

HYLIGHTS

Hydrogen for Transport in Europe

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INTERIM REPORT

Deliverables W5.1 & W5.2

Initial comparison of different legal forms and management structures of hydrogen demonstration projects in Europe

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A Coordination Action to Prepare European and Fuel Cell Demonstration Projects on Transport

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The European Commission is supporting the Coordination Action “HyLights” and the Integrated Project “Roads2HyCom” in the field of Hydrogen and Fuel Cells. The two projects support the Commission in the monitoring and coordination of ongoing activities of the HFP, and provide input to the HFP for the planning and preparation of future research and demonstration activities within an integrated EU strategy.

The two projects are complementary and are working in close coordination. HyLights focuses on the preparation of the large scale demonstration for transport applications, while Roads2Hycom focuses on identifying opportunities for research activities relative to the needs of industrial stakeholders and Hydrogen Communities that could contribute to the early adoption of hydrogen as a universal energy vector.

Further information on the projects and their partners is available on the project websites www.roads2hy.com and www.hylights.eu.

HYLIGHTS



2 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2



3 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

Disclaimer

This document is the result of a collaborative work between HyLights Industry and Institute partners. The results of the research were subsequently elaborated and presented in a coherent manner, which involved extensive stakeholder consultation in locations around the world as well as feedback from the “HyLights” Industry Partners.

The ideas presented in this document were reviewed by certain "HyLights" project partners to ensure broad general agreement with its principal findings and perspectives. However, while a commendable level of consensus has been achieved, this does not mean that every consulted stakeholder or "HyLights" Industry Partner necessarily endorses or agrees with every finding in the document. The producer of this document is the sole responsible for its content and recommendations.

4 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

Contents

1. Foreword	5
2. Executive Summary	6
2.1 OBJECTIVE OF REPORT	6
2.2 METHODOLOGY.....	7
2.3 SUMMARY OF FINDINGS	7
3. Main Analysis	14
3.1 PUBLIC PRIVATE PARTNERSHIPS AND LEGAL FORMS.....	14
3.1.1 SHORT THEORY ON PPPs	14
3.1.2 POTENTIAL LEGAL FORMS OF PPPs FOR LHPs	15
3.1.3 FINANCING LHPs.....	25
3.2 MANAGEMENT STRUCTURES.....	25
3.3 ROLE OF NATIONAL, REGIONAL AND LOCAL GOVERNMENT	27
3.3.1 LHPs, PPPs & STATE AID RULES	27
3.3.2 SHORT THEORY ON STATE AID	28
3.4 INTELLECTUAL PROPERTY MANAGEMENT	29
3.4.1 IP & CHOICE OF LEGAL FORM OF LHP CONSORTIUM.....	29
3.5 SAFETY/STANDARDS & REGULATIONS.....	31
3.6 SAFETY/ RISK, LIABILITY & INSURANCE	31
4. Countries & Project Findings	33
4.1 PUBLIC PRIVATE PARTNERSHIPS AND LEGAL FORMS.....	33
4.2 MANAGEMENT STRUCTURES.....	37
4.3 ROLE OF NATIONAL, REGIONAL AND LOCAL GOVERNMENT	39
4.4 INTELLECTUAL PROPERTY MANAGEMENT	40
4.5 SAFETY/STANDARDS & REGULATIONS.....	41
5. Future Considerations	44
5.1 PUBLIC PRIVATE PARTNERSHIPS AND LEGAL FORMS.....	44
5.2 MANAGEMENT STRUCTURES.....	45
5.3 ROLE OF NATIONAL, REGIONAL AND LOCAL GOVERNMENT	47
5.4 INTELLECTUAL PROPERTY MANAGEMENT	48
5.5 SAFETY/ STANDARDS AND REGULATIONS.....	48
5.6 SAFETY/RISK, LIABILITY & INSURANCE	48
6. Acronyms & Abbreviations	50
7. Annexes	50
8. References	51

5 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

1. Foreword

In the past years public and private stakeholders have been working towards the identification of a short to medium-term strategy to foster the development of hydrogen-fuelled vehicles and of hydrogen refuelling infrastructure technology. In view of improving hydrogen and fuel cell (HFC) technologies, it was decided that large-scale demonstration projects, so-called “LHPs” (Light House Projects) should be deployed in the short term in order to test the technology under real world conditions. These projects will also serve to bridge the gap between the R&D phase and the commercialisation of the HFC road transport technologies. Their main objective should be to develop all the key components of a hydrogen-orientated economy to market maturity, and in parallel, to foster market acceptance, so that decisions on mass production may be undertaken. Scenarios of the car industry and fuel suppliers on building up vehicle production and infrastructure should therefore be used as a guideline.

The European Hydrogen and Fuel Cell Technology Platform (HFP) is the forum where the stakeholders meet to identify the goals and the strategy to facilitate the development and deployment of cost-competitive, world-class European hydrogen-based energy systems and component technologies for applications in transport, stationary and portable power. The goals and strategy have been set out in a number of documents among which the “Deployment Strategy”, the “Strategic Research Agenda” the “Implementation Plan 2006”, etc. Focused R&D projects and corresponding demonstration activities should be the goal of future activities. The idea is that a comparatively large number of vehicles will initially be deployed in a few European “lighthouse regions” and this will foster the installation of adequate hydrogen infrastructure in addition to the existing one to meet the vehicles needs.

Several industrial partners have recently presented their vision and the potential timing for the realisation of these goals. For passenger cars, they proposed the testing in one pilot region in Europe and for buses in different European cities with refuelling stations located in designated depots. Hence, the role of national, regional and local authorities in the deployment of LHPs is very important.

Furthermore, under the upcoming Research Framework Programme 7 (FP7) and in coherence with the activities and the strategy identified by the HFP as well as in the upcoming “Implementation Plan 2006”, a Joint Technology Initiative (FTI) is intended to be created to foster the technology and promote large-scale commercialisation of hydrogen technologies.

LHPs will create a more sustainable loop for further enhancement of research and development to be carried out in the future into early market entry, thus leading to better and more affordable technology applications as the cost of fuel cells and the corresponding infrastructure is one big barrier.

The scope of the JTI should include the deployment of the LHPs. These will enable the successful implementation of the strategies and the achievement of the goals set out by the HFP and the JTI, and will help to bridge the gap between R&D projects and commercialisation as well as preparing the necessary public framework (Regulations, Codes and Standards (RCS), sustainability criteria, etc).

For the purpose of this report, the findings were linked to the assumption that the HFC JTI will be created. The analysis is focused on hydrogen road transport LHPs.

6 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

2. Executive Summary

2.1 OBJECTIVE OF REPORT

According to the findings of the “HFP Business Development Sub-Group” successful, industrial clusters, effective Public Private Partnerships (PPPs) and ambitious regional policies, among other factors, are fundamental issues in order to foster a future hydrogen and fuel cell (HFC) economy.

In addition, and in view of reaching the goals set out in the “Snapshot 2020” as described in the HFP Deployment Strategy report, a comprehensive, research, development and demonstration should be initiated by the JTI on time in accordance with the synchronised goals and timing outlined in the HFP Strategic Research Agenda and the Deployment Strategy.

PPPs will present their project proposals for future hydrogen road transport LHPs following the publication of calls for tenders by the JTI Programme Office. The Programme Office will assist the Director of the JTI in management activities and will also have a role in intelligence gathering, knowledge management and facilitating overall progress, as well as public outreach and dissemination activities. The Director will propose to the Governing Board a list of projects to be financed by the JTI. Contracts will be negotiated by the Programme Office staff and signed by the Director on behalf of the JTI. The Programme Office staff will handle all aspects of project follow-up, including analysis of reports and payments.

The LHPs will be situated in areas with their own specific technical, geographical, socio-economic and regulatory characteristics and will be so-called “Pilot Regions” for HFCs in Europe. The integration of all elements into large clusters should ensure interaction between the different levels of the hydrogen chain and particularly between stationary and mobile applications. It was recommended in the HFP Deployment Strategy document that the HFC road transport LHPs should concentrate on a few sites with specific assets, which allow for a cost-effective demonstration of a hydrogen economy in a full and comprehensive test of all applications. The LHPs should present the scope for an economically viable utilisation of the major infrastructure installations in a possible large-scale deployment for a subsequent commercial phase of market development to take place. These LHPs could be located in areas where there is existing hydrogen production capacity available combined with sufficient demand potential.

In view of ensuring that the project proposals contain all necessary elements of successful implementation, an in-depth analysis was deemed necessary to comprehend, record and monitor the critical success factors, among which the so-called “**Project Governance Indicators**” (PGIs).

For this reason “HyLights” was mandated to collect information from previous and on-going success stories both in Europe and worldwide (US, Japan, Australia, etc) of hydrogen road transport demonstration activities and elaborate on a list of different PIs which cover a wide range of issues related mainly to the preparatory/negotiation phase of the demonstration projects between the public and private interested parties, their contractual relationship and the project management structure. This report includes information on how these projects addressed Intellectual Property Rights (IPR), safety and risk management as well as RCS issues.

7 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

The current report is part of deliverables 5.1 & 5.2 of the “HyLights” contract and will be used as a basis for further development with the aim of providing concrete recommendations at the end of the “HyLights” project.

2.2 METHODOLOGY

The following methodology was adopted:

- Interviews with public (national, regional, local), private stakeholders (industry), hydrogen demonstration project coordinators, both at EU and non-EU level.
- Review of existing literature on hydrogen road transport demonstration projects, EU legislation on Public Private Partnerships, especially in the R&D sector, FP6 & FP7 documentation, EU policy documents i.e. EC proposal for a type-approval process for hydrogen vehicles, EIB Risk Financing documents, etc. A complete list of the documentation is presented in the “References” section of this report.

Preliminary desk research and review of the literature was a good foundation for the preparation of a questionnaire used during interviews with various stakeholders and/or project partners/promoters, which were an indispensable part of the research exercise. The empirical analysis of the interview findings complemented the theoretical findings and resulted in a comprehensive list of conclusions on the legal forms, management structures, intellectual property, and safety and risk management issues pertinent to future LHPs.

The findings have been summarised and are presented in the analysis section of this report. The projects’ results are presented in the form of “Project Factsheets” annexed to this report.

I N P U T	LITERATURE REVIEW	PROJECT/REGION FACTSHEET	INTERVIEWS
	<p>HyCOM, LHP study, Legal forms of Research Infrastructures of pan-EU interest, project studies, PPPs literature, etc</p>	<p>A Factsheet is used to collect info</p>	<p>Telephone or on-the-spot interviews</p>

2.3 SUMMARY OF FINDINGS

The report is divided into three sections. The first section is based on theoretical findings encompassing a spectrum of issues pertinent to successful LHPs. The second one presents the empirical findings based on previous and on-going hydrogen road transport demonstration projects within Europe and worldwide. Last but not least, a series of future considerations is included at the end of the analysis.

The proposals/future considerations included in this report, should not be misinterpreted as restricting or binding on future projects nor should even be considered as a blueprint for future demonstration projects but only as current findings based upon the analysis realised so far. Thus, should the scope of this report had been smaller or larger the following

8 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

proposal would have most probably been different. **The proposal is still very much open for discussion within the HyLights project and is thus subject to change and therefore the findings should not be understood as a formal proposals/recommendations from HyLights.**

The issues analysed in each of these three sections are the following:

A. Contractual Form: Public-Private-Partnerships (PPPs)

PPPs are an effective and transparent way for stimulating and supporting initiatives of common interest. Governments and public administrations are expected to set up partnerships in order to promote joint projects, common research efforts, funding synergies and consortia aiming at managing large projects. PPPs shall also be the basis for the creation of hydrogen-based industrial districts and the development of infrastructure networks. Regions can support strategic projects acting as direct partners and/or project promoters in LHPs to be funded under FP7.

The success of a PPP depends to a great extent on a comprehensive contractual framework for the partnership, and on the optimum definition of the elements that will govern its implementation. In this context the appropriate assessment and optimum distribution of risks between the public and the private actors, according to their respective ability to assume risks, is crucial.

Recent experience from the first EU PPP, GALILEO (satellite navigation system) shows that the joint undertaking is an adequate structure for a large-scale project as it ensures the coherent management of all funds allocated to the project. PPPs can provide a clear line of authority and responsibility covering all scientific, technical, administrative and commercial aspects of the project.

In this document, a short overview of the theory on PPPs is presented and issues related to the different legal forms that PPPs could take are analysed. PPPs do require bilateral negotiations, which by their nature contain transparency concerns thus underlining the need for a strong contractual framework.

At this point, it would not be wise to indicate that a certain legal or non-legal form would be the best solution for the future LHPs. This will depend on the project's geographic spread, the project's objectives and the partners' needs. Some advantages of the legal forms are detailed below

a) It is true that due to the high-risk profile (technological and market risk) of the envisaged LHPs, a solid legal form addressing liability issues would be better in terms of ensuring commitment and reducing investment risk. On the other hand, the establishment of such entities requires a lengthy preparatory administrative phase.

b) Another point to be taken into consideration is the willingness of the LHP consortium to seek other types of financing, such as risk financing to cover the needs of the future LHP. Such a scenario would require the existence of a separate legal entity, which cannot be created with a simple consortium agreement.

Looking at the range of projects that have been analysed we can group the legal form of concluded or on-going HFC demonstration transport projects into four broad categories based on the relationships laid out in the contracts of the associations.

- Legal form addressing the relationship between the partners:

9 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

1. **Horizontal:** when all project partners act on equal terms and decisions are reached following unilateral consultation. No partner has a leading role.
 2. **Vertical:** A project partner/coordinator has a leading role and a top-down decision making process is applied.
- **Legal form addressing the type of agreement:**
 1. **Informal partnership:** Due to early phase of evolution, project needs and objectives, most projects investigated adopted a partnership by signing a simple consortium agreement without needing to create a separate entity with its own legal persona.
 2. **EU-led:** most of the projects realised in Europe were funded by the European Commission; hence, the partnership agreement adopted the form stipulated in the EU funding regulations (FP5 or FP6 funding programmes).

However, it must be noted that the circumstances, the needs and the objectives of the project partners at the point when the above mentioned findings were collected might differ from those that will be identified for future LHPs, especially since future LHPs will serve as a bridge between the existing R&D on HFC and large scale commercialisation of the HFC technologies.

B. LHP management structures

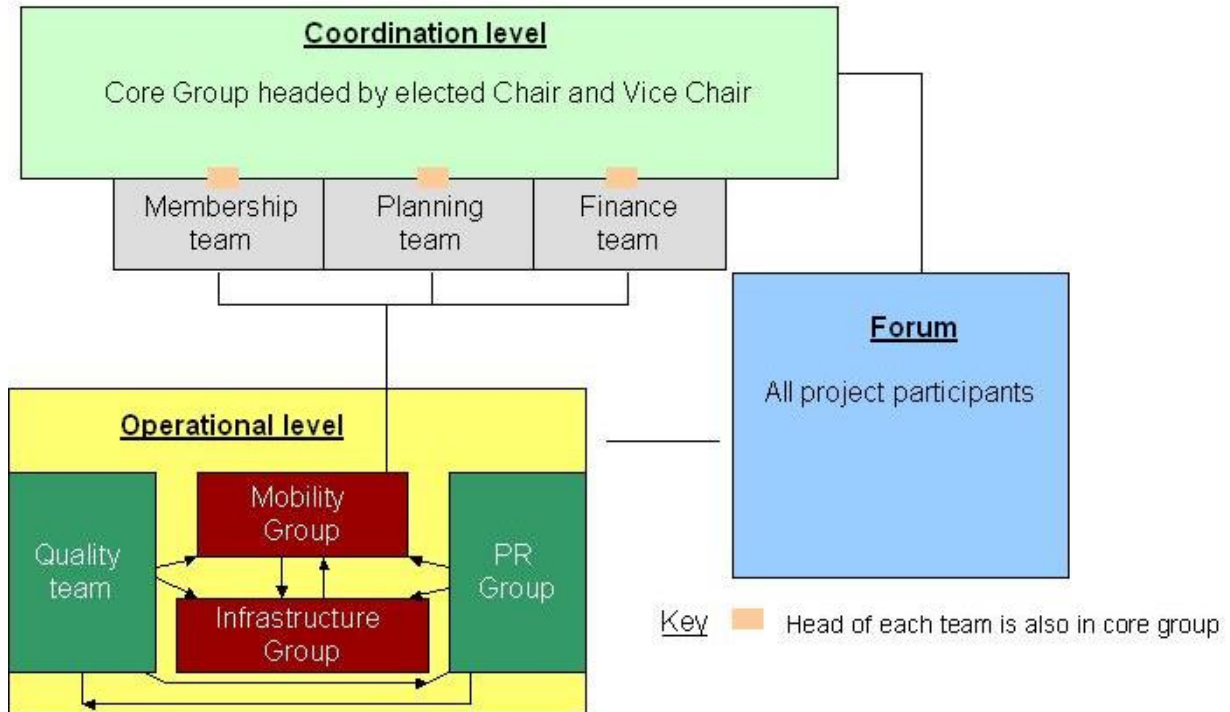
Following the compilation of project findings, a management structure could be proposed for each LHP which would contain necessary components with the aim of coordinating the project between vehicle and infrastructure companies and ensure collated and precise data being transferred to the programme level. Meanwhile the proposed structure would also ensure that coordinators in LHPs liaise with the operational team of the project. The management structure would guarantee equal representation of all project partners.

The scale of the LHPs, the complexity of the tasks and number of project partners might require the inclusion of bodies other than the vehicle and infrastructural companies and include bodies dealing with administration, finance, safety and PR all to ensure the consistency of the LHPs' actions within the programme's aims.

10 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

Project findings: Drawing from the projects' findings, analysis and the project partners' feedback on the effectiveness and efficiency of the adopted management structure, taking into consideration their recommendations, an initial generic example of a management structure for future hydrogen demonstration "Light-House Projects" is presented in the below Figure. This structure may undergo changes in the course of HyLights.



Note: Generic sketch of potential future lighthouse projects (LHP) management structures with key elements

11 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

The idea behind this example is that the structure uses an efficient decision-making process at the core group level through the involvement of Chair and Vice Chair persons, elected by the Forum; three teams would be dealing and assisting the whole project with administrative issues. The heads of each of the three teams will be participating in the Core group. This coordination level would be required to ensure that common tasks, issues and problems between the different industry participants and other project stakeholders are streamlined and the project runs smoothly.

The three teams (Membership, Planning and Finance) would undertake the following roles:

Membership team – would evaluate applications from stakeholders wishing to join the LHP through an analysis that would involve gauging the suitability and commitment from potential project participants/promoters within the aims and objectives of the LHP. The Core Group, on the basis of information compiled by the Team, should take the final decision in such cases. Finally, this team would foster and support the participation of SMEs and or Research centres.

Planning team – would evaluate and map the strategic choices aimed at reducing risks within the LHP and also ensure compliance with pre-identified action plan and more important with desired project outcomes. It would also monitor the overall efficiency of the project and put forward proposals and recommendations to the Core Group for decisions to be taken to improve processes, adopt project goals, enlarge partnership, etc.

Finance team – would act as the “Treasurer” of the project, i.e. would manage and distribute project funds and ensure that all partners have a fair share of benefits and charges based on their contribution. The team would be providing updates on the financials at regular reporting periods and should seek approval of the project’s financials from the Forum.

At the operational level, Mobility, Infrastructure, PR groups and the Quality Team would work in close cooperation. The mobility and infrastructure groups will liaise directly too, due to their clear interdependencies. The four components would implement the “quality assurance” aim laid down by the core group ensuring that all standards are met, best practices are in place, and there are good, sound relations with the local community that could lead to successful activities in view of raising public awareness. In this, the Quality Team would develop knowledge on ways to increase safety, but also disseminate public assurance information developed with the PR group to increase public acceptance of the project.

Finally, the existence of a Forum would allow for regular discussions between those steering the project and those doing the work on the ground (as the latter would have more hands-on experience on the issues that need to be improved and communicate the lessons learned within the project). Knowledge sharing sessions (KSSs) and annual reviews would also be part of the forum as well as reviews on macro- and micro-challenges.

C. LHPs & role of National, Regional and Local Governments

The issues that are addressed in this report touch upon the role of the public actors in terms of financing the LHPs, state aid barriers for the provision of such funds, their contribution to the evolution of RCS as well as in relation to public awareness initiatives.

It has been demonstrated that the role of public actors could be catalytic at the negotiation and preparatory phase of the demonstration projects as the long term financial and political commitment should be obvious and credible for the private partners to enter into any kind of discussions. The public sector should be able to demonstrate a well-designed and specific implementation plan addressing both regulatory and financing needs so as to “host” successful hydrogen LHPs within the respective countries or regions by presenting the potential synergies based on the readiness of each region to host such projects.

12 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

As a general comment a fixed and solid structure is necessary within the geographical area where the LHP will be realised as well as a harmonised policy and strategy so that continuity is guaranteed even if leadership changes. In addition, a dedicated structure at regional level aware of the particularities of HFC technologies and the issues related thereto would greatly boost the attractiveness of the respective region. It has been proposed that local chambers of commerce could help identify business opportunities at regional level. Many regions have policies on sustainable energy, however only few of them have a concise strategy on HFC technologies or have implemented incentive programmes to foster the introduction of such technologies especially in the road transport sector.

Project findings - State aid: related to the financial intervention of National and Regional governments in favour of LHPs, the debate on whether this could constitute illegal State aid or not has been part of several discussions. Article 87(1) EC states: "any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the common market".

With regard to State aid it could be said that there is no aid where all investors in a PPP share risks and rewards on exactly the same terms, i.e. as there is no benefit, there is therefore no State aid. By contrast, there is State aid where the public partner subordinates its return, enabling a commercial return to the private investors. The State aid rules are independent of the legal status of an undertaking. They only affect PPPs where the participation of the public partner provides a benefit to the private partner and/or the PPP as an entity provides a benefit to others.

In addition to the aforementioned, State aid rules and procedures valid for national schemes aimed at fostering R&D activities and environment friendly investments, would also be applied for national funding schemes supporting the introduction of HFC road transport technologies.

D. Intellectual Property management: this relates to the choice of legal form and the scope of the project activities as well as the sharing of project knowledge among project partners; the project findings demonstrated the methods followed for the collection, handling and dissemination of sensitive information. Identification of the appropriate IPR stipulations would occupy an important part of the project negotiation phase.

Project findings - IPR: For some projects, the information was collected manually, analysed and presented in an aggregated form. When projects evolved, they employed electronic means for sensitive data collection. The data were, generally speaking, centralised in an entity, governmental or not, treated and prepared for wider dissemination. The result of the applied methods was in most cases a comprehensive process that ensured the security of the information gathered, strict restrictions regarding the persons who had access to the raw data, and careful control over the consolidation and analysis of data to ensure that no project partners' individual data could be extrapolated from publicly released data.

E. Regulations, Codes & Standards:

RCS that are well conceived, based on scientific data, sufficiently reviewed, and equally applied across jurisdictions are crucial to the success of any demonstration programme. If the programme is to be large in scale, this implies that it will be large both geographically as well as in the numbers of the vehicles involved.

13 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

Project findings - RCS: If the programme crosses governmental jurisdictional boundaries, it is critical that the same RCS are applied uniformly wherever the vehicles will be operated and the hydrogen refuelling infrastructure installed.

While a number of agencies are considering specific codes and standards for installation and operation, the process is quite fragmented and is a long way off from providing a comprehensive basis for action by local officials.

The project investigations demonstrated that the implication of the local fire brigade was deemed necessary as well.

F. Safety/Risk, Liability & Insurance:

Liability related to HFC technologies will be directly proportional to success of technology, codes and standards. It has been indicated that many large insurance companies will not underwrite hydrogen projects because of the limited actuarial data to price coverage, the absence of codes and standards, and the fact that the current volume of policies is "quite small."

Many large companies have the financial capacity to self insure either the hydrogen vehicles or the infrastructure and those under public property can avail themselves liability indemnification.

Transition to consumer use will create challenges, but not different than fuel. The potential types of tort liability include:

- Products liability
- Negligence
- Abnormally dangerous activity

Project Findings: the non-existence of adequate insurance coverage will constitute an important commercialisation barrier. The majority of project findings demonstrated that in the case of vehicles, the OEMs undertook in-house insurance without any particular stipulations relevant to using hydrogen as fuel and this was arranged directly and bilaterally with the fleet operator. The contrary seems to have happened with regard to the refuelling infrastructure where specific risk analysis and assessment was realized and insurance against third party injuries was also foreseen. The fuel infrastructure providers bore any liability for any potential incidents (damages and injuries).

14 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

3. Main Analysis

3.1 PUBLIC PRIVATE PARTNERSHIPS AND LEGAL FORMS

For the realisation of hydrogen road transport LHPs, public and private stakeholders will need to join forces and financing sources for the achievement of the goals set out in the HFP draft Implementation Plan of October 2006.

According to the rules of the latest Commission proposal on FP7, "...the Community will provide financial support to multi-financed large-scale initiatives". On the one hand Community financial contribution will be allocated for well-identified national research programmes on the basis of Article 169 of the EC Treaty, subject to the definition of a financing plan based on formal commitments from competent national authorities. On the other hand, the Commission will support financially the implementation of JTIs to realise objectives that cannot be reached through other R&D funding schemes. Finally, financial contribution will be allocated to the development of new infrastructures of European interest. These JTIs will be in the form of PPPs.

A short analysis on PPPs and the different forms that these could take for the realisation of LHPs is presented in the following lines.

3.1.1 SHORT THEORY ON PPPS

Generally speaking, the term addresses the forms of cooperation between public authorities and private entities in view of realising projects/works for the purpose of guaranteeing adequate funding sources, the construction, renovation, efficient management or maintenance of infrastructure, the realisation of an ambitious R&D (see example of Research Joint Ventures "RJVs") or the provision of services.

The public authorities of the EU Member States often have recourse to PPPs in order to undertake infrastructure projects, especially in sectors such as transport, public health and national security. At European level, it was recognised that recourse to PPPs could facilitate the implementation of trans-European networks, whose conclusion was delayed mainly due to lack of adequate funds. Nonetheless, and although the public-private cooperation can offer micro-economic benefits permitting the realisation of a project that provides value for money and meets public interest objectives, recourse to PPPs cannot be presented as a panacea for a public sector having budget constraints. It has been demonstrated that for each project, it is necessary to assess whether the partnership option offers real added value compared to other options such as the conclusion of a more traditional contract of cooperation.

PPPs can take three main different forms:

- The PPPs that can be identified as 'public contracts' for works or services. "Supply, works and service contracts" are contracts for pecuniary interest concluded in writing between one or more of the contracting entities referred to in Article 2(2) of directive 2004/17/EC, and one or more contractors, suppliers, or service providers". "Public work contracts" are contracts having as an objective the execution or both the design and execution of works related to one of the activities defined in the Public Procurement Directive of March 2004. A "public service contract" is a contract other than public works or supply contracts having as objective the provision of certain services defined in the Public Procurement Directive of March 2004.

15 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

- PPPs that can be identified as **'concessions' for works or services**. A key feature of concessions is the right of the concessionaire to exploit the construction or service granted as a reward for having erected the construction or delivered the service. The main difference from public contracts is the risk inherent in such exploitation, which the concessionaire, usually providing the funding of at least parts of the relevant projects, has to bear. Such private capital involvement is considered to be one of the key incentives for public authorities to enter into PPPs.
- **Institutionalised PPPs (IPPPs)**: this form involves the establishment of an entity held jointly by the public and the private partner. The joint entity has the task to deliver the project undertaken. An IPPP can be created either through the establishment of a jointly held entity or by the private actor taking control of an existing public undertaking. Both parties will be *sharing* tasks and financing. It is not yet clarified how public procurement rules will be applied (1) to the establishment of mixed capital entities the objective of which is to perform services of general (economic) interest and (2) to the participation of private firms in existing public companies, which perform such tasks.

In "traditional" PPPs, i.e. concessions and public contracts, the public partner concentrates primarily on defining the objectives to be attained in terms of public interest, quality of services provided and pricing policy and it takes responsibility for monitoring compliance with these objectives. In addition and with regard to the distribution of risks between the public and the private partner, a PPP does not necessarily mean that the private partner assumes all risks, or even the major share of the risks linked to the project. The exact distribution of risk is determined on a case-by-case basis, according to the respective ability of the parties concerned to assess, control and cope with the project risk.

3.1.2 POTENTIAL LEGAL FORMS OF PPPs FOR LHPS

When public and private sector join forces to implement large-scale R&D and demonstration activities, their collaboration could take a specific form depending on the project's objectives, financing needs, production of IP, risk and liability issues. A number of possibilities exist and these are presented below. We begin the analysis by distinguishing between a formally and an informally established entity:

- Formal legal structure
 - Incorporated: European Economic Interest Group, Limited/Unlimited Liability; "European Company", "European Co-operative Society", etc
 - Unincorporated: INPA, Joint Undertaking, etc

Legal related Issue	Advantages	Disadvantages
1. Liability	No liability of stakeholders	
2. Ownership of assets	Entity to own or lease its assets; to vest its IPRs & to enforce them	
3. Taxation	Taxation at level entity	
4. Management structure	Statutory law available to enforce such management form	Less freedom to establish desired management form
5. Governing law	Mandatory rules on law & forum	No choice of law possible, since mandatory (national) law of the relevant MS will be applicable to legal entity
6. Branches/subsidiaries	Legal entity can establish branches/subsidiaries	



16 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

Source: "Development of Hydrogen and Fuel Cell Technologies in a Large-Scale Lighthouse Project", Final Report

- No (informal) legal structure (contractual basis): Consortium/Joint Venture

Legal related Issue	Advantages	Disadvantages
1. Liability		Potential liability of stakeholders
2. Ownership of assets	Each stakeholder can participate with required stake (assets, services, time spent, financing etc).	Unclear who is legally entitled to which assets after 10 years & to any assets created by/during the JV. Dependency on stakeholders to license IP rights & enforce to third parties
3. Taxation	Tax transparent to stakeholders	
4. Management structure	More freedom to establish desired management form	Little statutory law available to enforce such management form
5. Governing law	Choice of law possible	Uncertainty whether choice of law would be respected in all involved MS
6. Branches/subsidiaries		Consortium/joint venture cannot establish branches/subsidiaries

Source: "Development of Hydrogen and Fuel Cell Technologies in a Large-Scale Lighthouse Project", Final Report

In view of the upcoming LHPs to be jointly funded by the EC (FP7), Member States and industry sources, there is no specific requirement of what kind of legal form the consortium presenting the project proposal should take. Moreover, it is not necessary that the consortium undertake an incorporated legal form, as a simple consortium agreement establishing the cooperation could be a solution as well. The chosen form should, however, be tailored to

- the nature of the technological challenges that need to be addressed;
- the regulatory environment of the potential location;
- the characteristics of the relationship among the project participants and
- the financing needs of the future LHPs.

Furthermore, due to the inherent high-risk profile of the hydrogen road transport of the LHPs, the definition and allocation of liability among the partners should play an important role in the identification of the appropriate legal form. In addition, the generation and ownership of Intellectual Property and the distribution of dividends, as the case may be, will also affect the decision on the legal form. Finally, the fact that LHPs will be receiving public funds from the FP7 brings into the foreground competition and transparency rules that need to be respected as well.

The characteristics of each choice are subsequently outlined:

- **Simple Consortium Agreement:** it is not necessary that the consortium presenting a LHP project proposal adopts an official legal form to do so. A simple consortium agreement

17 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

presents the advantage that it could facilitate the negotiation and partnership set-up process by avoiding bureaucracy and could be applicable in case a less developed cooperation between the members is deemed necessary as well as for the realisation of EU R&D Framework Programme funded projects. In the latter case, the project proposals should abide to the rules set out in the relevant regulations for partners' liability, IP ownership, dissemination of project results, etc. Although a simple consortium agreement might be the fastest and cheapest solution in the short term, however, it might not be ideal for the deployment of large-scale hydrogen road transport LHPs for different reasons. These are mainly:

- The high risk profile of the projects
 - The financing needs
 - The commercialisation aspect of the activities to be undertaken (potential revenues to be generated throughout project realisation)
 - The partners would have joint and several liability towards third parties and among each other, which could be a barrier for the participation of certain entities, such as academia
 - Another concern relates to the pooling of additional financing sources to the project, apart from EU FP grants. For example, the eligibility criteria of the EIB Risk Sharing Finance Facility require that either a corporate or a legal entity apply for contribution since under this financing scheme a separate legal entity could provide for better management of IP, aligning of marketing activities, increase of public awareness, and thus facilitate large-scale commercialisation of the technology deployed.
- **A European Economic Interest Group (EEIG):** This form has the following characteristics:
 - Cooperation of at least two partners from EU Member States and of the European Economic Area (EEA).
 - The agreement creating the Group does not need to be officially registered, which leads to lower costs and time savings
 - No start-up capital is required
 - Although not officially registered, the EEIG does have a legal persona, which facilitates the undertaking of commercial activities and its headquarters can be easily transferred from one Member State to another
 - The dividends are distributed to Group members and they are not subject to corporate tax
 - The liability of the members is joint and several, which can be a prohibiting factor for certain stakeholders interested in joining the Group, especially for projects with a high-risk profile. Nonetheless, the liability issue could be solved with separate agreements between the Group members among themselves
 - The number of stakeholders joining an EEIG is limited to certain entities or numerous clauses are imposed by certain national legislations. This can be a barrier for using such forms for LHPs.
 - Unanimity is required to reach certain decisions, which can highly affect fast-track activities of project consortia with many partners coming from different sectors and representing different interests.

Generally speaking, EEIGs are a suitable form for projects with a common European identity, when joint and several liability is not an issue and where the projects do not entail great commercial risk, although the latter could be mitigated through the provision of quarterly reports.

In contrast to a national law company, the formation of a European law company such as the EEIG presents the following advantages:

18 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

- Due to its unitary law feature, the legal framework will remain the same regardless of the establishment location
- Partners -despite their cooperation- keep their economical and legal autonomy while the EEIG has legal capacity at the same time
- In spite of its legal persona, the EEIG is not subject to tax for profits, as the losses or profits will be regarded as losses or profits of its members. Consequently, the profit and loss of an EEIG will be taxed to its members individually causing local tax compliance issues in case a zero result cannot be managed at the very end of each fiscal year.
- The EEIG is not limited to the activities in a certain project but is also able to participate as an independent partner in new European research projects
- For the purpose of exploitation, the formation of an EEIG is advisable due to its structure (max. 500 employees) and its flexibility especially advisable for small and medium-sized research projects with medium-to long-term exploitation cycles

Concerning liability towards third parties, it must be noted that there is the possibility to exclude the liability of one or some members for particular obligations with a specific contract between the EEIG and its contract partners. Such an agreement is only valid for the particular business and always requires the consent of the third party.

- **Private Limited Liability Company:**

The consortium that will undertake the realisation of the LHP could adopt a corporate form and be created as a limited liability company. The advantages of such form are:

- The “company” partners will have limited liability vis-à-vis damages and third parties to the amount of capital (shares) brought into the company
- The LHP “company” itself will have easier access to other forms of financing, i.e. debt or risk financing as in the case of the EIB Risk Sharing Finance Facility
- There are no restrictions in terms of commercial activity as long as this complies with general rules related to competitive behaviour, consumer protection, etc
- If the company produces revenues, these can be diversified among company partners
- It requires the injection of start-up capital from the creators, as minimum capital requirements exist in the legislations of many EU Member States and it must be officially registered. This implies costs and potentially a big time lapse till official launch of the company's operations. The long time lapse could be effectively mitigated with efficient advance planning and upfront consensus on the company's objectives and activities
- The company's headquarters are legally administered in one Member State's jurisdiction. This could be a drawback in some cases.

In conclusion, it could be said that a limited company form could be ideal for long-term, commercial and risk intensive operations with an option of attracting additional financing. This is due to the fact that such a company can be easily liquidated; protect company members should liability issues arise and can easily raise financing from external lenders.

Other possibilities exist that are presented together with the aforementioned in a comprehensive form in Table 1 attached at the end of this document.

- Following the previous analysis, it should be noted that the guidelines which should be followed when choosing the appropriate legal form, are strongly related to the implementation

19 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

of an effective management structure, further analysis of which is presented in the following paragraphs.

For the establishment of the HFC JTI itself the option of a Joint Undertaking was proposed as this would lead to a strong project management mechanism, which would cover the multi-stakeholder aspect of the initiative.

The table below provides an overview of the different legal forms as well as their advantages and disadvantages.



20 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

TABLE 1	National Law			Community Law	
	Unlimited Liability Company	Limited Liability Company	Foundation	Article 171 – Joint Undertaking	EEIG
a) Partnership	Public, private, large number of European and non European countries, large flexibility for newcomers to join as contracting party or as scientific associates	Public, private, large number of European and non European countries, large flexibility for newcomers to join as contracting party or as scientific associates	Private, public bodies with a pre-existing legal entity (may vary from one country to another)	EU, EU bodies –public & private including third countries and investment banks Procedure for new members	European private, public bodies (two members from different MS)
Management	Director General – Council representing each contracting party – each party designates voting shareholders	Director General – Council representing each contracting party – each party designates voting shareholders	Director Board + representing founders + other members	Executive Director, Executive Committee, Administrative supervisory boards (custom-fit organisation defined by founding members)	Assembly of MS as Governing bodies – Secretariat as executive body for the assembly headed by executive director
Liability of Shareholders	Unlimited Liability for debts in proportion to shares	Limited by shares		Unlimited liability of members	Unlimited joint and several liability ¹ of all members and associates (except EC)
Financial Issues	General accounting – cost controlling – multi year plans Resources from contracting parties (cash or in-kind) commercial activity limited to 10% - loans possible VAT and other taxes according to national rules	General accounting – cost controlling – multi year plans Resources from contracting parties (cash or in-kind) commercial activity non limited - loans possible VAT, profit taxes and others according to national rules	Resources from founders, direct grants, user fees VAT according to host country rules	Presentation and structure of cost estimates and annual budget Internal & external financial controls Resources from contracting parties Commercial activities Possible loans VAT exemption, but other taxes payable according to national rules (headquarters site)	Regular accounting system Internal & external control Resources from MS, EC grants, other private sources – commercial activity is optional – possible loans VAT and other costs not covered by EC grant Taxes on profits or losses at individual members if any
Market procedures	No adherence to public procurement procedures	Usually private procurement regulations; if shareholders public sector organisations, the NewCo might need to comply with public procurement regulations and other obligations that apply to public authorities (UK, DE)	Private procurement regulations (public procurement regulations may apply in some countries)	Custom fit rules (no adherence to public procurement procedures) Specific formal tender procedures	Defined by MS
HR	Staff status under private law (depends on general national labour rules) Salary scale depends on existing national reference	Staff status under private law (depends on general national labour rules) Salary scale depends upon market or other reference	Permanent and temporary contracts – seconded personnel Salary scale depends upon existing national reference	Permanent and fixed term contracts-seconded personnel Salary scale depends upon founders agreement	Permanent contracts-seconded personnel-fixed term contracts possible Salary scale depends upon existing national reference in

¹ all parties together are responsible for the obligation ("joint") but also each party individually is responsible for the entire obligation on their own ("several")



21 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

TABLE 1	National Law			Community Law	
	Unlimited Liability Company	Limited Liability Company	Foundation	Article 171 – Joint Undertaking	EEIG
	Expatriation allowance	Expatriation allowance			the host country Expatriation allowance
Access Policy	Access according to scientific excellence and experience Free for non-proprietary research Access fees for proprietary research	Access according to scientific excellence and experience Free for non-proprietary research Access fees for proprietary research	Custom-fit access rules User fees possible 2	Access to contracting parties only Proprietary of IP	Custom-fit access rules – User fees possible – fixed term contracts possible Salary scale depends upon existing national reference in the host country Expatriation allowance
Advantages <i>Source: "Report of the Workshop on the Legal forms of research infrastructures of pan-European interests", March 2006</i>	Clear management, governance and accountability Clear accounting rules Adapted to industrial use Flexible staff policy (limited by national labour rules)	Clear management, governance and accountability Clear accounting rules Adapted to industrial use Can attract additional external investment/funding (in return for shares) Limited Liability	Clear management, governance and accountability Flexible governance structure providing for a Board and a separate Management with full authority for daily management Clear accounting rules Adapted to industrial use Emphasises the non-for-profit character of the project	Clear management & governance Sound effective financial rules Flexible policy staff (limited by national labour rules) Adapted to industrial use	Clear management & governance Sound effective financial rules (defined in EEIG convention) Flexible policy staff (limited by national labour rules and by EEIG convention) Adapted to industrial use
Disadvantages	Unlimited liability	Some organisations are not able to hold shares i.e. EC Some national laws are more formal than others: DG nationality, minority voting rights, salary scale, procurement rules When shareholders are public organisations: less commercial freedom, uncertain accountabilities state aid rules may apply	Some country laws other than the Netherlands and Germany are restrictive for foundations	Difficult for non-EU countries to join Unlimited liability of debts/joint liability of members	Must be composed of members from different EU countries Unlimited liability of debts/joint liability of members Upper limit of number of employees; taxable at individual member level if zero result cannot be managed at end of each fiscal year.

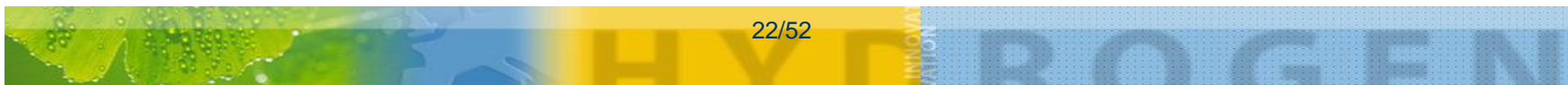
Source: "Report of the Workshop on the Legal forms of research infrastructures of pan-European interests", March 2006

² People pay **user fees** for the use of many public services and facilities



22 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2



23 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

TABLE 1	Other Forms			
	Joint Venture /Consortium	European Company (SE)	European Society (SCE)	Co-Operative
b) Partnership	Public, private, large number of European and non European countries, large flexibility for newcomers to join as contracting party or as scientific associates – no separate legal entity	<p>EU format of Ltd – can be established in four different ways with existing companies or subsidiaries from at least two MS:</p> <ul style="list-style-type: none"> • Merger of 2 companies • Formation of a holding company by 2 or more companies • Formation of a subsidiary by two or more companies • Transformation of an existing public Ltd company that has a subsidiary in another MS for at least two years <p>Governed by EC law directly applicable in the Member States, rather than by national law</p>	<p>A SCE can be established in three different ways:</p> <p>“ex novo” by 5 or more natural persons, by 2 or more legal entities, or by a combination of 5 or more natural persons and legal entities</p> <p>by merger of 2 or more existing cooperatives</p> <p>by conversion of an existing co-operative which has, for at least two years, had an establishment or subsidiary in another MS</p> <p>Governed by EC and not MS law</p>	
Management	Management structure should be specified in the contract		The SCE internal statutes set out its management structure according to one or two possibilities: two-tier structure (management body and supervisory body) and one-tier structure (administrative)	
Liability of Shareholders	Unlimited of members	Limited by shares		
Financial Issues	Tax transparent – each stakeholder obtains part of the tax result of the consortium/JV equal to its contribution – no capital requirement	Minimum capital requirements EUR 120,000	Minimum capital requirements EUR 30,000 Tax issues: a SCE is treated as any other multi-national company according to the national fiscal legislation applicable at company or branch level; Taxes paid in MS where headquartered.	
Market procedures				

24 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

TABLE 1	Other Forms		
	Joint Venture / Consortium	European Company (SE)	European Society (SCE) Co-Operative
HR		Negotiations are necessary on the involvement of employees with a body representing all employees of the companies concerned	Negotiations are necessary on the involvement of employees with a body representing all employees of the companies concerned
Access Policy	No specific rules – consortium decides		Members/founders must originate from more than one MS
Advantages	Allows parties to establish own designed management form No start-up costs (capital or notary)	SE with commercial interest in more than one MS able to move across borders easily SE could attract private venture capital more easily than series of national companies all operating under (different) national rules	Members can pursue certain activities in common while preserving their independence at the same time – could be a suitable form to access markets, achieve economies of scale or undertake R&D activities Ideal for a non-for-profit company
Disadvantages	No legal entity=> ownership problems over, i.e. assets, IPRs, etc. Partners could be held liable for damages or third party liabilities of consortium/JV	Start up costs HR arrangements might prove complex	Start up costs Pre-defined management structures Not adopted by all EU MS New and not widely known form

Source: "Report of the Workshop on the Legal forms of research infrastructures of pan-European interests", March 2006



25 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

3.1.3 FINANCING LHPs

The budget identified in the HFP “Implementation Plan” for the period 2007-2015 is EUR 6.7 bn, two thirds of which will be dedicated to demonstration activities. The latter will be partially financed by the FP7 (up to 30% for demonstration activities), partially by MS budgets (see example of Germany that allocated EUR 500 mn for the period 2006-2016 for LHPs) and partially by the industry either in public financed projects or projects financed with private funding (industry self-financed activity).

Public financing will help cover the risk aspect inherent in the hydrogen road transport LHPs. Within the same framework a new mechanism has been introduced to finance the JTIs, the EIB “Risk Sharing Finance Facility” (RSFF). Private investments in view of PPPs are also absolutely necessary; however, the willingness of the private sector to invest will heavily depend on the scope and the financial requirements from a variety of funding schemes and public sector commitment.

In addition, consultation with insurance companies should be realised as these will also play an important role in covering some of the project risks. In the case of multi-partner consortia the financing of projects supported by the RSSF may be raised via individual borrower(s) for their respective share of the project or via a joint legal entity such as a joint undertaking (i.e. JTI), EEIG, or some other SPV entity. Should a project receive FP7 financing, then this automatically qualifies for RSFF contribution. The EIB subsequently evaluates the “bankability” of the project.

Assuming that before 2020 a hydrogen infrastructure for transport applications will hardly compensate for the financial investment realised for it, combined measures are needed for overcoming the economical barriers on hydrogen production and infrastructure. For this reason PPPs are necessary for building up a basic infrastructure, beginning with large-scale comprehensive projects in order to allow a risk share for the initial investment.

3.2 MANAGEMENT STRUCTURES

Another important aspect of a project is the project’s management structure.

The guidelines followed for the establishment of the appropriate management structure should ensure that:

- The structures implemented should foster and promote efficiency and durability of the LHP;
- Long-term commitment of project participants, public authorities and industry should be supported;
- Transparency of activities and effective cooperation should be secured while providing the project partners a certain degree of flexibility and independency to implement the allocated project tasks.

A theoretical ideal project management structure for LHPs does not exist, but further to the analysis of several projects, we can conclude that the structure should capture and reflect the scope and strategic vision of each LHP by taking into consideration the following aspects:

- The particularities of the potential project location,
- The hydrogen technology targeted,
- Cultural differences,

26 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

- Guaranteeing the LHP's sustainability beyond the EC funded phase
- Utilisation of the management competencies of the different project partners and sharing of management functions to the extent that such sharing is feasible and appropriate.

In general terms, the LHP project management should:

- **Reinforce the LHPs overall vision to all participants.**
- **Foster successful collaboration and implementation of the identified actions.** A common set of goals and implementation strategy should be identified. The project management structure should be able to present a "Business Plan" and identify the following items as part of the monitoring and quality assurance process:
 - Expected outcome
 - Intermediate Steps/Milestones
 - Progress Indicators

The following recommendations could improve the collaboration:

- A management "Matrix" should be put in place and include, apart from the decision-making bodies, the different "Working Groups"/"Task Forces", each focusing on a specific area of interest to avoid duplication of efforts
 - The tasks of the "Working Groups" should reflect the goals identified in the "Implementation Plan" of the HFP to ensure cohesion of strategies and actions between the projects and the JTI decision-making and conflict resolution.
 - Equal representation of participating stakeholders to facilitate a fair decision making process (EC, public authorities, private companies, research centres, etc) should be agreed.
 - The structure should foster effective and active communication and participation of all stakeholders in the decision-making process, possibly with weighting on the basis of transparent and objective criteria i.e. financial contribution, percentage of participation effort, etc.
- **Allow for reporting (internal & external):** an appropriate mechanism should be put in place for the professional and financial management, monitoring and reporting on the implementation of the LHPs activities. An accurate and comprehensive accounting system should be developed to record costs and benefits of the LHP. This would have a very important role to play once "project revenues" are realised and the need to distribute dividends comes. In the case of multi-stakeholders, especially in a PPP project fostering R&D and demonstration activities, a functional, commonly accepted and understandable accounting system should be applied. With regard to reporting and enhancing transparency of LHPs, a "Periodic Activity Report" as well as a "Periodic Financial Management Report" should be implemented, following the requirements of the EC funding rules.
 - **Monitor safety & RCS:** it was recommended by the HFP strategy (Workgroup on RCS) that a special formal process/task force is created within each LHP for assessing due diligence on the safe use of hydrogen and contributing to the harmonisation of regulations for the hydrogen technologies.

The US DoE Hydrogen, Fuel Cell and Infrastructure Technologies Program has presented a document named "Guidance for Safety Aspects of Proposed Hydrogen Projects", which provides for the compulsory inclusion of a preliminary safety plan in all hydrogen-related proposals.
 - **Set up of an evolution scheme for the work plan and consortium:** this will provide the LHP with the flexibility to adapt to technology evolution and market needs. The project would have to be analysed and compared with the "Project Management Performance Indicators". The results of such an exercise could be presented in an "Annual Project Review" within the LHP.



27 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

The possibility of “hybrid membership” should be granted. If the addition of other participants during the period of Community funding is foreseen or deemed necessary, a mechanism should be in place to cover such case and provide the flexibility to the management to adapt to this situation. The “acceding” parties would not become project partners but might be able to contribute to the technology development while deriving some knowledge for themselves. Examples of this “hybrid membership” could include: NGOs, SMEs, Academia or Research Centres.

3.3 ROLE OF NATIONAL, REGIONAL AND LOCAL GOVERNMENT

In order to fulfil the targets set out in the HFP “Snapshot 2020”, Original Equipment Manufacturers (OEMs) will have to make investment decisions within the next few years based largely on where the public support and its impact on the market are most conducive to the introduction of HFC technologies. Therefore, regions should build on their financial, regulatory and market advantage and attract most fuel cell investment. It is widely accepted that the political commitment is a key factor for the success of LHPs.

Industry and market forces alone will not be able to guarantee the development and application of HFC technologies. The role of national, regional and local authorities is extremely important as they can substantially help towards raising public awareness, foster transparency of the investments and cover some of the risks involved in the LHPs.

With regard to setting up an operating hydrogen infrastructure, the local and/or regional authorities are/will be responsible for issuing the relevant operational licence (“approval process”). Local government officials, including fire officers, will need to be “trained” in terms of hydrogen transport technologies, as they are the ones who are and will be heavily implicated in the approval process of Hydrogen Refuelling Stations (HRS). An effort is currently realised by the HyApproval project to develop a handbook on approval routes that will be used as a reference by local authorities for the HRS authorisation process.

The approval process mentioned before entails a detailed risk analysis. The public authorities will enable large-scale commercialisation by sharing part of the financing needs and if needed covering the risk - partially or entirely - for technological or commercial failure (an important aspect of the risk is the liability towards third parties). Public authority intervention would greatly contribute to increase the users’ confidence.

3.3.1 LHPs, PPPs & STATE AID RULES

It was recommended in the European HFP Deployment Strategy that state aid issues have to be carefully considered in the realisation of LHPs. The possibility for Governments and Public Administrations to support private initiatives in the field of new technologies is often limited by the rules of market competition. HFC technologies require public financial support in order to speed up the transition for the research and innovation phase, towards a market introduction, growth and maturity.

28 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

3.3.2 SHORT THEORY ON STATE AID

State aid is aid from a Member State to business, which the Treaty of Rome declares as generally incompatible with the common market - with certain possible exceptions. Broadly speaking, it means Member State's financial aid which favours selected businesses and that has the potential to distort competition and affect trade between EU Member States.

Article 87(1) EC sets out the following criteria, all of which must be met, for a State aid to be present:

1. The aid favours certain undertakings or the production of certain goods
2. The aid is provided through State resources
3. The aid distorts or threatens to distort competition
4. The aid affects trade between Member States.

Public funding and State aid are not one and the same, i.e. public funding is not necessarily a State aid. General measures are not regarded as State aid because they are not selective and apply to all companies regardless of their size, location or sector. Examples include general taxation measures or employment legislation.

The beneficiary of State aid can be a public, private body or a Public Private Partnership (PPP). For State aid to exist, there has to be a benefit by an economic entity from State resources, which is active in an activity traded within the EU, e.g. insurance; construction; banking. If the entity does not carry out an economic activity, there is no State aid as far as these rules are concerned.

State aid needs to be notified and approved by the EC to be considered as lawful aid. Aggrieved competitors may take their complaint about (suspected) illegal State aid directly to the Commission or take the recipient of unlawful aid to court in their own Member State to seek damages. The consequences for businesses if funding bodies get the State aid rules wrong can be severe. Member States are obliged to recover illegal aid if ordered to do so by the Commission even if the recovery of aid means that recipient companies go bankrupt. Companies can also take the government/granting authority to court for damages against illegal aid recovered.

PPPs should comply with the following guidelines in order to avoid state aid concerns:

1. Market Failure

The project should, for example, concentrate only on vehicles and infrastructure that is not attracting a private developer/producer because it is not financially viable to buy and develop the technology/infrastructure without public intervention. This should eliminate any state aid concerns that the partnership is potentially competing against such private actors.

2. Selecting a private partner(s)

In creating a Joint Venture Limited company for example, the public body should competitively select their private partners. This should be done through rigorous advertising, which outlines the criteria that need to be met by the partner(s). The purpose of this is to prevent selectivity towards particular partner(s), which could in turn improve their competitiveness in the market place. By the same reasoning, it might be sensible to have only a three / four year contract with the selected partner(s) and then undergo another open tender. This should minimise the potential to distort competition in favour of the initial partner(s) as the project grows. This open tendering exercise might also provide a better guide as to how much public money needs to be made available to make the project happen.

29 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

3. Generated income

Another state aid implication is how the revenues from projects are split. These include the revenue created whilst projects are ongoing as well as to the way profits/assets are divided upon expiry of a scheme. A PPP is generally considered to be free of state aid if the public and private contributions to the project are symmetrical in what each gets out of the project. For example, if the ratio of funds channelled in is 75% public and 25% private, this ratio should be respected in receipts. This would mean that the private partner(s) should receive only 25% of the proceeds. By the same token, just as all profits should be shared between public and private, so should all risks, again in proportion to their contribution to the venture.

3.4 INTELLECTUAL PROPERTY MANAGEMENT

3.4.1 IP & CHOICE OF LEGAL FORM OF LHP CONSORTIUM

The reason to form a legal entity lies primarily in the creation of a legal frame that enables the associates to focus efficiently on the success of their business. One of the main aims of FP7 is the economical utilisation of the achieved knowledge through the project undertaken.

Since LHPs will be also co-financed by FP7 funds the regulations applicable in such funding contracts will be applicable. The FP7 IPR stipulations were slightly changed in comparison to FP6 stipulations, however most of the features were not altered. Some changes (other changes have been introduced as well and can be found in the FP7 IPR stipulations) are:

1. “Background” and “Foreground” instead of “Pre-existing Know-how” and “Knowledge”.
Although the meaning of “Foreground” remained the same and refers to project results, the meaning of “Background” information has changed to include only the information and IPR held by the project partners before signing the grant agreement and not the “side ground”, i.e. information developed in parallel to the project. This change was introduced to minimise participants’ confusion and concerns as regards access rights obligations to “side-ground”.



30 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

2. Ownership

A default regime of joint ownership was agreed in case the project partners did not agree upon another more preferable regime to them before signature of the grant agreement. Some additional changes for access rights and licences were introduced, which has led to greater autonomy in transferring the ownership of the results as it is not obligatory that the EC has to be notified, only the participants.

3. Protection of results

More room for negotiation between the project partners has been provided and they may transfer the results to other partners when they are not interested in protecting them. They do not need to notify the EC before doing so.

The question is which legal form is more suitable to address the exploitation of intellectual property by the group of partners that will realise the LHPs, should the partners decide to form an entity.

Before choosing the adequate legal form the partners should evaluate:

- The envisaged exploitation purpose
- The perspective of a joint association

The choice of the right legal form plays an important role for the economic success of a project consortium. As mentioned before a “one-fits-all” solution does not exist. The project partners should analyse their situation, motives and goals under the most common approach possible and evaluate how they can bring the different perceptions together under one joint perspective. Some examples of questions that should be taken into consideration when trying to address this issue are presented below:

- With regard to the exploitation purpose:
 - What research results should constitute a contribution to the joint project entity for the sake of exploitation?
 - What should be the scope of exploitation: national, European, worldwide?
 - Should the exploitation serve commercial or non-commercial purposes? Should it be a combination of charge-free, cost-covering and commercial exploitation?
 - What are the advantages of the exploitation by a legal entity in comparison with the exploitation (1) by third parties (2) by one of the partners and (3) by every single partner?
- With regard to the perspectives of the entity:
 - Which partners will participate in the formation of the entity? Would it be necessary to restrict the company to a few participants or is it necessary to include every project partner?
 - On what terms would the partners who would not directly participate in the project entity make their research results available (complete transfer of rights, single/exclusive licence, free of charge/against payment)?

At the earliest possible stage of every LHP a responsible person or entity should be appointed to manage the flow of sensitive information for all IPR-related tasks and questions. The responsibility of the person or entity would be to take care of all required measures to guarantee that all rights needed for exploitation purposes will be initially collected and subsequently transferred.



31 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

One of the objectives of LHPs should be to contribute to the establishment of accessible and affordable IPR schemes since these are crucial for implementing new technology and protecting investment in R&D.

3.5 SAFETY/STANDARDS & REGULATIONS

Some notions related to Regulations, Codes and Standards (RCS) are mentioned below, since they will be a fundamental part of the legal framework for LHPs. A coherent framework of solutions related to widely accepted safety methodologies and RCS do not currently exist. The framework should enhance the level of safety in a public area. Due to the current lack of implementation of harmonised RCS, insurers may raise premiums to avoid the higher risk environment.

Since a small number of HFC vehicles and HRS required for a hydrogen economy with substantial mass exist, only limited data is available on the operational and safety aspects of these new technologies.

The importance of accumulating more data in this field is prevalent and therefore the LHPs would be an ideal source of information in the field of safety and regulations to build public confidence in hydrogen transport technologies. The information collected would contribute to the evolution of the technology for the detection and safe management of unscheduled hydrogen releases or incidents involving hydrogen systems.

Concerning vehicles, the current approach to RCS concerning hydrogen storage systems for automotive applications is not flexible enough to enable the design of lightweight, cost-competitive and safe onboard hydrogen storage systems. This prevents any breakthrough in achieving the general requirements for automotive application and would thus inhibit large-scale commercialisation of hydrogen vehicles.

The regulations that apply to receive approval for a hydrogen road vehicle are not yet at a stage that could enable substantial market penetration for such vehicles. The technical knowledge required for the necessary codes and standards requires further development. Although efforts to harmonise the regulatory environment for type approval of hydrogen vehicles at European level have resulted in the publication in August 2006 of a draft proposal for a regulation on hydrogen powered motor vehicles.

Codes & Standards issues for both vehicles and HRS have been dealt with by the respective Initiative Group with the HFP and are foreseen to be part of the JTI. FP7 funding will be dedicated to RCS activities under the Hydrogen and Fuel Cell activities as well.

3.6 SAFETY/ RISK, LIABILITY & INSURANCE

Safety/risk, liability and insurance are very much linked to the previous paragraph due to the lack of a harmonised regulatory environment for both vehicles and HRS.

A core principle of a PPP is the risk allocation to the party best able to manage it at a lower cost. The aim is to optimise rather than maximise risk transfer. The issue of liability, risk management and allocation is very crucial for the successful implementation of LHPs. Insurance companies will need to intervene at one stage, as they will have to assess and manage the risks associated with new and innovative hydrogen transport technologies, thus enabling commercialisation. The need



32 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

for appropriate insurance provisions will be more evident once the HFC vehicles and infrastructure are accessible by the wider public.

The choice of the legal form will also depend on how risky the LHP will be and how liability issues will need to be addressed among project partners. This is encompassed by the LHP's overall perspective, which is the large-scale commercialisation of HFC road transport technologies. Apart from liability towards losses of profit or equipment damages, a very important aspect is third party liability. This can be detrimental not only in financial terms but for the successful deployment of HFC road transport technologies and the project partners' goodwill.

For this reason, higher protection vis-à-vis liability issues provided by certain legal forms such as the typical Limited liability company could be preferable over an unincorporated consortium or a EEIG where liability of partners is joint and several. In the second case however, separate and bilateral agreements could foresee other arrangements.



33 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

4. Countries & Project Findings

This section looked at numerous demonstration projects taken from Asia, Europe and North America over the past few years. The findings presented below look at each demonstration project within the topics already covered theoretically in the previous section.

All conclusions and suggestions consider only the demonstration project level and do not pertain to make suggestions or recommendations on the structure or operations of a future JTI under the FP7.

4.1 PUBLIC PRIVATE PARTNERSHIPS AND LEGAL FORMS

Looking at the range of projects that have been analysed we can group the legal forms of the projects into four broad categories based on the relationships laid out in the contracts of association. These groups are namely:

- Legal form addressing the relationship between the partners:
 - (1) Horizontal: when all project partners in the LHP act on equal terms and decisions are reached following unilateral consultation. No partner has a leading role.
 - (2) Vertical: A project partner/coordinator within a LHP has a leading role and a top-down decision making process is applied.
- Legal form addressing the type of agreement:
 - (1) Informal partnership: Due to early phase of evolution, project needs and objectives, most projects investigated adopted a partnership by signing a simple consortium agreement without needing to create a separate entity with a legal persona of its own.
 - (2) EU-led: most of the projects realised in Europe where funded by the European Commission; hence, the partnership agreement adopted the form stipulated in the EU funding regulations (FP5 or FP6 funding programmes).

Horizontal partnership

The ARGEMUC (Germany) project adopted a horizontal agreement structure, which places the public authorities as horizontal partners, thus no partner had a leading role. Experience showed that the bilateral agreements were constantly being changed when the membership increased. Multiple changes to contracts led to a highly complex legal agreement that negatively affected both the clarity of the agreements and the time needed for making decisions. Thus it is clear that in this type of agreement there needs to be cooperation and a sense of the overall common objectives. Changes to bilateral contracts should be minimised in order to keep the objectives clear and concise.

Vertical partnership

The HYNOR project in Norway is probably the most vertical in its approach and works on the understanding that the central coordination of the project may not suit the whole terrain of the project. At its summit there is a formal PPP with six separate legal entities for each node (location of a hydrogen-fuelling station). Each node has its own agreement setting out cooperation and responsibilities depending on the local issues that each node has to face. At the node some end-users (e.g. bus operators) are project partners, but this is not always the case. The Partnership is open to any organisation that signs a consortium agreement under Norwegian law. So far this arrangement has worked well for a project terrain covering 580kms from Oslo to



34 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

Stavanger. The advantage of this structure is the customisation of the project on the ground with a strong chain of command and harmonised structure from the top.

A “vertical partnership structure” can be seen as more effective especially where the public authority has the possibility to lead and apply an already established and stable procedure as this could avoid time losses and enhance cohesion of the project.

Informal partnership

The two projects in the USA use the terms ‘partners’ and ‘partnerships’ informally, stating commitment to a ‘collaborative effort’ to advance technologies. The types of binding agreements signed were statements of intent, statements of principles, confidentiality agreements, and indemnity agreements. The existence of an open structure without a separate legal entity aims to promote open communication at all levels so that high-level management and technical experts determine together the steps needed to be taken in view of the project’s overall objectives. Such evaluations should lead to a quicker and more efficient implementation of the technologies given a successful project outcome. For example, in Japan it is not the cultural norm to have strictly regulating partnership agreements but more flexible ones between governmental organisations and industry sectors are preferred.

Collaborative efforts may be more informal legally but require checks and balances within the organisational structure to ensure that responsibilities are met and tasks undertaken by the relevant partners, hence the range of agreements signed between the partners.

EU-led

Last but not least there are those projects led by the EU under the Research Framework Programmes (e.g. FP5 and FP6). For the ZERO REGIO, CUTE and HyfLeet:CUTE projects, a consortium formed an agreement with the EU, while sub-consortia were set-up for each city in the project to deal with local issues. The ECTOS project in Iceland was based on a cost-sharing contract with the European Commission meaning that the public authority (here the EU) does not fully reimburse contractors for the costs incurred. There was a good balance of input from industry, academia, municipality administrations, technical research and business partners, as well as car retailers, bus operators and hydrogen retailers.

An EU-led agreement is also a form of vertical agreement and shares the same advantages of a chain of command from a coordinating organisation.

Financing LHPs

In all cases funds have come from both public and private sources. Often this is a 50-50 split, as was the case in HYNOR, CEP, ARGEMUC and LHP. In most of these cases all land and infrastructure remained in private hands after completion of the project. However, in Australia, the Western Australian government met most of the cost with smaller contributions coming from the private sector and the ownership of assets resided with the government following the completion of the project.

The ECTOS project secured about half of its costs from the European Commission although some costs for the hydrogen station were funded privately and did not show up on the official cost statistics. EU funding in the case of CUTE and its subsequent HyFLEET:CUTE is dependent upon whether the costs are related to RTD, demonstrations, training or management where the respective subsidies are up to 50%, 35%, 100%, and 100% with a cap of 7% of the total project budget. Following the CUTE project, transit companies bought or leased the buses and/or the infrastructure even though the EU funded the project.

35 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

To ensure that companies have a vested interest in the outcome of the project, HYNOR allowed sponsorship for each node thus helping to create publicity for the company and the project while simultaneously securing funding during construction. Thus the Norwegian government's main expenditure was directed towards the testing of the fuels (about two-thirds), while the remaining third went on the HYNOR project directly. As part of the London Hydrogen Transport Programme the Mayor of London provided seed capital to encourage business to have a vested interest in its project.

The more government-backed projects in Japan and Australia point to other systems of finance. Japan's government funds almost all of the JHFC projects and some funds are given in exchange for data, hydrogen fuel and other private assets. The STEP project requested that analysis is conducted on the project's variables, which will or need to change so that benefits will be reaped in five to ten years' time thus ensuring value for (public) money. The analysis will help the government decide whether such projects are to be deemed beneficial and to be repeated. Meanwhile, in California all partners including government agencies equally share the costs while also contributing in kind for defraying the costs; it is of course financially better for each partner the bigger the partnership is as costs are reduced.

From the EUCAR³ project a few recommendations were put forward which promoted a secure financial framework from which to work:

- Avoid cross billing – each partner pays for its own costs.
- One partner should do the distribution of public funding – often this is the case but not always.
- Hourly rates of all partners should be checked during the planning phase as well as annually – this ensures that budgets should be balanced by the year-end.
- A detailed financial plan should be provided for an 18-month period – visualising future costs over a significant time span is better for budget balancing.
- A pre-payment of funds, approximately 80% should be realised demonstrating further commitment from partners and providing the impetus to start the project.

On ownership of infrastructure and transit means, there are numerous forms of ownership. In London the LHP project stipulates that all bus operators will own the buses and not their manufacturers, while the land is owned by the public sector (it shall be leased to infrastructure providers). The CUTE bus operators also own the buses like in London, however, the bus operators own the infrastructure too. This is in contrast with the HYNOR project where two of the nodes are owned by the energy companies Hydro and Statoil who are the owners and operators of RS while also providing the infrastructure at these locations.

European research infrastructures based on Community law – GALILEO example

Article 171 allows the European Community to set up joint undertakings or any other structure necessary for the efficient execution of Community research, technological development and demonstration programmes. The decision to set up a joint undertaking is made by the Council based on a proposal from the European Commission. This structure ensures the single effective management of a programme combining various funding sources from the public and private sectors.

This possibility has been used, relatively recently, for the GALILEO satellite navigation system. The mission of the GALILEO joint undertaking is to preside over the development phase and to prepare the deployment and the operation phases as well as to determine the conditions for the

³ EUCAR fosters strategic cooperation in research & technological development (R&TD) activities

36 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

participation of the private sector. The funding members are the European Union and the European Space Agency.

The GALILEO joint undertaking experience shows that the joint undertaking is an adequate structure for a large-scale project. It ensures the coherent management of all funds allocated to the project. The governance structure is very robust with a clear line of authority and responsibility covering scientific, technical, administrative and commercial aspects of the facility. Decisions taken by the Administrative Board are implemented by the Executive Committee, assisted by the Advisory Committee under the guidance of the joint undertaking Director.

37 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

Legal Basis	Article 171 – Joint Undertaking
Partnership	European community, European bodies, - public and private including third countries and investment banks procedure for new members
Management	Executive Director, executive committee – Administrative and supervisory boards (custom-fit organisation defined by founding members)
Liability of shareholders or members	Unlimited liability of members
Financial issues	Presentation and structure of cost estimates and annual budget Internal and external financial controls Resources from contracting parties – commercial activity – possible loans VAT exemption, but other taxes payable according to national rules (headquarters site)
Market procedures	Custom fit rules (no adherence to public procurement regulations) Specific formal tender procedures
Human Resources	Permanent and fixed-term contracts – seconded personnel Salary scale depends upon founders Agreement
Access policy	Access to contracting parties only Proprietary of IP
Advantages	- Clear management and governance - Sound and effective financial rules - Flexible policy staff (<i>limited by national labour rules</i>) - Adapted to industrial use
Disadvantages	- Difficulty for non European countries to join - Unlimited liability for debts/joint liability of members

Conclusions on GALILEO

To set up facilities based on Article 171 of the European Union Treaty entails complex and long negotiations. Once in place they ensure the effective management of major programmes combining public and private sources of funding.

4.2 MANAGEMENT STRUCTURES

Top-down approach

In general the project findings revealed a common management pattern, using a top-down approach to management using a core group, which sets out guidelines and objectives for the projects. Furthermore, the structures demonstrated the existence of more specialised sub-groups, which deal with specifically assigned responsibilities. Nonetheless, it was evident that the core group needs to be able to give orders to and receive information from the specialised

38 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

groups including fora and additional layers of governance. From this point on, there are variations in the form of governance, which shall now be considered.

It can be concluded that most of the projects analysed used a top-down approach, however those that did not can be found in the section entitled "Other Approaches".

Core group

The EUCAR partners' experiences showed that the core group is the key to the project's success. The core group does not have to contain all of the partners (as some are found at the taskforce level) and instead can contain fewer partners if this aids decision-making. Although, even then, attaining a common agreement can be difficult as for instance in the London Hydrogen Partnership - the representation in the so-called steering group cut across industry, local government, academia etc. In the ARGEMUC project structure all members voted on decisions and if 75% agreed then the decision was taken forward. ARGEMUC partners suggested that if a public body had more control, decisions could be made quicker (this relates back to their legal form). EUCAR, alternatively, took the core group and assigned one or two key leaders for the same reason, while a core group leader was also used in the CaFCP structure whereby there were elected Chair and Vice-Chair positions. In addition, CaFCP split the core group into three administrative parts to further increase efficiency, namely for membership, planning, and finance.

This analysis demonstrated that for decisions to be taken swiftly while being representative of the consortium's wishes, an elected body such as that used in the CaFCP structure is most suitable, as this provides direct leadership of the project while representatives of private and public organisations can hold the two positions. Although splitting the core group into administrative parts ensures that participants increase their work efficiency, it can reduce knowledge sharing and may contradict one of the key objectives of the project. In addition, EUCAR partners shared the concern that having all participants together reduces the security level of intellectual property.

Taskforces

All of the projects used specialised taskforces, with EUCAR partners saying that the benefit of using them is that the core group's meetings allowed engineers to stay focussed and did not become sidetracked with administrative work. The Freedom CAR project used joint technical teams between OEMs and energy directors, and used project managers coordinating taskforces in both sectors. This is a useful innovation and one that could ensure that the projects, at a taskforce level, would be in sync while allowing for cross-taskforce problems to be resolved. A taskforce manager placed between the core group level and taskforce groups could also help coordinate the more technical aspects of the programme as seen in both the EUCAR and CaFCP projects.

Fora

The EUCAR and London Hydrogen Partnership used a forum where all partners from the core group and each taskforce participate in discussions, knowledge-sharing, resolve macro-challenges and realise the annual review of the projects' activities.

Extra layers

The CaFCP added a safety team at the same level as the taskforces so as to build a hub of knowledge on best practices and to disseminate their findings to increase the safety of the project. This innovative approach led to the development of an Emergency Response Guide relating to hydrogen stations and fuel cell vehicles. The Guide includes high-pressure hydrogen and high voltage line diagrams for the different fuel cell vehicles, so that emergency personnel can use them when extracting occupants from a vehicle. It is now being updated and copies have been presented to six local fire departments with plans for further distribution in the pipeline.

39 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

Such a voluntary action of a partnership is good for the credibility of the project vis-à-vis the public and demonstrates an advanced level of cooperation beyond the signatory partners.

The JHFC project added a committee, again alongside taskforces, ensuring 'overall efficiency' of the project. This is a useful addition when using public finances in order to maintain amicable relations with public authorities and taxpayers. However, efficiency was ensured in the HYNOR project through developing a framework that encouraged "positive" competition. The project being so expansive and with different local issues to be taken into consideration, it was decided that three taskforces (vehicles, station, hydrogen competences) should be used in each location. These taskforces would realise most of the project while adhering to the framework set out by the core group. The three taskforces worked together to secure funding for each location on the Scandinavian Hydrogen Highway while simultaneously encouraging efficiency at a local level. Thus, financing of the project was done separately although there was also a central budget in place for coordination purposes.

The London experience adopted a secretariat to support the core group, taskforces and forum.

Other approaches

Despite having a top-down approach in terms of contractual agreements and in management, the STEP programme operated on a largely horizontal basis as its steering committee (core group) was more political than executive and the project coordinator only took decisions on the basis of consultations with project partners.

The Canadian hydrogen demonstration activities are facilitated and coordinated by a PPP in a bottom-up process where the industry has a key management and monitoring role in the Highway cluster of demonstrations. This can prove advantageous but results can vary significantly from the project's aims if left unchecked.

4.3 ROLE OF NATIONAL, REGIONAL AND LOCAL GOVERNMENT

Each of these levels of government all had and will have an important role to play in the development of a successful LHP, but they should also be used well by the private sector to maintain good relations and aide their own future by helping to create a better playing field for their new technologies. Freedom CAR was engaged in training of city, municipality, regional, and national stakeholders helping to promote their technology while transferring knowledge to policy makers. In Europe, one should not forget to take this further to intra-EU (between Member States) and perhaps even on a more global international level. HYNOR approached national and local government and was pleased with the outcome. While the ECTOS partners demonstrated a will for worldwide approval of hydrogen, alongside national tax exemptions for hydrogen. The Japanese experience demonstrates that different strategies and concerns are related to each institution as central government is lobbied for the harmonisation of rules and regulations (especially on hydrogen refuelling standards) while on a local level the partners must address the concerns of local authorities.

A few projects use a neutral partner such as the Freedom CAR project where NREL was the neutral partner in the DOE and the CaFCP used a technical consulting firm specialising in taking new technologies from the laboratory to the marketplace (largely due to the fact that the government could not interfere directly). STEP retrospectively realised its need for a neutral body too.

40 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

The comments of the CEP partners are perhaps the most interesting. One may assume that by creating a level playing field in terms of standards and regulations, one could secure entry and development in a marketplace. However, CEP partners stated that although liaising from the earliest possible opportunity with local authorities for approval of the project, they have tried to avoid homologation and RCS in the short-term as the technology is only in a development phase and is constantly changing, thus RCS would prohibit, more than encourage, development.

4.4 INTELLECTUAL PROPERTY MANAGEMENT

The Intellectual Property Rights (IPRs) of the demonstration projects are held by either the public sector partner or the private entity-project partner. Some interesting distinctions are noted below with recommendations drawn from the experiences of previous projects.

The London Hydrogen Partnership will ensure that the local transport authority Transport for London (TfL) will own all the intellectual property gained from the project and will subsequently licence it to different providers. Within the ARGEMUC project meanwhile it was allowed that all partners own their own IPRs but can only licence them on a non-fee basis. The private partners of the HYNOR project were entitled to their IPR as long as they performed their assigned tasks with the necessary due diligence. In such a case the company's ownership of the IP was passed to other partners.

Many projects collate sensitive information into documentation which does not provide specific performance details attributable to the manufacturer but to the technology as a whole. This being done, Freedom Car still had a problem in getting Toyota into the project over their concerns that data security was not tight enough. In the JHFP, discussions take place between the public and private actors in order to reach an agreement on what data should be transferred and bilateral confidentiality agreements are signed between the actors.

Case study – US experience

Between 2005 and June 2006 data was taken on over 43,000 individual vehicle trips, using an advanced analysis tool, the NREL Fleet Analysis Toolkit (NREL FAT), which automates the processing of the data and analyses every trip. All of the results can be viewed as automatically generated figures within the graphical user interface (GUI). The 19 GB of raw on-road data linked to the partner companies were then delivered to the Hydrogen Secure Data Center (HSDC), located at the National Renewable Energy Laboratory (NREL). Access to the HSDC is strictly controlled and limited to specific persons within NREL. Detailed analyses and reports were generated within the HSDC, the results of which were only available to a limited number of individuals authorised to enter the HSDC. The only public data products permitted to leave the HSDC are termed "composite data products" and are agreed upon in advance with each partner company. These data products contain no confidential information and display only aggregate data from the partners. For example, the composite data products will contain ranges of performance values, and the performance of individual companies is not detectable. The process is dynamic because as the projects and technology evolves, additional composite data products are developed, approved for release and then published. In addition, detailed data products are created for individual companies so that they can share in the benefits of NREL having performed unique analysis on their data. Furthermore, the industry partners of the project met with the NREL to share the results and the companies found the results extremely valuable.

One of the most profound problems came in the EUCAR findings showing a lack of protection of project knowledge developed by the consortium. This was mainly due to a deficiency of

41 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

regulations in the consortium agreements and the vague EU regulations on state aid that have prohibited stronger IPR clauses in the past. It was thus recommended that guaranteed exclusive access to project results should be available for project partners for up to 5 years following project completion. It was therefore also suggested that the companies' legal departments involvement might be required in future.

In the CUTE project, data collection was one of the responsibilities of the Project Coordinator. The data and information were collected through the project's Mission Profile Planning (MIPP) system, through the Incident Reporting Scheme, through responses to specific questionnaires, in project meetings and in individual meetings. MIPP data tables were developed in order to have a common format for the data collection. These tables included all major aspects of the trial as well as some "more subjective" data such as passenger acceptance. Data was collected on a one-off basis, i.e. training experiences, dissemination activities, cost data. The frequency was defined in accordance with the overall project objective requirements, following which, the submitted data was firstly subject to a quality check for consistency, reliability and accuracy. They were then analysed focusing in the indicators defined for each key area.

For the HyFleet:CUTE project the software system was upgraded to a commercial, fully web-based, version with the ability to produce tables, graphics, time series, benchmarks and complete reports automatically. The system is configured on the basis of user and user access rights.

Considering these experiences, it is therefore suggested that IP should be subject to tight controls and that one of the best ways of increasing transparency of the project while protecting IPRs is through the collation of data into a presentable form, which could be in the remit of a Project Coordinator's role. Raising money through the licensing of IP is one form of recuperating costs by public authorities, while contract clauses on 'due diligence' provides a form of guarantee of cooperation from project partners.

4.5 SAFETY/STANDARDS & REGULATIONS

With regard to how the existence of RCS interacts with safety concerns and public awareness, the findings of the HyNet project demonstrated that at regional and local levels the public awareness is generally less developed and incoherent than at the overall EU level. Although some regional and municipal governments have demonstrated leadership in fostering public awareness, there needs to be a greater dissemination of this knowledge of hydrogen related regulations and project successes.

The European Experience

During the CUTE/ECTOS/STEP HFC bus demonstration projects, one of the principal goals was to develop a quality and safety approach and method for the establishment of future HRS. At the beginning of these projects, very limited information and expertise related to hydrogen safety issues was available within the organisations responsible for the certification of equipment or components. In June 2004, the three projects established a joint task force to address hydrogen safety and security issues. Over the 3-year period of the buses and HRS operation, vehicle data on safety and quality aspects were monitored and systematically collected using different types of measuring indicators. The barriers in terms of approval and licences process were monitored throughout the realisation of the CUTE project. The findings demonstrated that the approval process for HRS was to be a time-consuming experience. From the clarification and production of the documents required for the building application to the authorities' final issues of the permission to operate, the approval process took several months in the different cities involved.

42 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

Even a three-week public hearing was included in the process of obtaining a building licence. The approval procedures were different in the cities involved according to local implementation requirements. The experience from CUTE demonstrated that the major challenges for obtaining licences or approvals from the relevant authorities were:

- The lack of experience in handling hydrogen for non-industrial or public applications
- The absence of regulations explicitly expressing the safety requirements for such applications

The Approval Process experiences from CUTE

City	Time	CNG - regulation	Project limited approval	Safety studies	Overall impression
Amsterdam	6 M	Yes	Yes	Hazop, FMEA, QRA	Based on CNG
Barcelona	12 M	Yes	Yes	Hazop, QRA	Comprehensive - as expected
Hamburg	12 M	No	Yes	Hazop	Time consuming - complex procedure with TÜV
Luxembourg	9 M	No	No	Hazop, QRA	Based on foreign expertise
London	30+M	No	Yes	Hazop, QRA	Difficult – local resistance – as expected
Madrid	10 M	Yes	Yes	Hazop	Comprehensive – as expected
Porto	6 M	Yes	No	Hazop, QRA	Smooth – based on existing CNG –experience
Stockholm	24 M	Yes	Yes	Hazop, QRA	Complex – as expected
Stuttgart	4 M	Yes	Yes	Hazop, QRA	Easy – demo project

Note: for HRS process

The HyCom study has proposed the creation of an Association of Hydrogen Communities based on certified membership with rights and obligations. If well organised, this could contribute to European cohesion (RCS) and international visibility. EUCAR findings concluded that lighthouse projects would strongly benefit from RCS since vehicle type approval/registration would become much easier, faster and cheaper.

With certain projects, vehicle insurance is not an issue, as the vehicles are owned by the vehicle provider and only leased or rented to the fleet operator or customer, hence vehicle insurance is covered by the OEM. Nonetheless, the issue of insurance for private owners still remains open. With regard to HRS insurance, this is handled by the HRS operator.

The American Experience

The US DoE presented in October 2005 the “Guidance for Safety Aspects of Proposed Hydrogen Projects”. This is a list of compulsory safety requirements as part of the Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project. Within this project all safety incidents, near misses and non-events are reported to HSDC within the NREL and then combined into a chart that shows the number of events by quarter.

In addition, the DoE requires that for potential hydrogen demonstration projects, each project applicant or principal investigator and collaborating groups select and use a specific safety methodology. A variety of practices exist for the identification and analysis of safety hazards and the applicants can choose an approach that is best for their project. The DoE HFC and Infrastructure Technologies programme provided these guidelines for a preliminary and a more detailed safety action plan to be included in project proposals, in order to guarantee best



43 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

practices and increase public awareness and confidence that will result in an environment where safety is an integral component of all of its funded projects.

A safety plan would be used to identify immediate (primary) failure modes as well as any secondary failure modes that may come about as a result of other failures. In such a plan, every conceivable failure would be identified, from the catastrophic to the benign. Identification and discussion of perceived benign failures may lead to more serious ones being found. All potential hazards related to hydrogen production, delivery, utilisation or storage system must be identified and analysed, as well as any system aspects that may be adversely affected by a failure. These aspects include threats or impacts to:

- Personnel/Third parties: hazards that pose a risk of injury or loss of life must be identified and eliminated or mitigated.
- Equipment: damage to or loss of equipment or facilities must be prevented. Damage to equipment can be both the cause of incidents and the result of incidents.
- Business interruption: the prevention of business interruption, in addition to property damage is important to commercial entities. The interruption of business is frequently expressed in terms of time elapsed and the time element could be translated into financial terms as loss of revenue or added value. A complete safety plan in those instances would include time element interruption, and where critical, a contingency plan for providing needed services or manufacturing.
- Environment: damage to the environment must be prevented and the safety plan must qualify of failure modes resulting in environmental damage.

For technology validation and demonstration project proposals, the preliminary safety plan must include the use of methodologies for identifying, analysing and mitigating safety risks as well as communicating safety events to the necessary parties.

Each project has to demonstrate plans to measure safety performance and review methods for the management of change. A good measure of a safe hydrogen project is its insurability.



44 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

5. Future Considerations

5.1 PUBLIC PRIVATE PARTNERSHIPS AND LEGAL FORMS

PPPs have been developed in several areas of the public sector, such as transport, public safety, energy, waste etc. The basic idea of a PPP is to achieve value for money for the project partners by sharing risk and costs in a way, which creates incentives and optimises the technical solutions and the financial burden of the project. They are characterised by a relatively long duration of the relationship, involving cooperation between the partners on different aspects of the planned project. Funding may be a complex arrangement between the various players, including both public and private funds. The distribution of risks between the public and private partner is determined case by case.

Empirical results have demonstrated that the vast majority of past and on-going hydrogen R&D and demonstration projects were created as PPPs without a specific legal form, only on the basis of consortium agreements. Hence, all obligations were fully controlled by the consortium agreement. PPPs can take the form of incorporated or unincorporated partnerships.

Whatever the chosen legal forms, they should be tailored to the needs and objectives of the future LHPs. Considerations come into play ranging from whether a “loose” or a “fixed” partnership would better foster cooperation among project partners, how risk and liability should be allocated in such high risk profile projects to how IPR issues will be addressed, how potential dividends will be distributed, etc. Designed appropriately PPPs can generate substantial benefits for consumers and taxpayers. The scope of potential benefit will, however, depend on the type of project being undertaken and the exact terms of the contract governing the PPP.

The partnership agreement should foresee a stakeholder structure with participants from both public (i.e. local and regional stakeholders such as municipalities, etc) and private domain, (i.e. technology providers, energy companies, etc). Collaboration with universities and SMEs should be fostered as well. The local communities will be among the end users therefore it is crucial to establish a good relationship with them in order to enhance public acceptance. These should also be involved in the definition of the safety standards and regulations as permits both for refuelling stations and vehicles might pass from them on a case-by-case basis. The legal form and agreements of the partnership should allow partners to choose their own counterparts, decide on responsibility and specific activities (loose form of partnership).

In addition, the relationships that will develop under the LHP PPPs, must be able to evolve in line with changes in macro-economic or technological environment and in line with general interest requirements.

As mentioned in the previous paragraphs, project partners of European research projects have two options for the creation of a common vehicle for the realisation of the project:

- Form a legal entity under national or European law
- Form a consortium/joint venture with no legal form at all

For international research projects it has to be considered that the establishment of an entity under national law has the disadvantage that the laws of the country of establishment will govern the company. This could present disadvantages concerning the transparency of the structures and the equality of partners. Therefore, the solution of a European company with a unitary legal frame, which is valid in every member state, could be a suitable option.



45 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

It must be noted that a well-chosen national solution might be often be better than a European company especially if the association be dominated by one or several partners coming from the same Member State or should be principally active in one Member State. A further argument for the choice of a national company is the question of partners' liability. The advantage of a limited liability company under national law is that the liability towards third parties is limited to the assets of the company. A regression to the partners' assets can only be done exceptionally. It has been argued that a European Stock Company would be created for rather big and long-lasting business and that the EEIG (provided that no special liability limitation provisions are foreseen) entails joint and unlimited liability of the project partners. The establishment of a national company should be considered when the partners need to clearly identify and regulate the limitations of liability. Should academia or research institutions wish to participate in such a project consortia, they might come across a barrier as some national laws restrict their participation in a company without limitation of liability.

Companies with limited liability are especially suitable for commercial exploitation of research results from small and medium-sized R&D projects, which provide a success promising exploitation concept with a long or medium-term exploitation cycle and a long-lasting organisational bond of the participating parties.

5.2 MANAGEMENT STRUCTURES

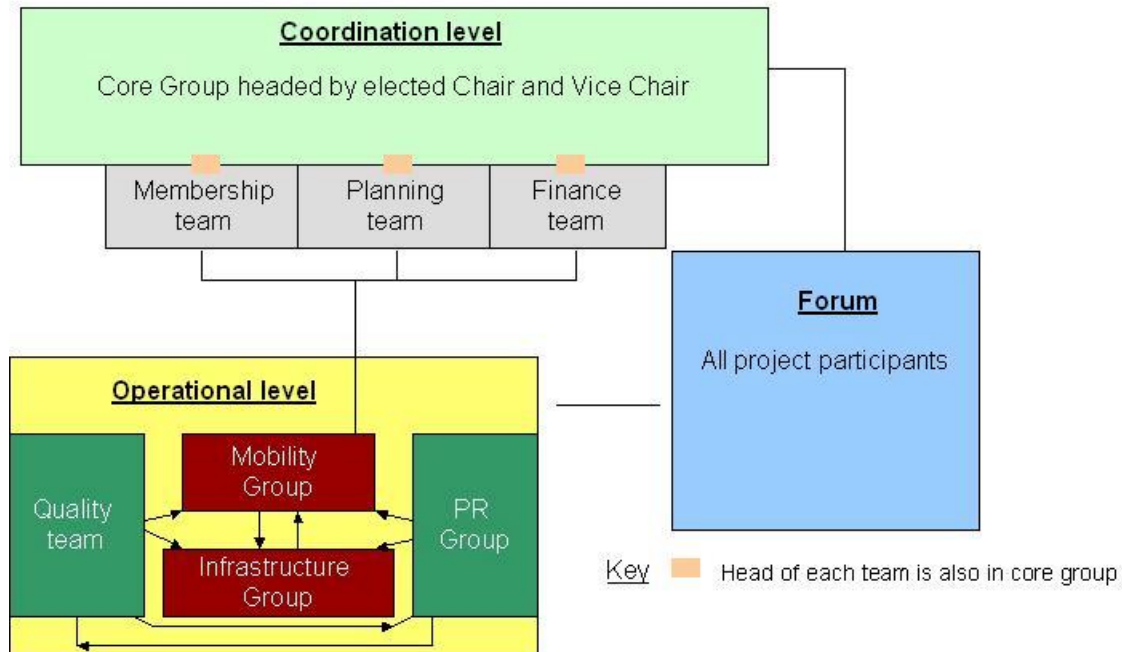
Below is a proposed management structure based on the study's findings which contain the necessary components with the aim of coordinating the project between vehicle and infrastructure companies and ensures collated and precise data being transferred to the programme level. The proposed structure would also ensure that coordinators in LHPs liaise with the operational team of the project. The management structure would guarantee equal representation of all project partners.

The scale of the LHPs, the complexity of the tasks and number of project partners might require the inclusion of bodies other than the vehicle and infrastructural companies and include bodies dealing with administration, finance, safety and PR all to ensure the consistency of the LHPs' actions within the programme's aims.

Project findings: Drawing from the projects' findings, analysis and the project partners' feedback on the effectiveness and efficiency of the adopted management structure, and taking into consideration their recommendations, an initial example of a proposed management structure for future hydrogen demonstration "Light-House Projects" could be as follows:

46 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2



The management structures should reflect a composition that will allow the project partners of each sector to participate in the decision making process on issues of strategic importance for the project. This is achieved through using an efficient decision-making process at the core group level through the involvement of Chair and Vice Chair persons, elected by the Forum; three teams would be dealing and assisting the whole project with administrative issues. The heads of each of the three teams will be participating in the Core group. This coordination level would be required to ensure that common tasks, issues and problems between the different industry participants and other project stakeholders are streamlined and the project runs smoothly.

The three teams (Membership, Planning and Finance) would undertake the following roles:

Membership team – would evaluate applications from stakeholders wishing to join the LHP through an analysis that would involve gauging the suitability and commitment from potential project participants/promoters within the aims and objectives of the LHP. The Core Group, on the basis of information compiled by the Team, should take the final decision in such cases. Finally, this team would foster and support the participation of SMEs and or Research centres.

Planning team – would evaluate and map the strategic choices aimed at reducing risks within the LHP and also ensure compliance with pre-identified action plan and more important with desired project outcomes. It would also monitor the overall efficiency of the project and put forward proposals and recommendations to the Core Group for decisions to be taken to improve processes, adopt project goals, enlarge partnership, etc.

Finance team – would act as the “Treasurer” of the project, i.e. would manage and distribute project funds and ensure that all partners have a fair share of benefits and charges

47 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

based on their contribution. The team would be providing updates on the financials at regular reporting periods and should seek approval of the project's financials from the Forum.

At the operational level, Mobility, Infrastructure, PR groups and the Quality Team would work in close cooperation. The mobility and infrastructure groups will liaise directly too, due to their clear interdependencies. The four components would implement the "quality assurance" aim laid down by the core group ensuring that all standards are met, best practices are in place, and there are good, sound relations with the local community that could lead to successful activities in view of raising public awareness. In this, the Quality Team would develop knowledge on ways to increase safety, but also disseminate public assurance information developed with the PR group to increase public acceptance of the project. The representatives of national, regional and local government may be present in the PR group as these authorities would be able to play a substantial role in raising public awareness.

Finally, the existence of a Forum would allow for regular discussions between those steering the project and those doing the work on the ground (as the latter would have more hands-on experience on the issues that need to be improved and communicate the lessons learned within the project). Knowledge sharing sessions (KSSs) and annual reviews would also be part of the forum as well as reviews on macro- and micro-challenges.

5.3 ROLE OF NATIONAL, REGIONAL AND LOCAL GOVERNMENT

It is expected that Member States and Regions will invest directly into LHPs of interest to them. A flexible set of mechanisms will need to be put in place to allow their optimal participation in LHPs, whilst maintaining control over their own funds. Appropriate legal and administrative regimes need to be worked out to facilitate such interfaces and integration, both by the Member State and regional departments or agencies responsible for programme implementation.

It comes without doubt that the regions will play a primary role in fostering the large-scale commercialisation of hydrogen vehicle technologies due to their potential identity as being promoters of green technology through public procurement.

They have the capacity through the application of public procurement procedures to adopt environmental considerations in technical specifications and in contract performance clauses. These joint procurement activities could enhance demand and consequently production volume; increase technology visibility and public awareness; enable the creation of solid local networks and support services. All these will lead to the successful establishment of future hydrogen communities.

In addition, public authorities in general are heavily implicated in the authorisation process for HRS and insurance will be requested to cover the risk (both technological and commercial) generated from the LHPs on both vehicles and HRS. Close interaction and involvement of local, national and European authorities and jurisdiction need to be ensured during the final set-up and implementation of early markets deployment, including LHPs.

The decision of the most appropriate government level is essential for developing proper action plans. Member States should define clear general policies, strategies and programmes while Regions are expected to give an important contribution to the realisation of such programmes. In fact they can facilitate the creation of hydrogen communities and develop integrated clusters of coordinated projects of regional dimensions.

48 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

Governments can give a strong support to the deployment of HFC road transport LHPs with their legislative action; the HFC industry as an element for a more competitive and sustainable economy should benefit by specifically targeted legislative acts at national level.

The “state aid” rules should provide possibilities of financial support to private initiatives in the field of HFCs from Governments and Public administrations, where it is demonstrated to be necessary for the deployment of LHPs. Reflecting on the case of RES, exemptions from the state aid rules can be awarded for the pre-competitive phases of deployment. In this respect hydrogen can be treated as RES.

5.4 INTELLECTUAL PROPERTY MANAGEMENT

A consideration to solve potential IPR issues would be to create a mechanism of mutual agreements and letters of intent between the partners. Although these written agreements might sound arbitrary to write and sign, these could facilitate the protection of interests of partners throughout the realisation phase of LHPs and constitute a good basis for the commercialisation phase.

5.5 SAFETY/ STANDARDS AND REGULATIONS

A fundamental challenge to the commercialisation of hydrogen energy technologies is the lack of safety information on hydrogen components and systems used in a hydrogen fuel infrastructure. A second challenge is the limited availability of uniform international codes and standards necessary to standardise technology. Internationally accepted codes and standards will be necessary to increase the confidence of local, regional and national officials in the use of hydrogen and fuel cell technology. The use of appropriate codes and standards will also need to be considered in the context of insurance and liability if the hydrogen market is to grow and become self-sufficient, independent of public subsidy. New technologies not yet recognised in codes and standards may have difficulty in obtaining reasonable rates for insurance, and may not be approved in some cases. The potential for lawsuits and the need to insure facilities and vehicles are serious concerns that could affect the commercialisation of hydrogen technologies. Uniform codes and standards will reduce risks perceived by insurers of new and innovative hydrogen technologies.

Real life experience from LHPs should be used to further improve and optimise codes and standards via a feedback mechanism. Subsequently, the improved codes and standards should be used as input for new regulations, with the aim to end up with more adequate and efficient permitting and approval processes as well as to lower labour and construction costs of new facilities.

5.6 SAFETY/RISK, LIABILITY & INSURANCE

Vehicle manufacturers and fuel providers manage their legal liability on the current gasoline and diesel technology. Because there is little legal precedent for hydrogen vehicles and fuelling, the legal liability for these products is unclear. Concerns that extraordinary interpretations of legal

49 Legal Forms and Management Structures

DELIVERABLES W5.1 & W5.2

liability will be developed may restrict the willingness of the manufacturers and fuel providers to expand beyond the currently planned small demonstrations.

In addition, vehicle operators, station owners, dispenser equipment manufacturers, etc. will need access to liability insurance at fair and reasonable rates. Insurers do not have any meaningful experience to determine the correct pricing of this insurance, and there are possibilities that it either will not be available at all, or available only at a prohibitive price.

Some specific proposals:

- Require that users of hydrogen fuelling stations be properly trained and authorised.
- Use only tested and safe technologies for fuelling stations
- Develop legislation providing an acceptable level of liability for vehicle manufacturers and fuel suppliers.
- Provide regulatory guidance to the insurance industry to encourage the availability of reasonably priced insurance for vehicle operators and fuel providers.



6. Acronyms & Abbreviations

CaFCP: California Fuel Cell Partnership
CUTE: Clean Urban Transport for Europe
DoE: Department of Energy
DS: Deployment Strategy
EC: European Commission
EEA: European Economic Area
EEIG: European Economic Interest Grouping
EHFP: European Hydrogen & Fuel Cell Platform
EIB: European Investment Bank
EU: European Union
FC: Fuel Cell
FP: Framework Programme
HFC: Hydrogen Fuel Cell
HFCV: Hydrogen Fuel Cell Vehicle
HFP: Hydrogen and Fuel Cell Partnerships
HRS: Hydrogen Refuelling Stations
HSDC: Hydrogen Serve Data Centre
INPA: International Non-for-Profit Association
IP: Intellectual Property
IPRs: Intellectual Property Rights
JTI: Joint Technology Initiative
JV: Joint Venture
KSS: Knowledge Sharing Sessions
LHP: Light House Project
MIPP: Mission Profile Planning
MS: EU Member State
NfP: Non-for-Profit
NGO: No Governmental Organisations
NREL: US based National Research Energy Laboratory in Golden, Colorado
OEMs: Original Equipment Manufacturers
PGIs: Project Governance Indicators
PPPs: Public Private Partnerships
R&D: Research and Development
RCS: Regulations, Codes & Standards
RES: Renewable Energy Sources
RJVs: Research Joint Ventures
RSFF: Risk Sharing Financing Facility
RTD: Research Technology & Development
SMEs: Small & Medium-sized Enterprises
SPVs: Special Purpose Vehicles
SRA: Strategic Research Agenda
STEP: Sustainable transports Energy for Perth
TfL: Transport for London

7. Annexes

Please see Project Factsheets.



8. References

- "European HFP - Strategic Overview", June 2005
- "European HFP – Deployment Strategy", August 2005
- "Workshop on the role of European Regions in the future Hydrogen and Fuel Cells JTI – Summary Findings" European HFP, Turin, March 2006
- "Next Steps for the Development of a Hydrogen Infrastructure for Road Transport in Europe – a common position paper of BMW Group, Ford Motor Company, GM Europe AG, MAN Nutzfahrzeuge AG, Shell Hydrogen B.V., Total France & Volkswagen AG", October 2006
- "Key outcomes of the Business Development Sub-Group work conducted between June 1004 and March 2006", EHFP Business Development Sub-Group, March 2006
- "European Directive on the Promotion of Clean Road Transport Vehicles", COM(2005)634
- "Directive 2004/18 of European Parliament and of Council of March 31, 2004 and Directive 2004/17 of EU Parliament and of Council of March 31, 2004, regulating public procurement procedures"
- "Report on European Technology Platforms and JTIs: Fostering Public-Private R&D Partnerships to Boost Europe's Industrial Competitiveness", Commission Staff Working Document, Brussels, October 2005.
- "Development of Hydrogen and Fuel Cell Technologies in a Large-Scale Lighthouse Project", Final Report, July 2006.
- "Green Paper on PPPs and Community Law on Public Contracts & Concessions", COM (2004) 327 final, April 2004.
- "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on PPPs and Community Law on Public Procurement and Concessions", COM(2005)0569 final, April 2005,
- "Draft Implementation Plan – Status 2006", EHFP Implementation Panel, October 2006
- "Introducing Hydrogen as an energy carrier – safety, regulatory and public acceptance issues", DG for Research Sustainable Energy Systems, 2006
- "ToRs - Initiative Group on RCS", EHFP, 2004
- "Guidance for Safety Aspects of Proposed Hydrogen Projects", US DoE, Hydrogen, Fuel Cells & Infrastructure Technologies Program, October 2005
- "Controlled Hydrogen Fleet and Infrastructure Demonstration and Validation Project: Fall 2006 Progress Update", Conference Paper, NREL/CP-560-40588, October 2006
- "FP7: tomorrow's answers start today", EC 2006
- "Amended proposal for a DECISION OF THE EUROPEAN PARLIAMENT AND THE COUNCIL concerning the 7th framework programme of the European Community for



research, technological development and demonstration activities (2007-2013)", COM(2006) 364final, Brussels, 28.06.2006

- "Proposal for a Regulation of the European Parliament and the Council laying down the rules for the participation of undertakings, research centers and universities in actions under the FP7 for the dissemination of research results (2007-2013)", COM(2005) 705 final, Brussels 23.12.2005
- "FP7 Risk-Sharing Finance Facility to leverage EIB Loans in large EU RTD projects and infrastructures", Discussion document prepared by the Commission services (DG RTD and ECFIN) and the EIB, July 2005
- "The creation of an entity in charge of the exploitation of RTD results – what are the best choices", IPR Helpdesk
- "Hydrogen Safety, Codes & Standards", IPHE, October 2004
- "Hydrogen and Tort Law: Liability concerns are not a bar to a hydrogen economy", William Vincent, Energy Law Journal,
- "Specific Recommendations for the Hydrogen Highway Project" as a supplement to "Facilitating Fuel Cell and Hydrogen Commercialisation and Adding Value to California's Hydrogen Highway Network", CaFCP, July 2004

