
 Asia-Pacific
 Economic Cooperation

APEC Science Centre Impact Project
 An initiative supported by science centres and museums in APEC economies, in cooperation with the international networks of ASPAC, ASTC and RedPOP

*Presentation for the 29th APEC-ISTWG meeting
 27-28 October 2005, Singapore*

Overview

- ▶ About the project
- ▶ Activities and achievements to date:
 - networking through meetings
 - electronic networking
- ▶ Human capacity building:
 - some science centre success stories
- ▶ Where to next?
- ▶ How can you help?




Background

- ▶ Governments recognise the importance of science, technology and innovation for their economies and for the living standards of their people.
- ▶ Science centres and science museums engage with a wide variety of people to promote awareness of science and technology and to encourage young people to study and consider careers in these areas.




Project aims

- ▶ Strengthen linkages and the sharing of data and best practice approaches among science centres and museums in the APEC region
- ▶ Assist science centres and museums to articulate, to governments and stakeholders, their particular assets and their contributions to community and economy interests





International Steering Group

- ▶ Dr Tuan Chiong Chew, Singapore
- ▶ Dr Sook-Kyoung Cho, Korea
- ▶ Dr Wen-Hao Chou, Chinese Taipei
- ▶ Ms Haydee Domic, Chile
- ▶ Mr Brenton Honeyman (Project coordinator), Australia
- ▶ Ms Lesley Lewis, Canada
- ▶ Dra Julia Tagüeña Parga, Mexico – Red-POP
- ▶ Ms Bonnie VanDorn, USA – ASTC
- ▶ Mr Chee-Kuen Yip, Hong Kong – ASPAC



The project and ISTWG

- ▶ International science and technology networks
- ▶ Human capacity building
- ▶ Connecting research and innovation
- ▶ Strengthening technological cooperation and encouraging best practice in strategic planning



Relevance to EDNET

- ▶ Education in maths and science is a high priority for APEC's Education Network (EDNET).
- ▶ Research priorities for EDNET include:
 - build an online professional development network
 - use all opportunities to share knowledge
 - research how best to integrate instruction in science, technology and mathematics
 - promote the use of evidence-based policies and practices throughout APEC
 - build on existing cognitive research

Support and funding

- ▶ Sponsoring economies and participating institutions
- ▶ Australia: project coordination and secretariat + website (Questacon)
- ▶ Korea: financial support from the Korea Science Foundation
- ▶ ASTC and ASPAC: in kind support (conference sessions, distribution of bookmarks)

Networks involved with the project

- ▶ APEC's ISTWG
- ▶ Australian government officers, both in Canberra and in embassies in the APEC region (especially those from the Department of Education, Science and Training)
- ▶ Regional science centre networks
- ▶ Connections among individual science centres and museums
- ▶ Community networks associated with each individual science centre / museum



Regional science centre networks

- ▶ Asia Pacific Network of Science and Technology Centres (ASPAC)
- ▶ Association of Science-Technology Centers (ASTC)
- ▶ Red de Popularización de la Ciencia y la Tecnología para América Latina y el Caribe (Red-POP)



ASPAC

- ▶ 33 members in 14 APEC economies
Australia; Brunei Darussalam; China; Hong Kong, China; Indonesia; Japan; Korea; Malaysia; New Zealand; Philippines; Singapore; Chinese Taipei; Thailand; United States of America
and 2 members in Europe



ASTC

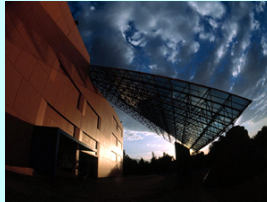
- ▶ Over 500 members (2004) in 40 economies, including 440 in USA and others in
Australia; Brunei Darussalam; Canada; China; Indonesia; Japan; Malaysia; Mexico; New Zealand; Philippines; Singapore; Chinese Taipei; Thailand



Red-POP

- ▶ 77 members in 16 economies including 21 members in the APEC economies of

Chile; Mexico; Peru



Other science centre networks

- ▶ CASC
Canadian Association of Science Centres
- ▶ ASTEN
Australasian Science and Technology Exhibitors' Network



In total ...

- ▶ A potential network of some 500 individual science centres and science museums throughout the APEC region



Networking activities

- ▶ Bringing people together at conferences and meetings
- ▶ Sharing information electronically



Meetings and conferences

- ▶ Project Scoping Meeting at the 5th ASPAC Conference
Hong Kong; December 2004
- ▶ 4th Science Centre World Congress
Rio de Janeiro, Brazil; April 2005
- ▶ ecsite annual conference
Helsinki, Finland; June 2005
- ▶ ASTEN conference
Dunedin, New Zealand; July 2005
- ▶ ASTC Annual conference
Richmond, Virginia USA; October 2005



5th ASPAC conference

- ▶ 4 December 2004:
The Project Scoping meeting was hosted by the Hong Kong Science Museum
Attended by delegates from 16 APEC economies



4th Science Centre World Congress

- ▶ Rio de Janeiro, Brazil, April 2005

Executive directors of the regional science centre networks discussed strategies for international cooperation



ecsite annual conference 2005

- ▶ ebsite: European Network of Science Centres

Helsinki, Finland, June 2005



Our project officer was an invited speaker, on the economic impact of science centres, and promoted the APEC Project during this session and informally at other times.



2005 ASTEN conference

- ▶ Australasian Science and Technology Exhibitors' Network

Dunedin, New Zealand; July 2005

There was no formal session focusing specifically on the APEC Science Centre Impact Project, but informal discussion opportunities were used to promote the project.



2005 ASTC annual conference

- ▶ Association of Science-Technology Centers

Richmond, Virginia USA, October 2005

The program included an international seminar on the project's progress and plans — attended by 23 people from 18 institutions in 8 APEC economies (Australia, Canada, Japan, Malaysia, Mexico, Singapore, Thailand, United States of America)



Electronic networking

- ▶ The project website
- ▶ Monthly updates: email based newsletters
- ▶ Individual email contacts



The website

<http://www.aspacnet.org/apec>



Website content

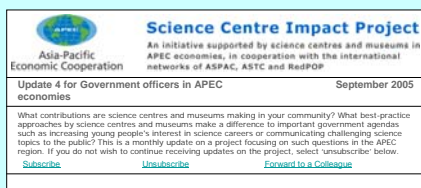
- ▶ The project website has nearly 40 reports, covering
 - (a) science centre impacts
 - (b) examples of successful programs in 3 theme areas
 - (c) research on relevant topics such as public attitudes to science and technology

Website visits: statistics (to 30 Sept 2005)

Website page	Visits
APEC Project home page	1773
Project history	1115
Economic impact study (Groves)	839
Science centre impact study (Garnett)	228
Partnerships (Lewis)	155
Archived newsletters	182

Monthly updates

- ▶ We have distributed five **monthly updates** through an electronic newsletter system that allows tracking of popular items.



Monthly updates: statistics (to 30 Sept 05)

- ▶ 4 issues, with 3 versions of each
- ▶ 1 special bulletin
- ▶ 465 contacts on mailing lists
 - 120 in government
 - 345 in science centres and museums
- ▶ 30-34% of recipients opened each newsletter
- ▶ 53% of all recipients have opened at least one issue

Monthly updates: popular topics

- ▶ APEC policy summary (Cheung, June)
- ▶ 'Education' review (Johnson, August - ASTC)
- ▶ Partnerships (Lewis, July - Canada)
- ▶ Impact studies (Garnett + Groves, June - international)
- ▶ Museums and impact (Scott, August - Australia)
- ▶ New technologies (Craig & Ding, September - Australia)



Science centre impacts

- ▶ Personal impacts
- ▶ Societal impacts
- ▶ Economic impacts
- ▶ Policy impacts

Research shows that science centres and museums have a positive effect in the first three areas.



Policy impacts

Relevant government policy areas include:

- ▶ Education - formal, informal, lifelong
- ▶ Science
- ▶ Technology
- ▶ Innovation
- ▶ Careers, workforce planning
- ▶ Tourism and leisure



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Progress ...

- ▶ We have gathered some relevant policy documents from 11 APEC economies:

Australia; Brunei Darussalam; Chile; People's Republic of China; Hong Kong, China; Indonesia; Japan; Malaysia; Russia; Chinese Taipei; Thailand



Science Centre Impact Project

Science Centre Impact Project

Human capacity building: Some science centre success stories

Project themes for 2005:

- ▶ Assisting people to understand difficult or controversial science topics and issues
- ▶ Using community-focused, culturally appropriate programs to increase access for community sectors that are usually difficult to involve
- ▶ Engaging others in partnerships and cooperative ventures

Science Centre Impact Project

Difficult or controversial topics

- ▶ The China Science and Technology Museum and the State Environmental Protection Administration's Centre for Environmental Education and Communication took a two-pronged approach to *educating and enthusing teenagers about environmental issues and sustainable development* - to encourage them to change their daily behaviour:

Exhibition

Earth, Mankind, Challenges and Solutions

Competition

National Teenagers' Innovative Competition on Environmental Protection



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Project outcomes: the exhibition

- ▶ Between November 2003 and June 2005, the exhibition *Earth, Mankind, Challenges and Solutions* has attracted more than 660 000 teenagers from all over China.
- ▶ 'Compared with other environmental protection exhibitions, teenagers have shown higher enthusiasm in this one.'
- ▶ An exhibition on the Scientific Concept of Development received a total audience of 160 000 within two months, with more than 5000 media reports.

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Project outcomes: the competition

- ▶ Over 100 000 students from more than 10 000 schools were involved.
- ▶ 'Students actively took up research, investigated and collected materials, proposed action plans and proved their feasibility. Finally, they harvested many unexpected results, to the astonishment of their parents, teachers, evaluation committee members and even themselves.'
- ▶ 'Some teenagers began to re-evaluate their everyday behaviours ...'

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Increasing access

- ▶ Miami Science Centre & Planetarium (Florida, USA)

Upward bound: a mentor-based program for young people from underprivileged families



Student achievement (2001-04)

	Youth program participants	All students in district
Percentage of students graduating from high school	99%	53%
Percentage of graduating students going on to post-sec. education	96% (60% in STEM)	54%



Partnerships

- ▶ Ontario Science Centre, Canada

▶ OSCLub

A program for students aged 14-15 years, pre-service and in-service teachers, and mentors from business and industry, based on real-world applications of science, mathematics and technology.



Benefits for students

- ▶ The students

'gain employment skills and are introduced to exciting career opportunities. They have the opportunity to see the applications of science, math and technology in business and industry. They develop relationships with peers and adults from outside their own school/community. They learn the benefits and challenges of working in a team.'

Benefits for teachers

- ▶ For the in-service and pre-service teachers

'OSCLub provides the opportunity to develop new teaching strategies. Teachers develop relationships with business and industry mentors. They have the opportunity to develop programs collaboratively with other innovative science teachers and to work with motivated and talented students.

All of this can be carried back to their home classroom.'

Benefits for corporate partners

- ▶ What does the OSCLub program offer to businesses that provide mentors for participating students?

'It provides a development opportunity for their employees who participate as mentors, leading to improved communication skills, knowledge and understanding. OSCLub contributes indirectly to a more highly skilled and knowledgeable future work force.'

Looking ahead ...



Looking ahead ... meetings

- ▶ 6th ASPAC conference
Perth, Australia May 2006
One day will be devoted to the
APEC Science Centre Impact Project
- ▶ Public Communication of Science and Technology: PCST
International conference
Seoul, Korea: May 2006
- ▶ ASTC 2006 annual conference
Louisville, Kentucky USA
October 2006



Looking ahead ... more research

- ▶ Continue to gather and disseminate reports and case studies
- ▶ Analyse government policies: how can science centres work more effectively with governments?
- ▶ Take advantage of opportunities - e.g. conferences - for strengthening and expanding networks and sharing information
- ▶ Carry out new research - specifically for this project




How you can help

- ▶ Encourage science centres and museums to share their information with others through this project.
- ▶ Are you aware of any organisations in your country that would be interested in sharing information with us, receiving information from us, or carrying out research on science centre impacts? If so - tell us about them.
- ▶ Provide government policy documents - new ones or updates - and relevant research reports.



Staying in touch

- ▶ Subscribe to our monthly electronic updates
<http://www.aspacnet.org/apec/news>
- ▶ Email us:
apecproject@questacon.edu.au



The graphic features a map of the Asia-Pacific region in blue, with the APEC logo (a globe with "APEC" text) in the center. Below the logo is the text "Asia-Pacific Economic Cooperation".

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