



# Education

## Survey Results



**Edwina Tanner**

**July 2020**

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# Introduction

## WHP Education Module Development Background

The WHP is designing education modules based on the materials developed by partner cities to guide students to an understanding of the similar issues facing urban marine waterways in different locations around the world.

The broad thematic areas to be covered include coastal urbanization, water quality, eco-engineering, and sustainable management of urban waterways.

The modules will be targeted towards postgraduate or final year undergraduate university students however will be suitable for many adult education uses.

The modules will be science-based however will also be suitable for non-science students.

The modules developed will be open-source and freely available to educators.

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### WHP Education Survey Results Summary

8 questions asked

Responses were collected and analyzed from 26 WHP partners

Four modules will be developed one for each of the four themes listed below. For each theme 4 x 15 minute linked Powerpoint presentations with optional voice overs will be created. Publications, videos, webinars and lecture notes will be associated with each presentation. Modules will include regional specific and global content.

Themes:

1. Water and Sediment Quality
2. Eco-Engineering and Nature Based Solutions
3. Governance and Multiple Use of Harbours
4. Socio-Cultural Aspects of Harbours

## Summary Table of Survey Respondents

Respondent Number	Partner City - Country	Institution	Name
1	Sydney - Australia	University of Sydney / Sydney Institute of Marine Science	Edwina Tanner
2	Auckland – New Zealand	The University of Auckland	Andrew Jeffs
3	Qingdao – China	Ocean University of China	Dehai Song
4	Abu Dhabi – United Arab Emirates	New York University	John Burt
5	Plymouth – United Kingdom	Plymouth University	Louise Firth
6	Singapore - Southeast Asia	Singapore Institute of Technology	Seck Tan
7	Ravenna - Italy	University of Bologna	Massimo Ponti
8	Rio de Janeiro - Brazil	Universidade Federal Fluminense	Abilio Soares Gomes
9	Dublin - Ireland	University College Dublin	Paul Brooks
10	Heraklion - Greece	Hellenic Centre for Marine Research	Eva Chatzinikolaou
11	Malaysia – Southeast Asia	University Sains Malaysia	Chee Su Yin
12	Lagos - Africa		Michael Adi
13	Ravenna – Italy	University of Bologna	Marco Abbiati, Laura Arioldi
14	Mediterranean Sea Region		#14
15	?		#15
16	South Africa	South African institute for Aquatic Biodiversity	Francesca Porri
17	Sydney – Australia	University of Sydney	Gavin Birch
18	Plymouth – United Kingdom	University of Plymouth	Sean Comber
19	Spain	Working on a MOOK with IH Cantabria	?
20	Tasmania - Australia	University of Tasmania	Catriona MacLeod
21	Wisconsin - USA	?University of Wisconsin-Milwaukee	?Sandra McLellan
22	Rio de Janeiro – Brazil	Instituto de Estudos do Mar Almirante Paulo Moreira	Ricardo Coutinho
23	Sydney - Australia	Macquarie University	Anthony Chariton
24	Singapore	Tropical Marine Science Institute; St Johns Island National Marine Laboratory	Serena Teo
25	Hong Kong	The University of Hong Kong	Kenneth Leung
26	Xiamen	Xiamen University	Qinhua Fang

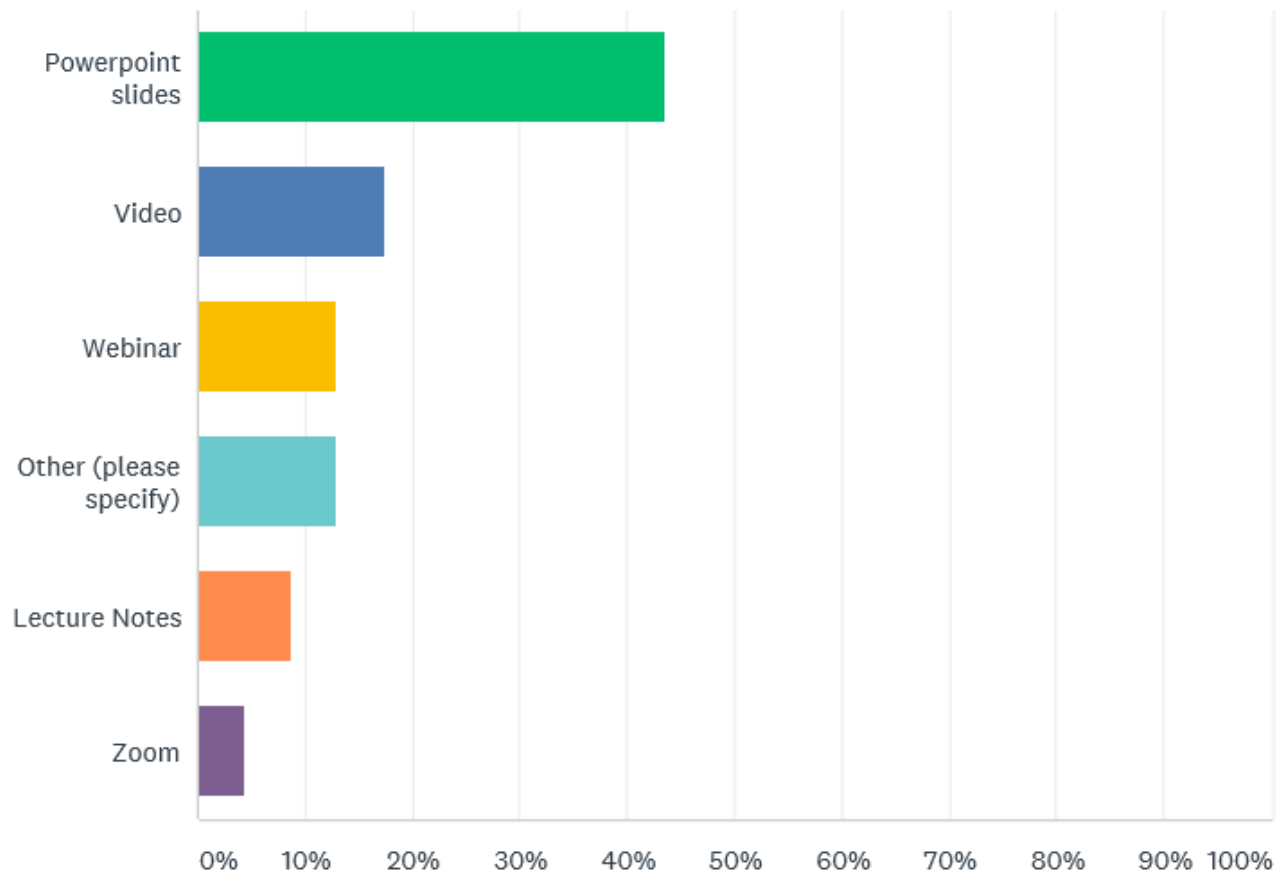
## Question 1. Do you have existing courses that could use this material?

Course Name	Partner City	University	Respondent
Masters in Marine Science and Management	Sydney	Sydney Institute of Marine Science	Edwina Tanner
Marine Communities Ecology (Final year undergrad & MSc)	Dublin	University of Dublin	Paul Brooks
Where the City Meets the Sea: Coastal Urbanization and Environmental Change (undergraduate, mainly junior non-science environmental studies students)	Abu Dhabi	New York University	John Burt
Masters in Marine Conservation	Plymouth	University of Plymouth	Louise Firth
Marine Ecosystems: structure and processes, MSc in Marine Biology Marine Ecology, BSc in Biological Science	Ravenna	University of Bologna	Massimo Ponti
Marine Pollution/undergraduate Sedimentary ecosystems/graduate	Rio	Universidade Federal Fluminense	Abilio Soares-Gomes
Marine Communities Ecology (Final year undergrad & MS)	Dublin	University College Dublin	Paul Brooks
Human impact, management and conservation of ecosystems Bachelor degree in Environmental Sciences Monitoring and quality assessment of marine habitats Master in Marine Biology	Ravenna	University of Bologna	Laura Arioldi
Conservation Undergraduate	Malaysia	University Sains Malaysia	Chee Su Yin
Conservation genetics and conservation biology, 2-year master level	Mediterranean Sea		#14
Rocky Shores - 3 <sup>rd</sup> year undergraduates Mono thematic specialistic course - honours	South Africa	South African Institute for Aquatic Biodiversity	Francesca Pouri
BSc Environmental Science MSc Environmental Consultancy MSc Applied Marine Science	UK	University of Plymouth	Sean Comber
Global Changes – Masters Level Marine Ecosystems – Masters Level	Spain		#19

Second year - UTAS KSM201 Marine Resource Management & Conservation	Australia	University of Tasmania	Catriona MacLeod
Master in Marine Biology	USA	University of Wisconsin- Milwaukee	#21
Introduction and advanced in Marine Biotechnology	Brazil	Instituto de Estudos do Mar Almirante Paulo Moreira	Ricardo Coutinho
Aquatic Ecology Systems: 3 <sup>rd</sup> year	Australia	Macquarie University	Anthony Chariton
Marine Lab Outreach & Education Programs (Secondary school - Undergraduate Level)	Singapore	St Johns Island National Marine Laboratory	Serena Teo
BSc in Ecology & Biodiversity BSc in Environmental Science MSc in Environmental Management	Hong Kong	The University of Hong Kong	Kenneth Leung
MSc and PhD in Marine Affairs	Xiamen	Coastal and Ocean Management Institute Xiamen University	Qinhua Fang

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Question 2. Is there a preferred format for the learning modules?



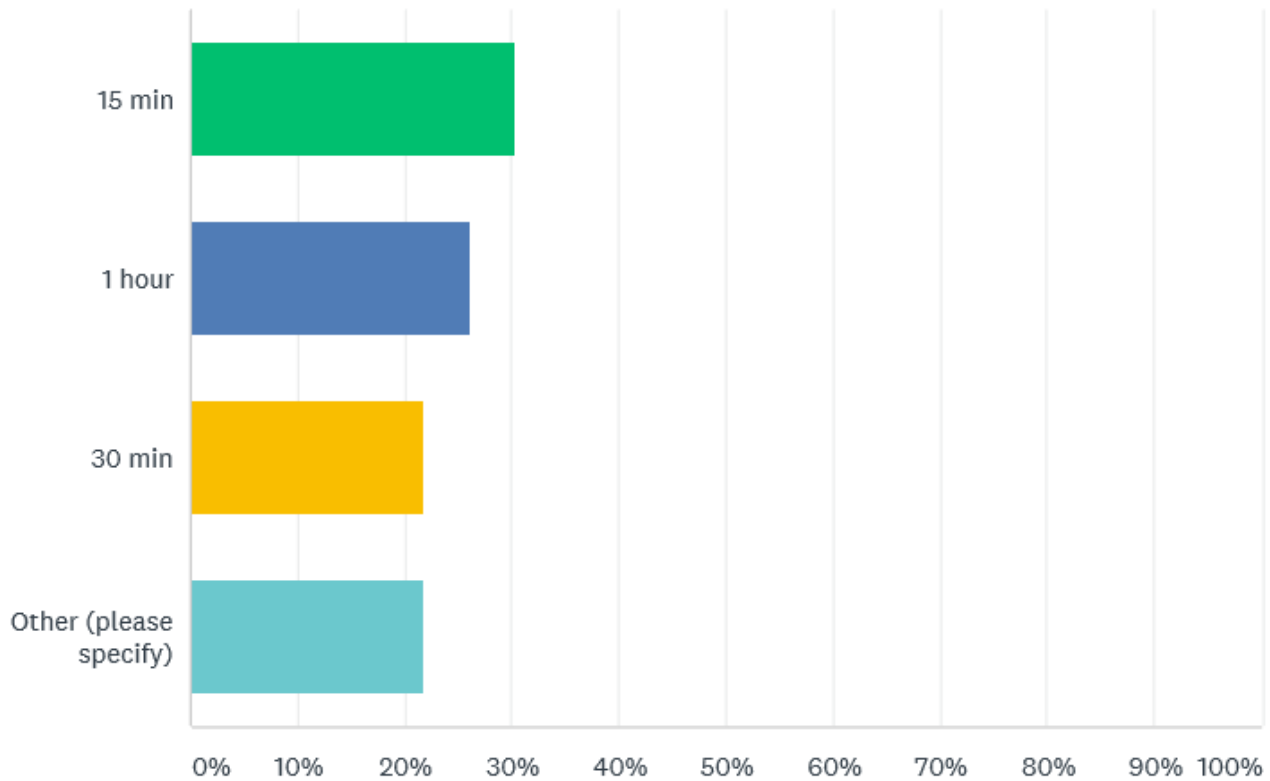
Other –

Mixed options based on above would be good - could look to incorporate in a number of ways

- Video snippets (2 to <12 min) with related papers/text
- Zoom with powerpoint slides

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Question 3. What is the preferred length for a learning module?



Other - 45 min

- 30 min
- 2 hours
- It would be good to have a synopsis version (15 mins) to be incorporated into lectures but also a longer version (1hr) that we could post in the module for students to review
- 1 to 2 hours
- Happy to consider range of options - a short piece could be built into/ around existing delivery, whilst a longer piece could act as a standalone lecture

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Question 4. The 4 themes proposed are **Coastal Urbanization, Water Quality, Eco-Engineering and Sustainable Urban Waterway Management**. Are there other themes that you would like to include? If so what are they?

### **THEMES**

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Social aspects

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Marine Ecosystem services

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Policy and regulation or ethics of decision making

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Nature based solutions

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Marine offshore planning / impacts

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Benthic- pelagic processes including sediment

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Coastal Restoration

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Nature-based solutions (i.e. living shorelines)

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Monitoring tools for coastal habitats

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Integrated Coastal Management

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Constructed Wetlands

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Pollution management

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Sediment quality

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Habitat Restoration

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Beach Erosion

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Marine Pollution e.g. microplastics

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Indigenous knowledge

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Quality assessment of coastal habitats

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Ports as gateways of invasive species

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Beach health

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Biodiversity

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Urban Ecosystem Functioning and Services

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Enhancing ecosystem functions of urban marine ecosystems

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Climate Change Adaptation

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Food Security

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Environmental/ecological risk assessment

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Seafood safety

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Marine protected areas

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Marine spatial planning

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Harbour and Shipping Management

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Integrated Coastal Management (ICM)

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Question 5. Is there a topic or a region of interest that you would like to include in your course?

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**TOPIC, Region**

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Sustainability, Coastal upwelling of Arraial do Cabo

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N Atlantic

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Some highlighting case studies might be good

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Examples from all over the world

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UK but anywhere really

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New South Wales

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Countries in emerging economies

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Mediterranean Sea

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Large enclosed brackish seas, Baltic, Black, Chesapeake, Adriatic

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Integrated Coastal Management, Lagos

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South East Asia

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State

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Middle East and Asia for megadevelopment and artificial islands

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Global perspective than local case studies (any)

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Marine Microplastics , Australia, Global

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Technical training in eco-engineering

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Middle East

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Eco-engineering & early stage processes

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USA

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Eco-engineering & population connectivity

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Adaptation and Economic Development

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Estuarine, Australia

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Oceans, Australia

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Tropical Southeast Asia

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Great Barrier Reef

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Eco-tourism

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Coral Triangle

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Question 6. Is there a topic or a region of interest that you have already created material for that you could share with this WHP Education Project?

TOPIC / REGION	RESPONDENT
I have not developed anything formal but i do talk about ethics and possible greenwashing. We just published a paper in journal of applied ecology on this (firth et al. 2020), which will make it easier to discuss in lectures now that its published. Students really engage with the ethics and greenwashing conversation. I could send some infographics and media articles that i think are happening as we speak. There was a press release yesterday and i know that the times newspaper has been in touch. There could be others. The media angle is useful for students to see and it highlights the connection between science, education, awareness and responsible media. This is a point we make in the j appl ecol paper. I could provide a short zoom interview if that was something you wished. I also have a tedx talk that may be useful to provide a link to - is there space for nature in the Anthropocene. <a href="https://www.youtube.com/watch?v=uy_upfnsugm">https://www.youtube.com/watch?v=uy_upfnsugm</a>	Louise Firth
Marine microplastics	Edwina Tanner
Guanabara bay	Abilio Soares-Gomes
Mainly around the southern Persian/Arabian gulf	John Burt
Ecological processes in brackish ecosystems, ppt	?Laura Arioldi (#13)
Not yet, but would like to contribute	Francesca Porri
Only limited material at the moment	Sean Comber
We are working on a MOOC on marine sustainability together with UC – IHC Cantabria that covers several topics of interest, including: MOOC1-Conservation of marine ecosystems: tools and methods MOOC2 - Human activities and vulnerability of marine ecosystems MOOC3 - Nature-based solutions in a climate change context MOOC4 - Land-Sea-Ocean interactions: current state and future challenges	#19
Would be happy to discuss share elements around spatial planning, multiple use management for targeted purposes and seafood safety	Catriona McCleod
eDNA monitoring/ not region specific	Anthony Chariton

Question 7. Would you or someone in your lab be willing to be listed as an expert who can be called upon to provide expert advice or participate in an online or pre-recorded lecture for this course?

<b>NAME</b>	<b>Partner City</b>	<b>TOPIC</b>
Edwina Tanner	Sydney	Water quality
Louise Firth	Plymouth	Eco-Engineering
John Burt	Abu Dhabi	Coral Reefs and Climate Change
Abilio Soares-Gomes	Rio	Pollution
Rafael Menezes	Rio	Social environment interactions
Luciana Altvater	Rio	Risk analysis
Lucia Messano	Rio	Biodiversity
Marco Abbiati	Ravenna	Ecology of coastal habitats
Massimo Ponti	Ravenna	Marine ecology
Sean Comber	Plymouth	Water Quality
Francesca Porri	South Africa	Larval ecology
Yes	#19	
Chee Su Yin	Malaysia	IGGI (Integrated Greening of Grey Infrastructure) and NbS in Malaysia
Gavin Birch	Sydney	Sediment quality
Catriona MacLeod	Tasmania	Water quality
Annachiara Codello	Sydney	Microbial communities
Neo Mei Lin	Singapore	Marine Conservation, Ocean Plastics Pollution
Kenneth Leung	Hong Kong	Ecological risk assessment
Qinhua Fang	Xiamen	Marine Policy and Environmental Awareness

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## Question 8. Comments

- This is great! I am more than happy to contribute in any way that I can. (Louise Firth - Plymouth)
- This will be very useful. (Edwina Tanner - Sydney)
- We believe this initiative is of great interest (#21)
- Great ideas - would love to discuss further. (Catriona McCleod - Hobart)
- We are working on a MOOC on marine sustainability that covers several topics of interest we should explore synergies between the two projects (#23)
- Given the world experience, it would be great to try to collate some unique features from all countries, in terms of logistics, training, results. (Francesca Porri – South Africa)
- Commendable approach (Lagos)
- The report is very helpful and encouraging (Qinhua Fang - Xiamen)