



Summary of the workshop

Island Energy – Status and Perspectives

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Chair IEA Experts' Group on
R&D prioritysetting



In advance

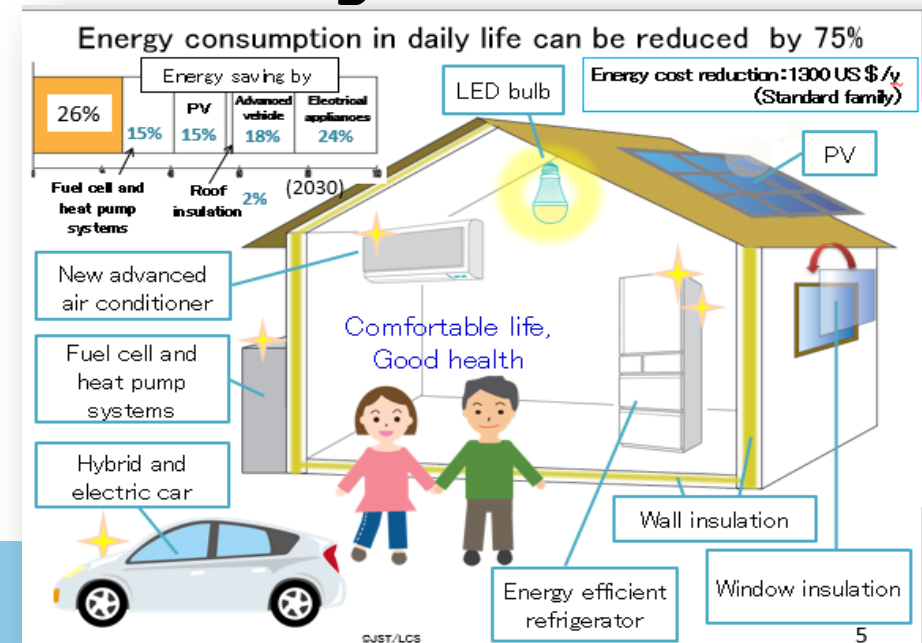
- You did answer the questions of the rational
- Due to the small letters and graphs you'll have to wait for the full report for the details
- You have presented so much, that most details will be lost in this summary





Why workshops like this...

- Importance of the topic: COP21
- Part of the road to a low carbon society (JST)
- RDD&D is important
- Raise awareness & collaboration (among IA's)
- Feed into IEA analyses & joint technological initiatives





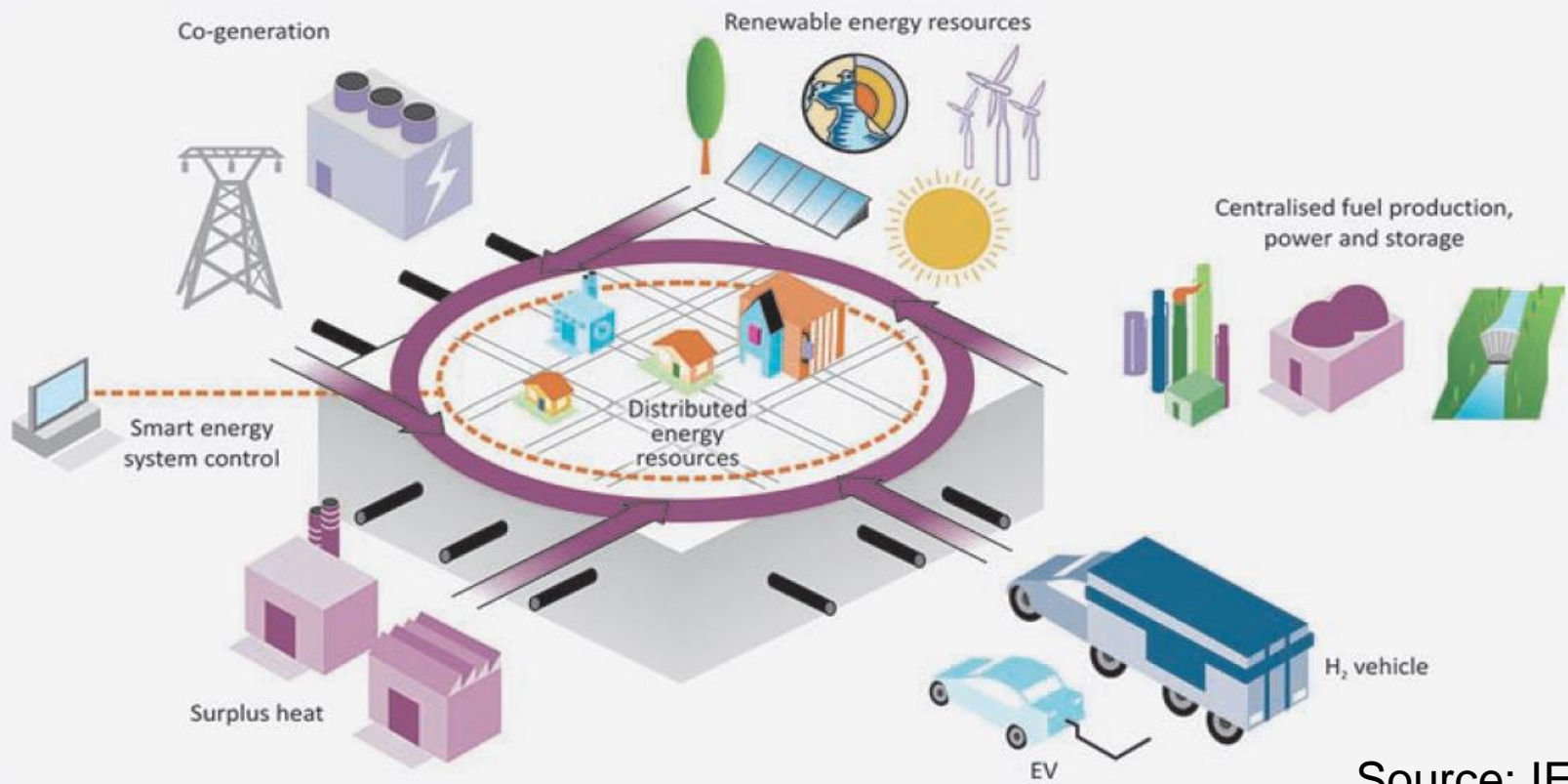
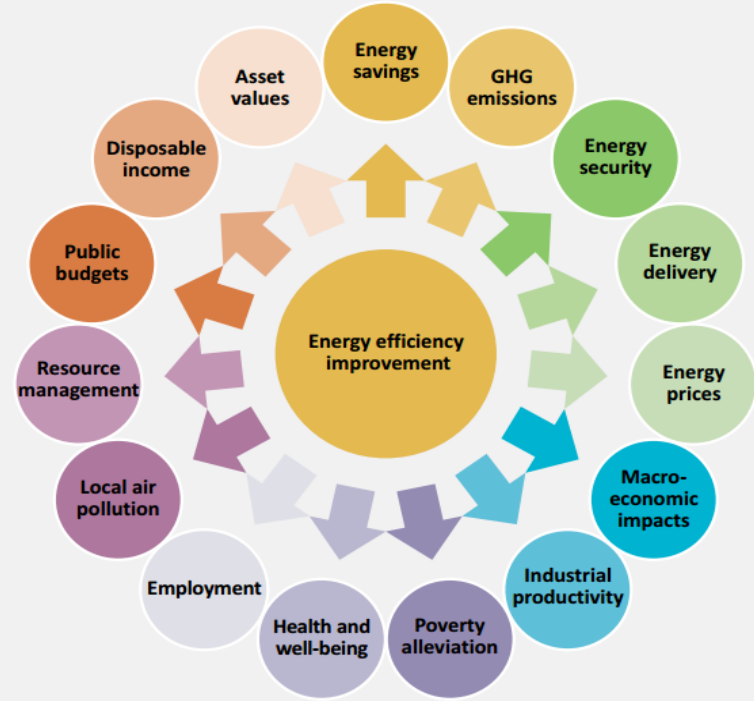
Japan as an example

- Fossil fuels have to be imported (Oil/LNG/Coal)
- Impact on environment & economy
- Vulnerable to climate change:
 - Pollution
 - Effects of temperature rise
- Increasing % renewable
- No clear plan to become self sufficient
- Need of business models for energy transition
- 7000 Islands..



IEA: Clean Energy Systems for Islands.

- Core principles apply to every area
- ETP16: looks at cities and self-sustaining cities.
- Integrated approach: supply side and demand side
- Models to get the best energy
- Multiple benefits: important for islands
- Appliances still bring a lot of potential

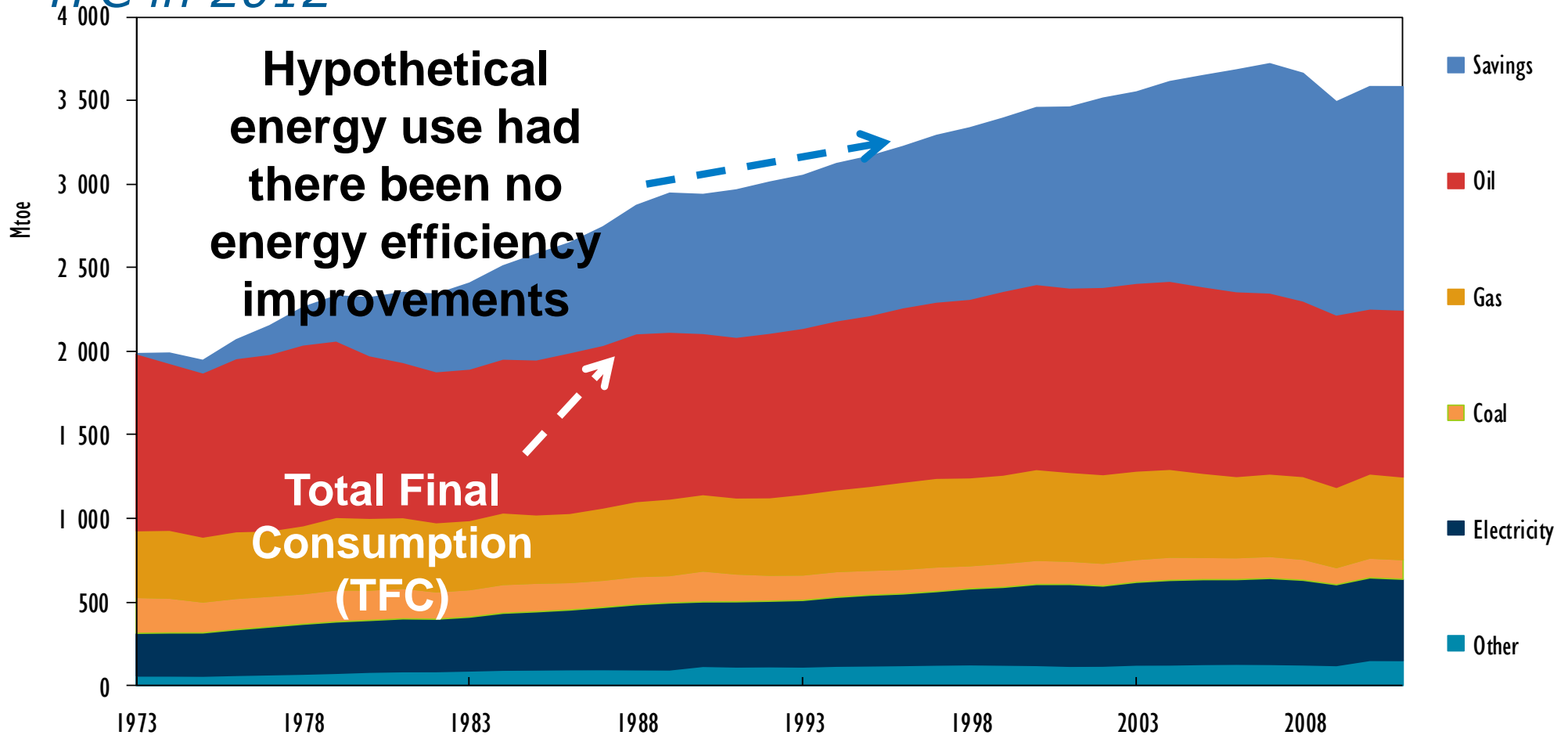


to date.

Source: IEA presentation

Output - Energy efficiency: the 'first fuel'

savings larger than the contribution of any other fuel to TFC in 2012





About Islands:

- Number of Smart Grid examples in Japan.
- Much Japanese industries involved. (NEDO)
- Fast growing number of projects, collaboration with the USA
 - New Mexico microgrid (Los Alamos) / Hawaii Maui
 - Much attention for storage and distribution
 - Voluntary e-cars: from 250 – 400
- There are a lot of demonstration projects: *Are we ready for deployment?*



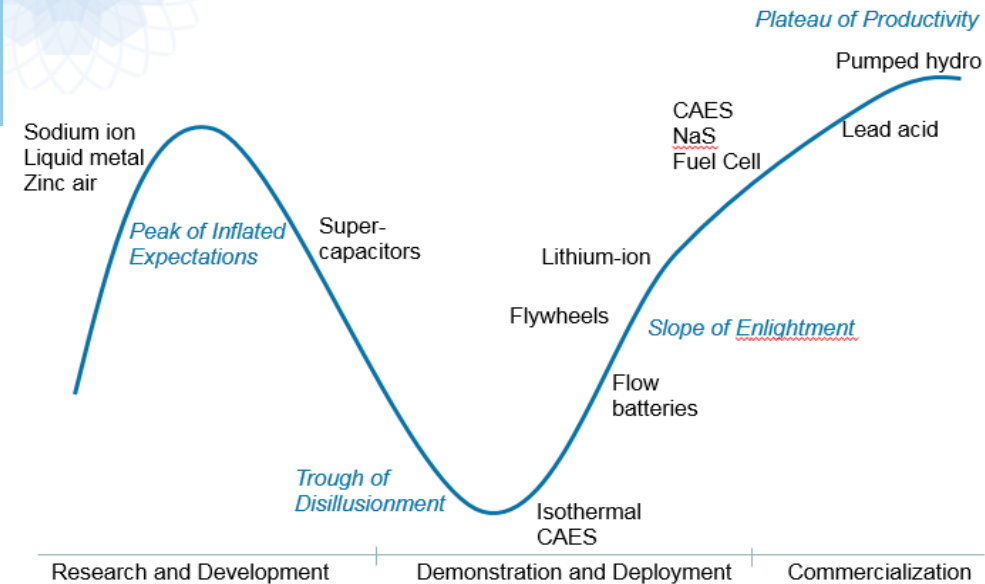
Island states

- Energy transition initiative:
 - Playbook: guide to sustainability
 - Based on actual project (USVI /Hawaii)
- Standards: having them is one thing, using them is something else: good example
 - Pacific appliance labelling and standards program
- Careful sustainable development demonstrated: Faroe

Technology



Source: IRENA presentation
Curve of Inflated Expectations



- Storage knowledge is advanced enough to provide the adequate technology.
 - Might have to be adapted to extreme weather
 - Examples of non chemical (hydro/concrete / compressed air) are limited (El Hierro / Faroe)
- DC as an alternative in demonstration phase
 - alternative of thinking. (Sony)



End user

- Are important for end use efficiency
 - Should be involved from the start
 - Don't act economical per se.
 - Home app: gimmick or trend?
 - Multiple benefits apply
 - We need to know more about effectiveness of incentives (DSM), but do have labelling for appliances (4E)
 - Heterogeneous



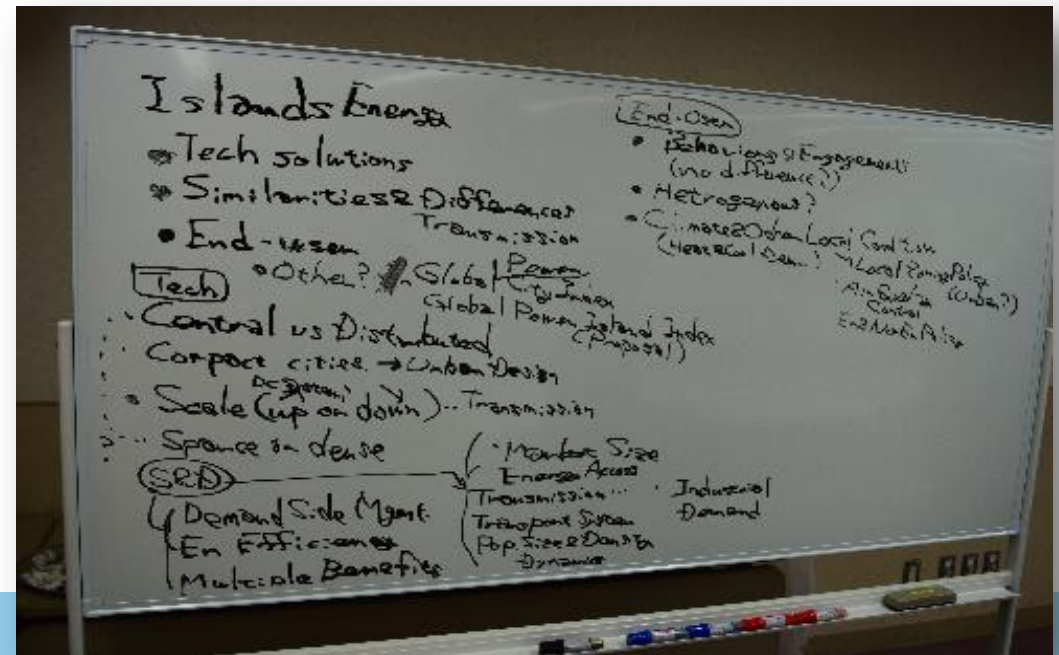
Some barriers

- No business models for islands
 - Unbundling on islands , where possibility of market conditions is reduced, might not lead to cost reduction.
 - Smart grid elements, like distributed generation and storage, might improve cost efficiency and integration of intermittent generation in the future.
 - Can't we think like the WWW guys?
- Right involvement of government (especially if there is a "mainland")



Islands vs (Compact) Cities

- Huge variety in renewable (solar/wind/biomass/OTEC/hydro/wave) (IA OES)
- Limited Demand Response options
- Smart Distribution "easy" ("no" history)
- No energy market





Islands vs Cities (El Hierro)

- **Similarities:**
 - Space limitations that encourage rooftop generation
 - Difficult and expensive development of distribution network: permits & authorizations
- **Differences:**
 - Islands usually lack interconnections, while large cities are typically surrounded by high-voltage transmission rings
 - Islands tend to have regulated conditions, while cities market conditions



Key conclusions

- Good examples to promote self sufficiency on islands
 - Business models are the biggest challenge, multiple benefits should be included in developing these.
 - Storage is an important necessity on islands, far more than on mainland.
 - Electrification of society is necessary to become selfsufficieent,
- Islands are showcases for distributed generation and distribution
 - (but each one does have a unique combination of technologies)
- Transposing results to big compact cities is not realistic.
- More research is necessary to bring down the cost
- Using the knowledge for remote area's, smaller villages and growing cities is an reel option
- Engagement of society is very important to achieve sustainability



Towards a report

- Presentations will soon be online (IEA EGRD).
- We will write a report & ask feedback.
- Report will be published on the IEA website as well.

