documents/2013/1200485_7321.html

Government's reconfirm the commitment on FCV commercialization and regulation review.

Hydrogen Stations: Toward 100

- By the end of FY2012
 - **Experimental HRS:** 17
- FY2013 budget for HRS subsidy: 4.6 bil yen (=35 mil Euro)
 - **Commercial HRS:** 19 (New installations)
- FY2014 and FY2015
 - **Commercial HRS:** more stations coming
- By 2015 (Target)
 - **Commercial HRS** ca. 100 (target)

- Subsidy ratio: 50%
- Average subsidy awarded:
35 mil Euro / 19 = 1.8 mil Euro
- Average station cost today:
3.6 mil Euro



Long way to go, but making progress...

Conclusion

- ❑ Regulation review is important part of FCV commercialization.
- ❑ If all necessary regulation reviews are processed and finished, HRS cost may be >200 mil yen (currently 550 mil yen).
- ❑ Top leader committed the review, and it is now included in national strategy.
- ❑ Now, work!