

Telefonica



ITU Green standards week

Innovating today for
a sustainable tomorrow_

*Perspectives on Buying & Building
Green Cables*

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Perspective comes from . . .

- Almost 30 years in the telecommunications field
- Most of this as a developer, owner and operator
- Since 2009, as a technology developer and vendor
- Experienced this industry sector from two sides
- Managed feast, restructuring and famine – all good
- Brought new subsea technology to market for HMN
- First titanium repeater & branching unit housing

Perspective of HMN

- JV between Huawei and Global Marine (BT & C&W)
- Marine experience of Global Marine
- Optical Innovation of Huawei Technologies
- Opportunity to define, design and develop
- Driven by innovation but grounded in tradition
- Rapid prototyping and in-house qualification

Innovative 6fp Repeater & 8fp Branching Unit



Large Bandwidth and Wide Spans

- Up to 120km span distance, 1 ~ 6 fiber pairs
- 27nm/33nm broad gain bandwidth, supporting up to 160 channels per fiber pair

Robust Mechanical Design; capable in a harsh marine environment

- Up to 8000m operating and recovery depth
- Reduced diameter sea case, can be **plough buried directly** by existing fleet
- Simplified design with redundant long-life lasers in a titanium pressure housing
- Failure rate < 6 FIT with 25 years design lifespan



Perspective on the goals of the JTF

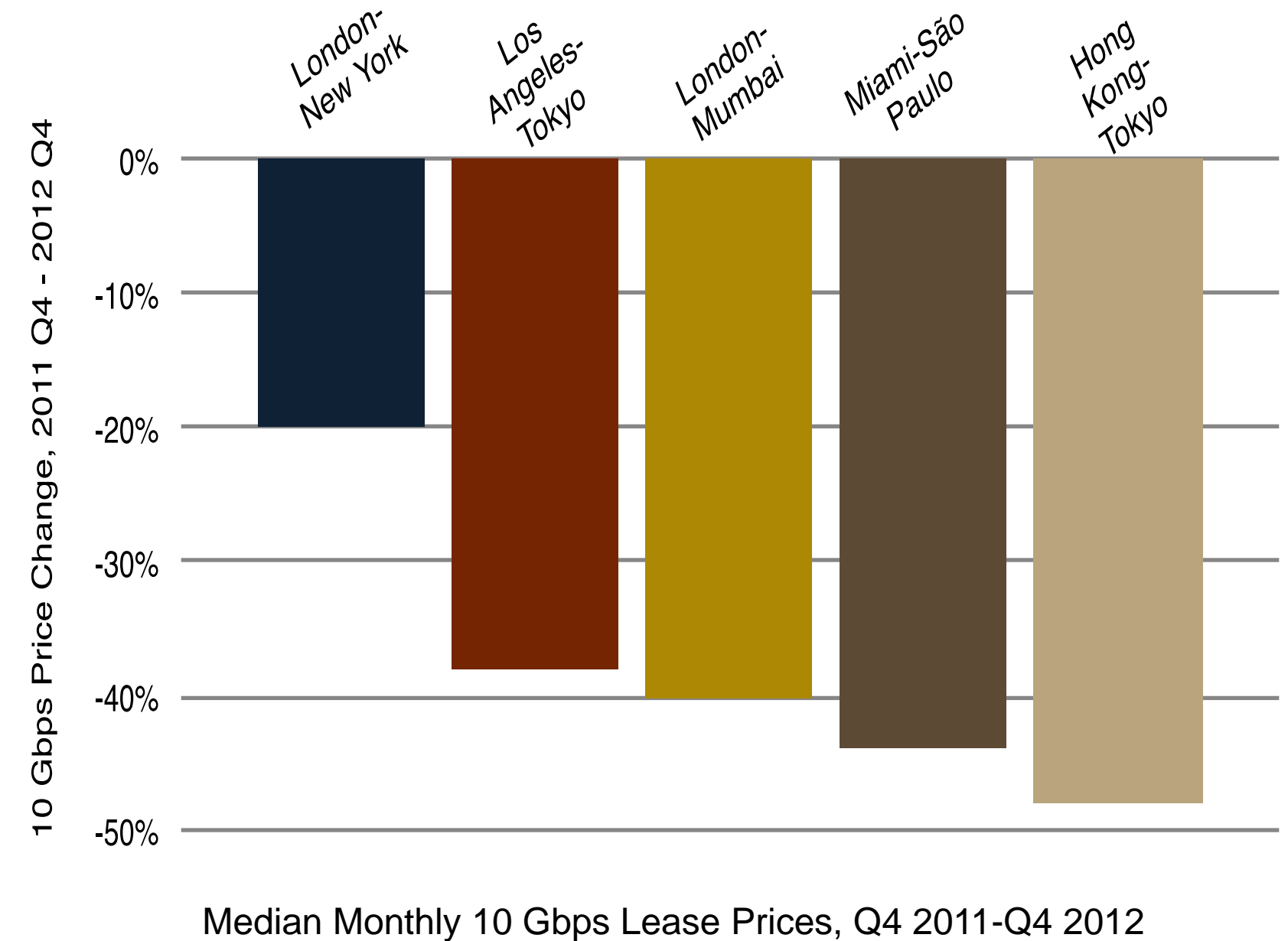
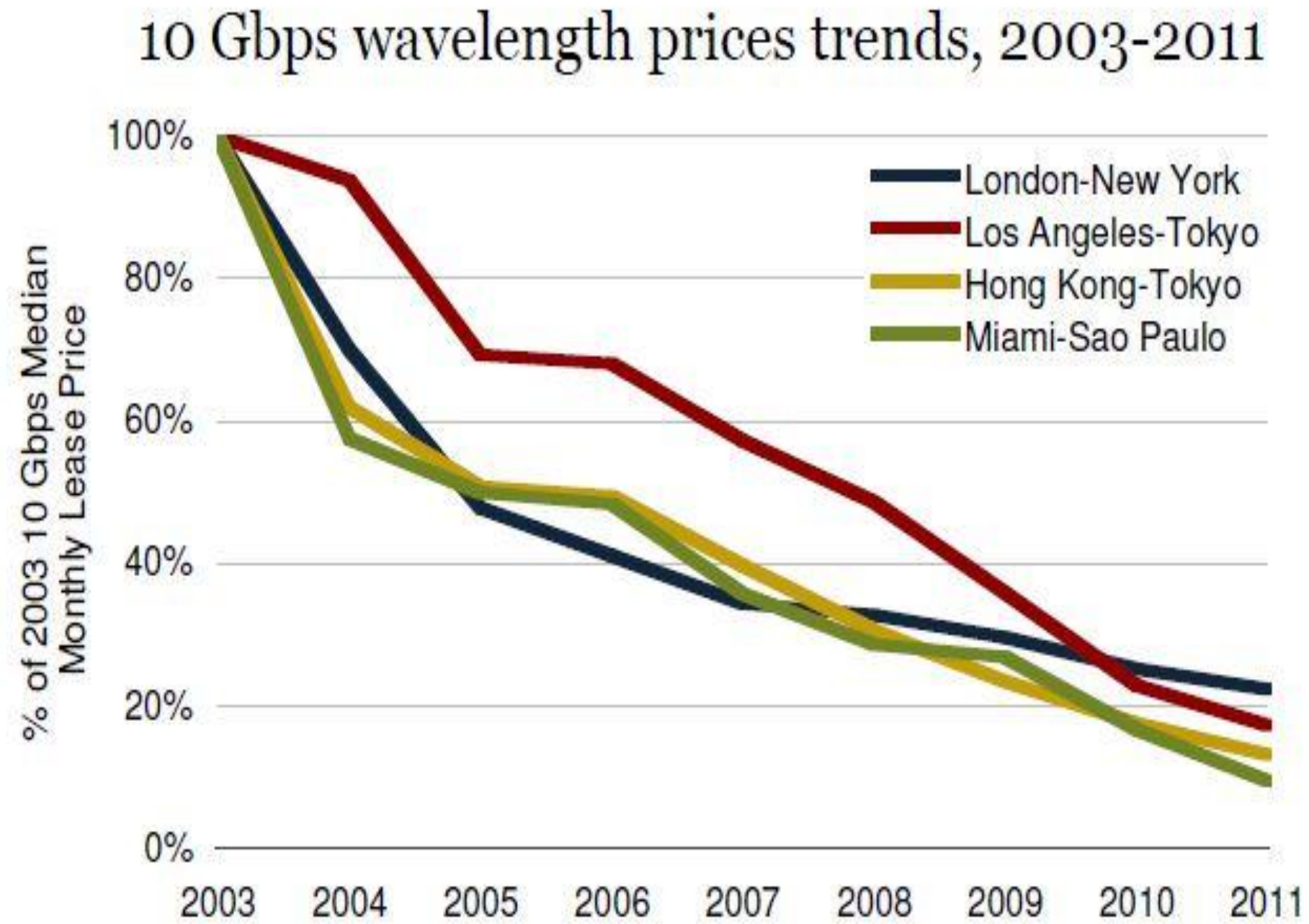
- Macro Needs and Solutions are now well known
- Permit challenges could be overcome
- Strategy, Legal & Engineering papers are clear
- Sensor Design is showing convergence
- Vendors can develop, manufacture and deploy
- Design, Development and Deployment
 - all have a common issue

“Show me the money” – Funding

Shouldn't 'Industry' absorb the cost?

- Commercial pressures – rise of free internet
 - Significant price erosion for international carriers
 - Cu/Fe rises causing margin squeeze for vendors
 - Twin route LON-NYC 1999; close to \$1bn > 2.4Tb
 - 2012, Same Scope; conservatively \$400M > 60Tb
 - Cable developers want to minimise build costs
- “no pot of gold to fund science and research”

Shouldn't Industry absorb? – Carrier view



Source: Telegeography

Technical Challenges?

- Mechanical is easy to solve, connectivity harder
 - Bringing data back on-shore is a key factor
 - Loss of in-band capacity is a huge revenue threat
 - Out-of-band could be ‘something for nothing’
 - Equivalent of Orderwire or SMS in C7 signaling
 - Low impact will enhance chances of acceptance
- “Money is the key issue, again – what contribution”



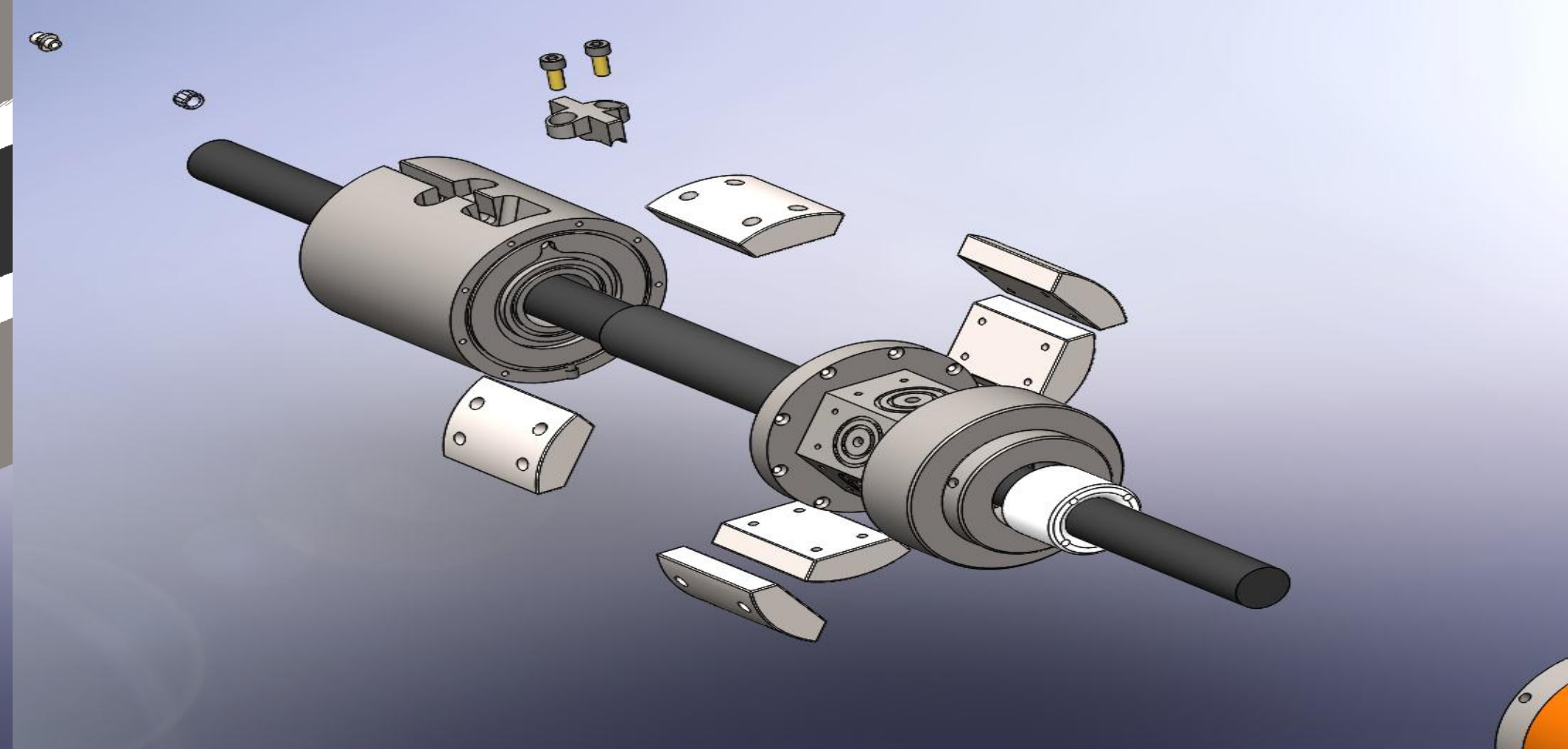
Technology Saving Money & Solving Problems



A 3D CAD model of a cable routing assembly. It shows a grey metal housing with a central channel. A black cable is shown entering from the left and exiting to the right. A blue callout bubble is in the top left corner, and another is in the bottom right corner.

MOUNTIN
G FACE

CABLE
ROUTE



Off-Line DESIGN



A 3D CAD model of a cable input assembly. It shows a grey metal housing with a central cable input. The cable is shown entering from the left and exiting to the right. A blue callout bubble is in the top left corner, and another is in the bottom right corner.

CABLE INPUT
WITH
GLASS/GLASS
SEALING

SCIENCE SEGMENTS
"SCIENCESEGS"

Printed & Painted Result



**HUAWEI MARINE
NETWORKS**

GREEN CABLES

Maybe a Universal concept will work

- UJ™ consortium – majority of cable repair joints
- Core design is standard, with end-specific variants
- Vendors funded for collaboration and cooperation
- Universal fund? Suitable systems with options
- Standardised design – functional specification
- Proprietary mechanicals and data-relay

If I were developing an oceanic system today . .

I would . . .

“Route for Revenue” – capture major traffic flows

“Divert to Developing” – pass under-served countries

“Branch for Oil&Gas” – near-continent fields & assets

“Host the science” – funded sensors included

Projects may already be happening, but this is what I believe will be needed to prove the business model

Where is some of the money?

“It is good to be green & good to be seen”

- Philanthropists? – regional development funds
- World Bank – funds for inter-regional activities
- Development Banks – life-saving, green project
- Green credentials attractive – Oil & Gas companies
- Need to study these potential sources formally and build a ‘desire to fund’ from this community

Challenge for the JTF & Community

- Search out the funds and potential investors
- Coordinate and collaborate for a universal solution
- Continue to raise awareness and publicise
- Green credentials attractive – seek Oil & Gas companies

“A small group of thoughtful people could change the world. Indeed, it's the only thing that ever has.” – Margaret Mead, 1981

Thank you

