

Cooperation as Success Factor for The German National Innovation Program

March 01, 2011 | Tokyo |

4th IPHE WS Stationary Fuel Cell

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Federal Ministry
of Transportation, Building
and Urban Affairs



Federal Ministry
of Economics
and Technology

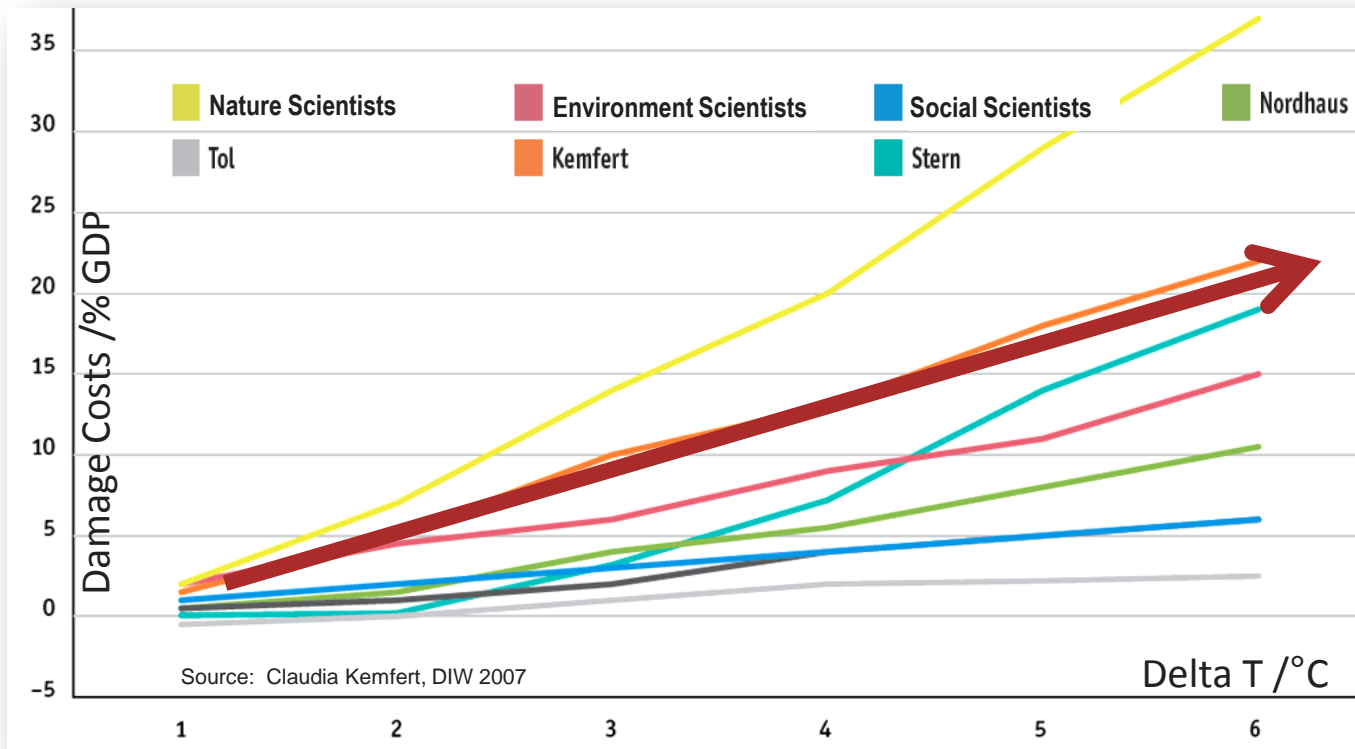


Federal Ministry
of Education
and Research



Federal Ministry for the
Environment, Nature Conservation
and Nuclear Safety

Damage Costs by Climate Change



Nicholas Stern



Claudia Kemfert

Sources
ur.: www.hm-treasury.gov.uk/sternreview
br.: BMWi 2009

Up to 20% of all incomes have to be spent to overcome damages caused by climate change, if we do not act immediately

It is our choice



Pakistan Aug 2010



Russia Aug 2010



Germany 2010

We can eliminate the climate issue from our planet earth, or:
The climate issue will eliminate us from the planet earth

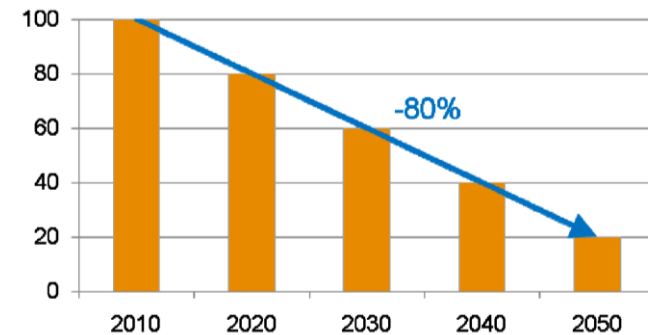
Climate Protection Plan 2050 by the German Government

Sep 2010

- Reduction of **Primary Energy Consumption** by

- 50% until 2030
- 65% until 2040
- 80% until 2050

} Increase of efficiency
by 2.1% per year



- Reduction of **Green Gas Emissions** by

- 55% until 2030
- 70% until 2040
- 80% - 95% until 2050

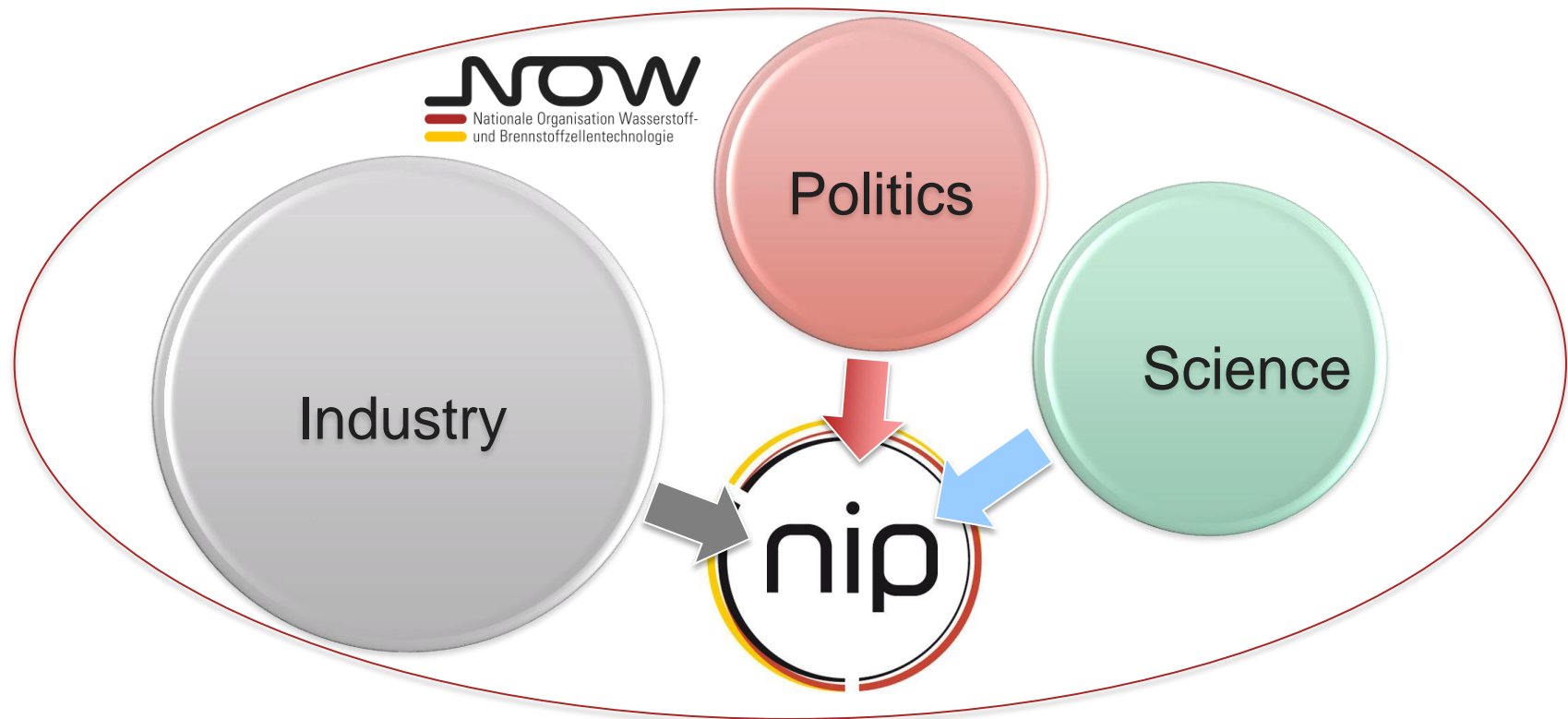
} 60% Renewable in 2050

- Investment 20 billion € per year (by the German tax payer)

High efficient Fuel Cells, Cogeneration with fuel cells and use of bio-energy with fuel cells support directly major climate protection targets

How to manage?

National Platform for Hydrogen and Fuel Cell Technologies



The NIP concentrates input and resources from Science, Industry and Politics

German National Innovation Program Objectives



Sources: Baxi, Baxi, MTU, Staxera

- Accelerating market entry of H₂/FC applications
- Strengthening Europe's global competitiveness
- Enlarging High-Tech competencies in Europe
- Creating sustainable jobs
- ... and last but *not* least:
- Saving energy and protecting the climate

German National Innovation Program (NIP) Hydrogen and Fuel Cell Technology

NIP is supported by:



- **200 M€** funded by Fed. Ministry of Economics. Focus R&D
 - **500 M€** funded by Fed. Ministry of Transport, Building & Urban Affairs. Focus demonstration with R&D
 - **700 M€** contribution of industry
-
- **1'400 M€** total budget
 - Duration: 2007-2016

NIP is a strategic alliance between German politics, industry and science

NIP: Preparing various markets

Task allocation



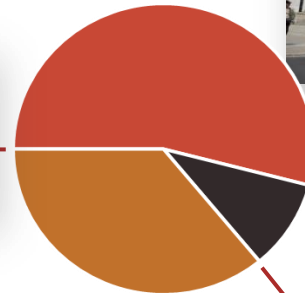
Hydrogen & Transportation 54% *

- Expanding vehicle fleets and the hydrogen infrastructure starting from key-regions

Budget 1.4 B€, Funding: 700 M€.
Jan 2011: 95 projects
229 M€ funding spent



Source CEP



Stationary Applications 36% *

- FC CHP for residential and small business applications
- Maritime application



Source Lürssen



Source Vaillant

Special Markets 10% *

- IT, telecommunications
- Logistics, leisure and tourism markets



Source BMW

* Planned distribution according to National Development Plan v 2.1.



NIP – Stationary I Residential Applications



Sources: E.on , E.on, Staxera, Vaillant, EnBW

- Objective: High-efficient co-generation for residential houses
- Lighthouse CALLUX: Start Sept. 2008
 - 5 utilities, 3 appliance suppliers, science and craftsmanship
 - Budget 80 Mio € for 800 units to 2015
- 7 Development projects with SOFC, LT-PEM, HT-PEM
- 1 Research project “Desulphurisation Standard”

NIP – Small Stationary Residential appliances “under investigation”



Quelle: Hexis



Quelle: RBZ



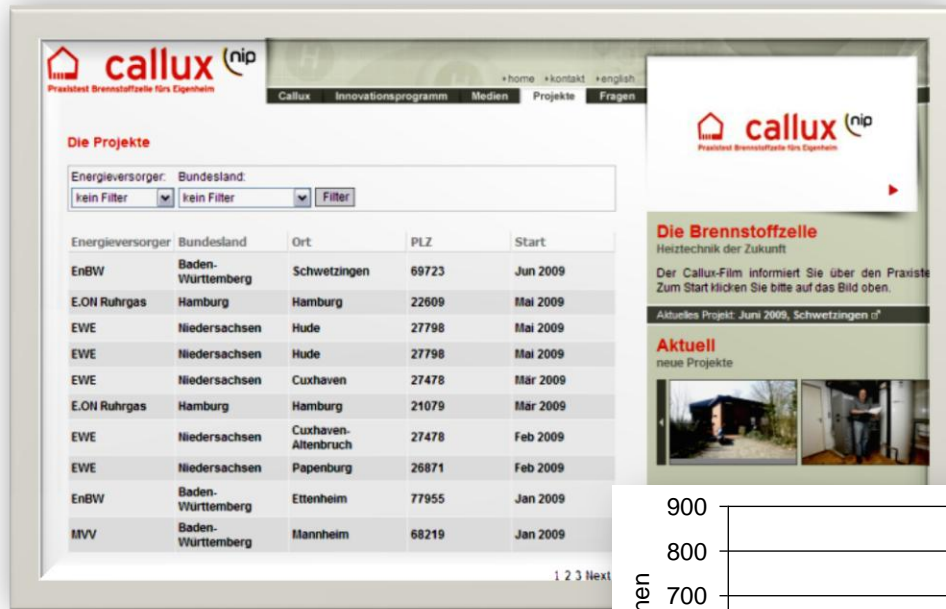
Quelle: Baxi



Quelle: CFCL

Lighthouse CALLUX

Fuel cell practice-run



Die Projekte

Energieversorger: Bundesland:

kein Filter | kein Filter | Filter

Energieversorger	Bundesland	Ort	PLZ	Start
EnBW	Baden-Württemberg	Schwetzingen	69723	Jun 2009
E.ON Ruhrgas	Hamburg	Hamburg	22609	Mai 2009
EWG	Niedersachsen	Hude	27798	Mai 2009
EWG	Niedersachsen	Hude	27798	Mai 2009
EWG	Niedersachsen	Cuxhaven	27478	Mär 2009
E.ON Ruhrgas	Hamburg	Hamburg	21079	Mär 2009
EWG	Niedersachsen	Cuxhaven-Altbruch	27478	Feb 2009
EWG	Niedersachsen	Papenburg	26871	Feb 2009
EnBW	Baden-Württemberg	Ettenheim	77955	Jan 2009
MVV	Baden-Württemberg	Mannheim	68219	Jan 2009

1 2 3 Next

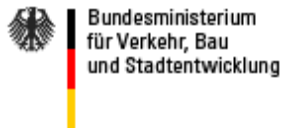
Die Brennstoffzelle
Heiztechnik der Zukunft

Der Callux-Film informiert Sie über den Praxistest. Zum Start klicken Sie bitte auf das Bild oben.

Aktuelles Projekt: Juni 2009, Schwetzingen c.f.

Aktuell
neue Projekte

Source: <http://www.callux.net/>



EnBW

BAXI INNOTECH

e-on | Ruhrgas

HEXIS

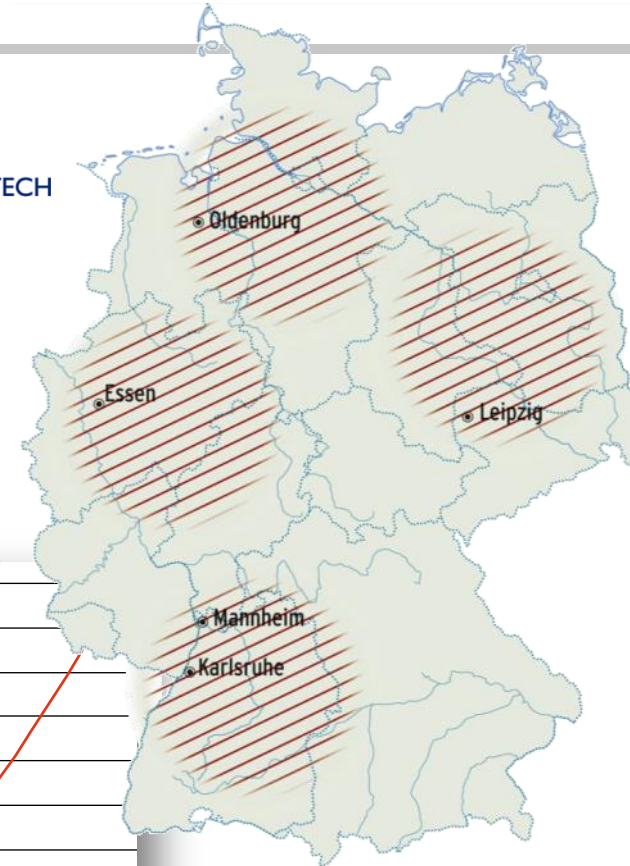
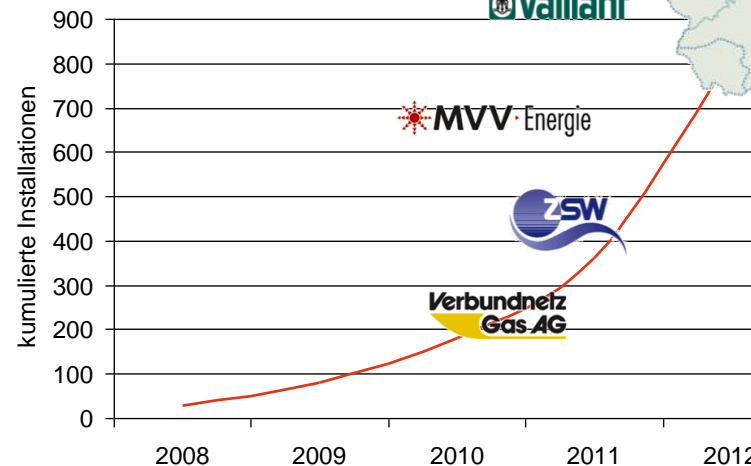
EWG

Vaillant

MVV Energie

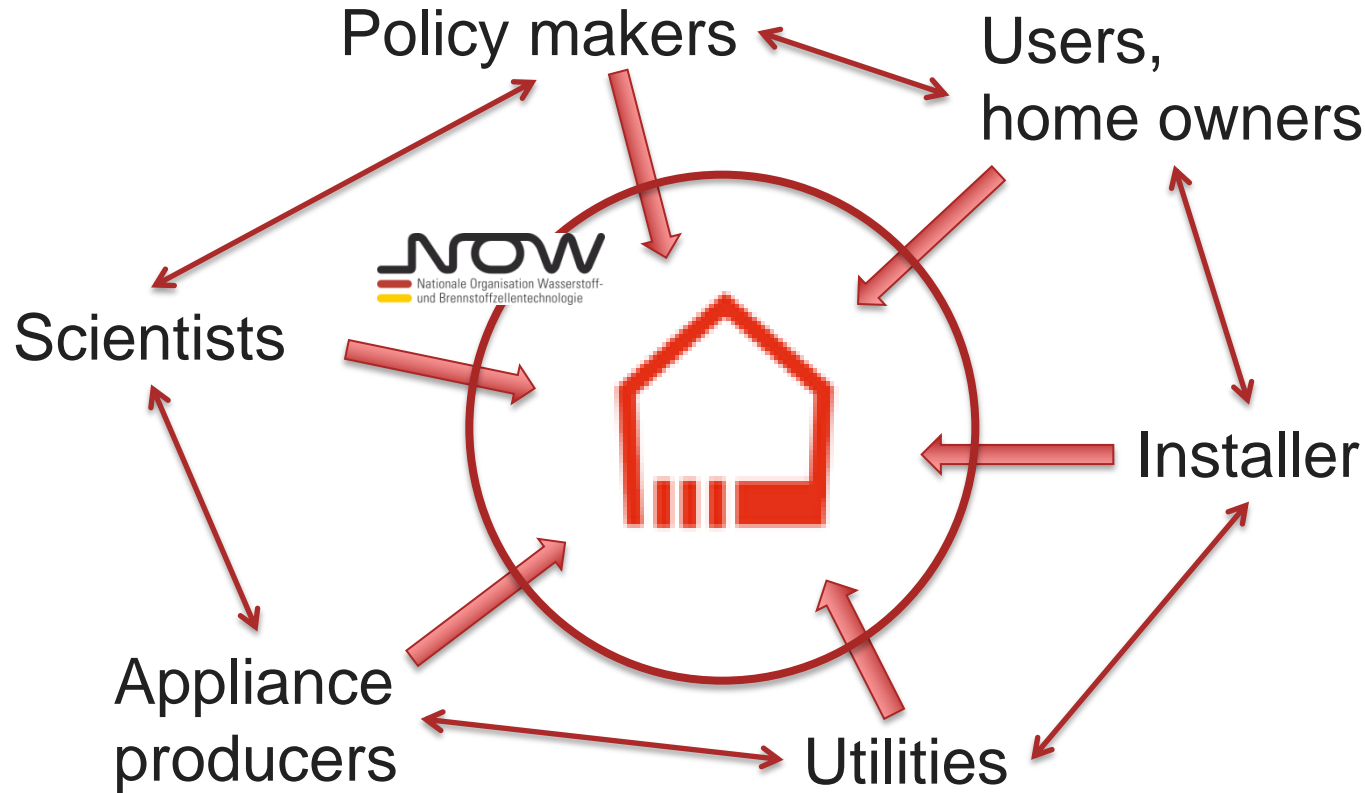
ZSW

Verbundnetz Gas AG



Lighthouse CALLUX

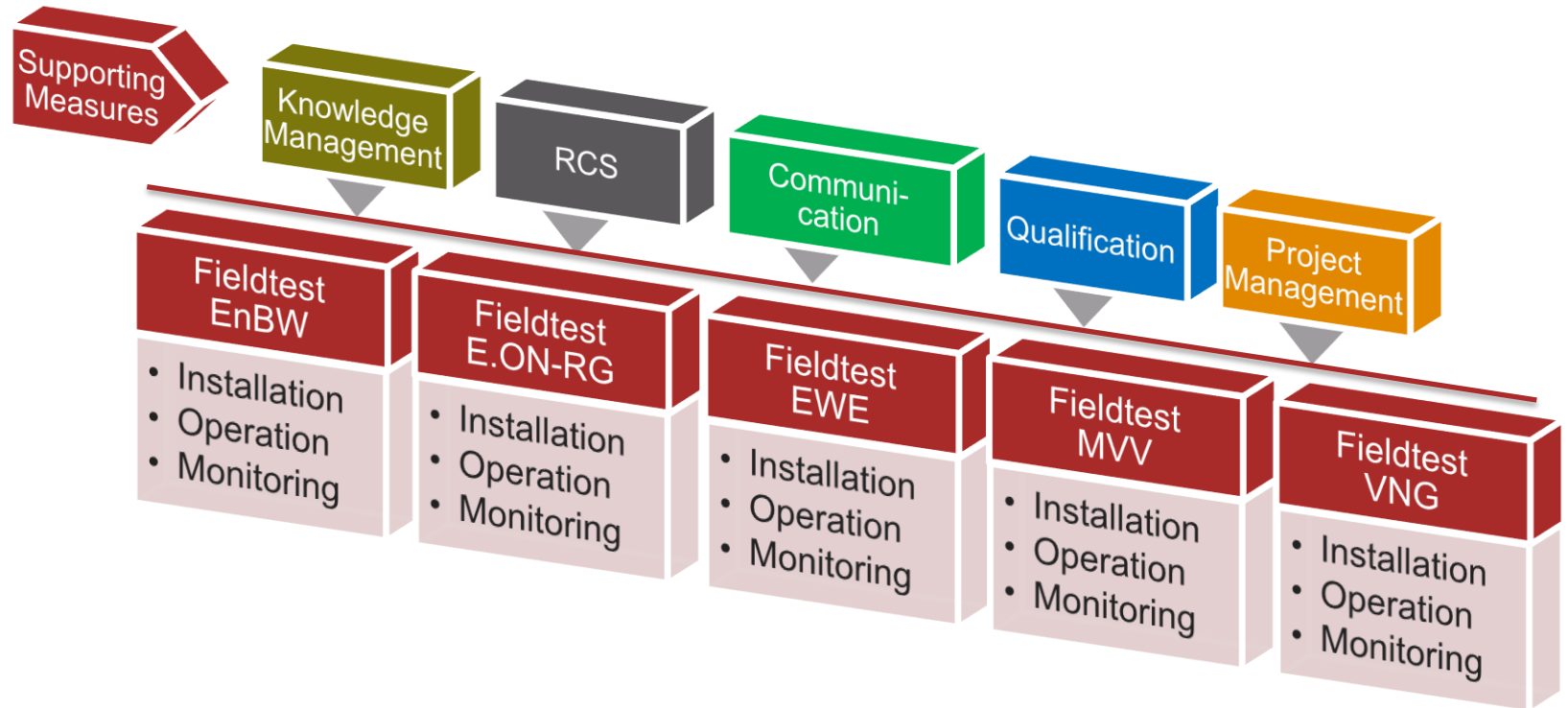
Integration of all players



A close and coordinated cooperation of all branch members
creates synergies and speeds up innovation

Lighthouse CALLUX

Fuel cell practice-run



Objectives: Market preparation of fuel cell heating systems, testing and optimisation of technology, improving frame conditions

More about CALLUX
by Dr. Stephan Ramesohl – E.on-Ruhrgas
Parallel session 1 Room G602
13:30 – 13:50

NIP – Large Stationary Industrial Applications



Sources: MTU, BMU, PASM

- Decentralized, highly-efficient supply of power, heat and cooling
- Application e.g. in hospitals, office-buildings, large IT infrastructures, waste-removal gasification, decentralized district heating, sewage gas usage and many more
- 200-700 kW, $\text{Eta}_{\text{el}} = 47\%$
- Combined with facilities for biogas, gas scrubbing, organic-rankine (ORC), energy-recovery, cooling
- 2 MCFC plants in operation, 7 planned projects on hold

ON HOLD

NIP – Stationary III

Marinal Application



Source: Lürssen

NIP – Stationary III Marine Lighthouse e4ships

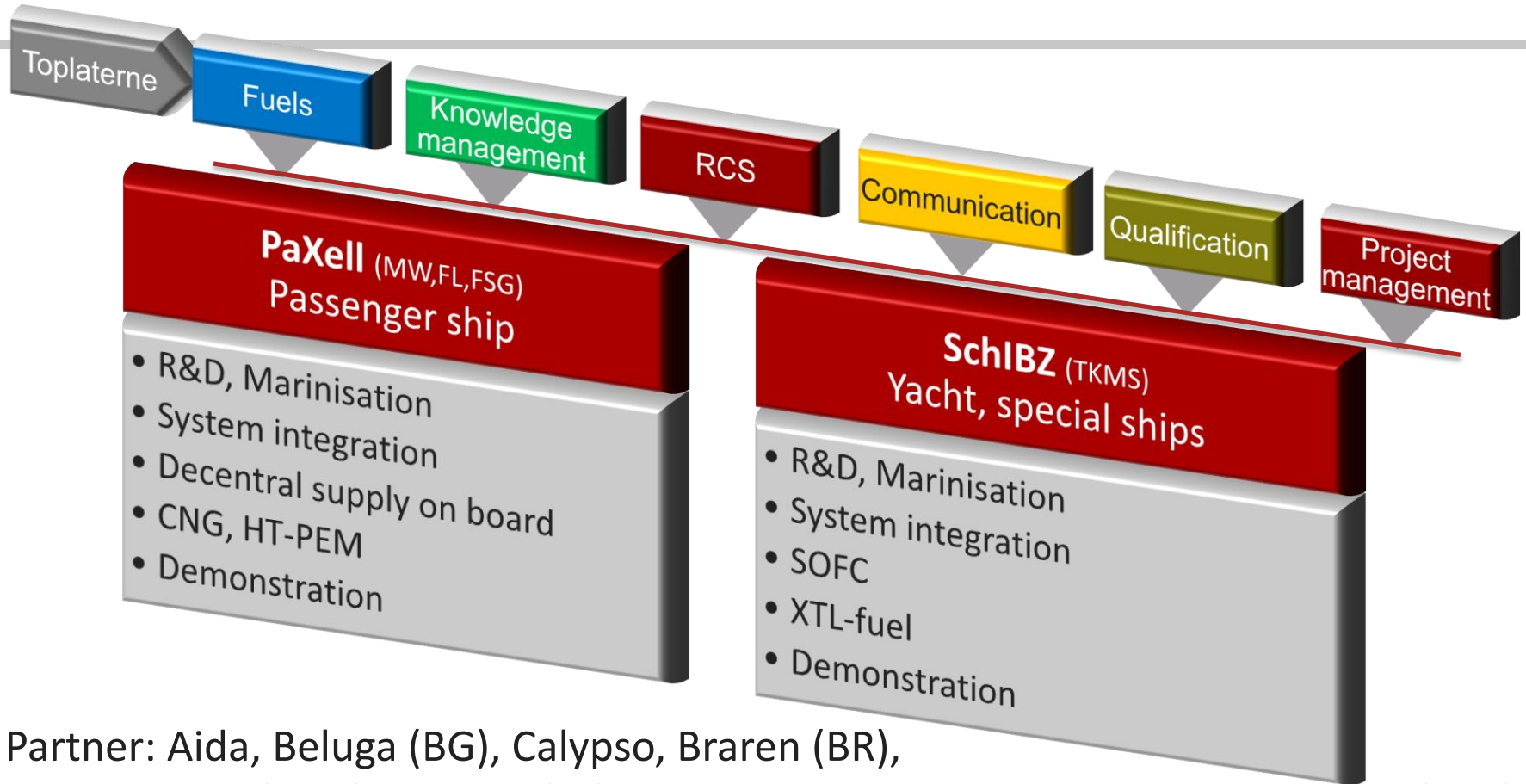


Sources: NOW, Calypso/Aida, e4ships, CMT

Objectives

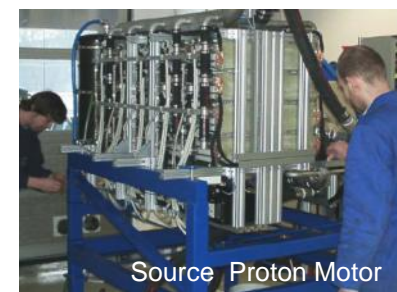
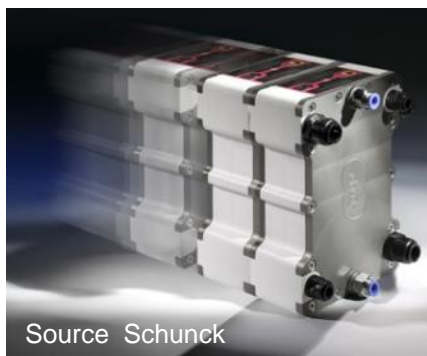
- Strengthening shipyards and operators
- Emission reduction during hotel and harbour operation
- Lowering costs for electricity, heating, cooling, tank-inertisation
- Application: Ferry, yacht, research und trade vessels; navy vessels supposed to follow
- Fuels: Sulfur-free diesel, CNG

NIP – Stationary III Marine e4ships-structure



Partner: Aida, Beluga (BG), Calypso, Braren (BR), Meyer-Werft (MW), Lürssen (FL), HDW, Flensburger Schiffahrtsgesellschaft (FSG), Blohm + Voss (TKMS), Inven, Serenergy, Topsoe FC, VSM, CMT, DNV, GL ...

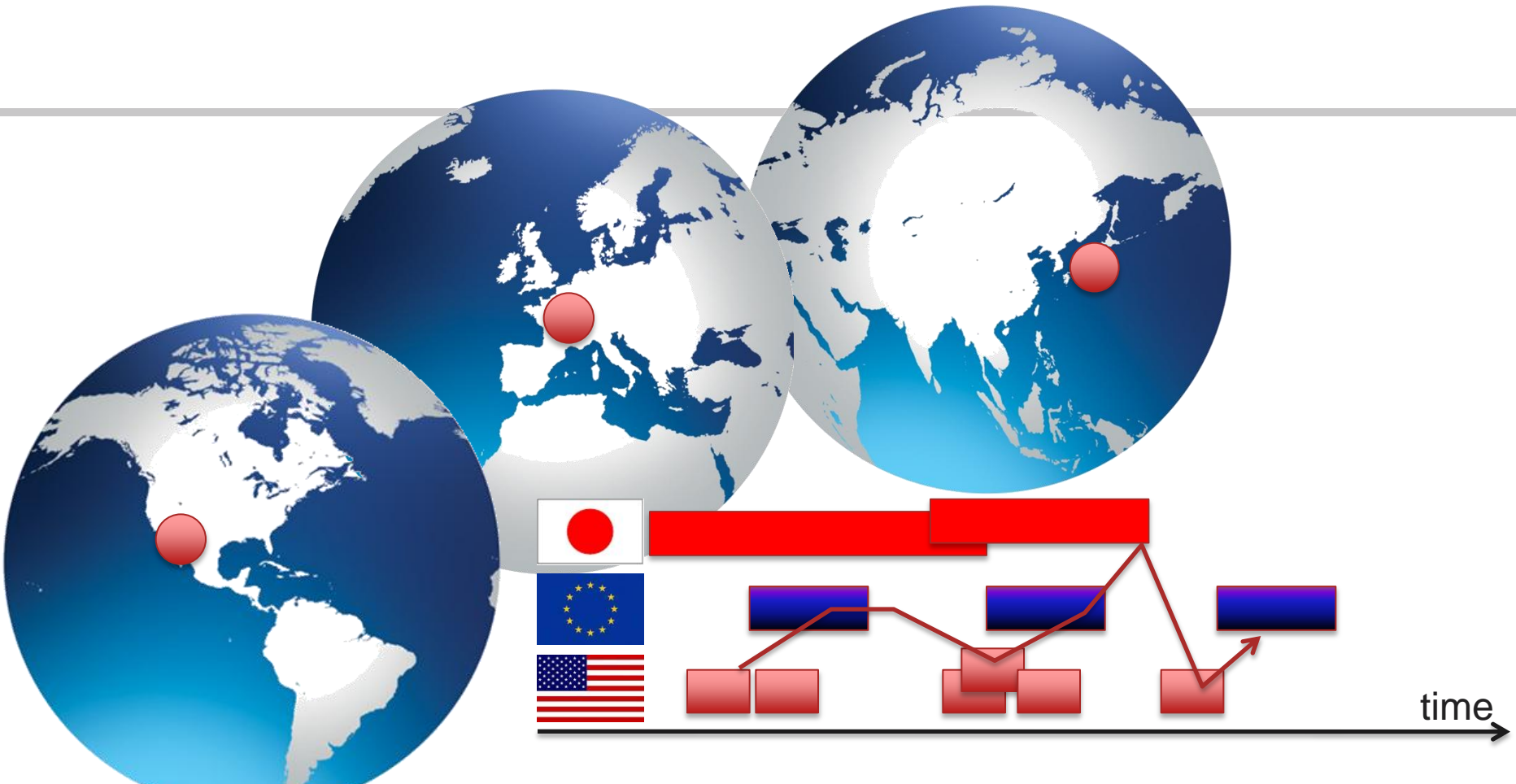
Supply industry established in Germany, Austria, Switzerland, Danmark



Strong European fuel cell component and appliance suppliers
can provide latest technology to the global industry

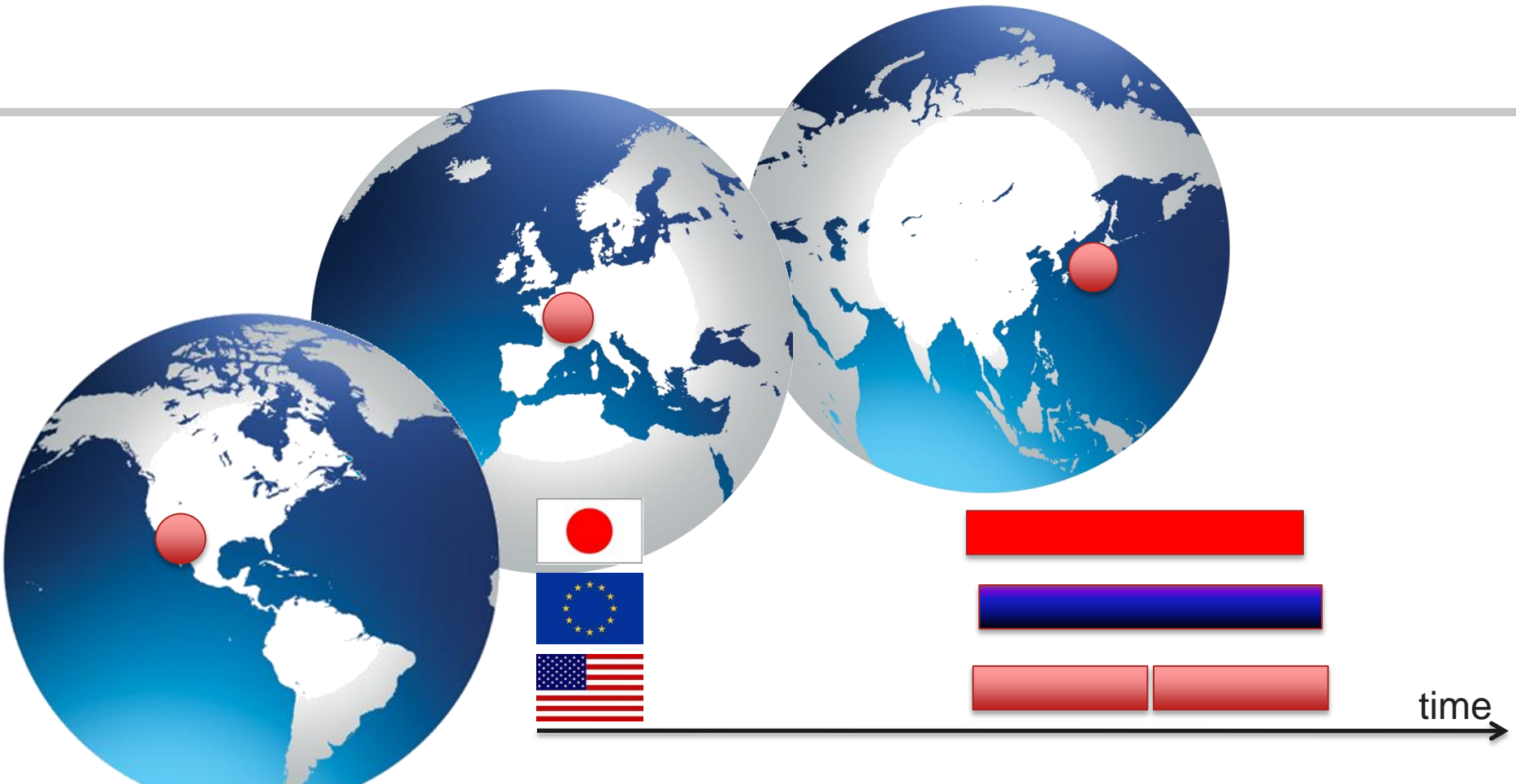
Is this enough?

Funding Harmony?



In a global market, volatility of and a wide diversity between national funding programs impair progress of global product development

Funding Harmony!



A synchronized global R&D and market preparation schedule is required

International Cooperation

Multilateral

NOW is a member of the International Partnership for Hydrogen and Fuel Cells in the Economy



- Partnership of 17 countries plus the EC
- Forum for international collaboration on RD&D, policy, and education

NOW supports the European Joint Undertaking for Fuel Cells and Hydrogen to align R&D and demonstration programs

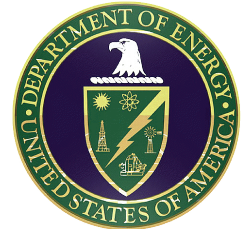


Bilateral

NOW collaborates on a bilateral basis with several countries:

USA

- Participation in merit reviews
- Data sharing



Japan

- MOU in place with NEDO
- Information exchange



In some business fields the
global cooperation works fine yet



Found in Ginza road,
Tokyo, March 2011

感謝

Arigato !
Vielen Dank ! Merci !
Bedankt ! Thank You !



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