



# Future Scenarios of Low Carbon Society Beyond 2050: An Asia- Pacific's Aspiration

17 November 2010  
Bangkok, Thailand

# What is the Rationale?

- To link global science, technology, and policy communities to government or local initiatives to combat climate change issues.
  - A new sense of purpose for global science, technology, and innovation due to *environmental limits*.
- To envision and describe the future society where a **low-carbon economy** and **adaptive lifestyle** become the principle drivers governing trade and development.



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Q: What could the “divergent outcome” driven by climate change be like?

*A: Low carbon societies with multiple dimensions.*

Q: But what will they look like in 2050?

*A: We don't know yet, but certainly not just about reducing emission anymore.*

# Visioning of LCS 2050

Climate change and its impact

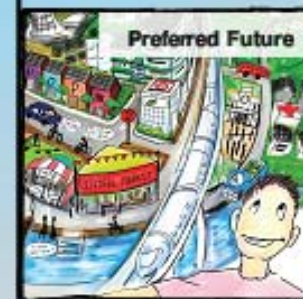
Trade of goods  
and services



Migration, rural  
life, and natural  
resources



Society  
and health



Housing,  
construction,  
urban life,  
transportation

# Real-Time Delphi Survey

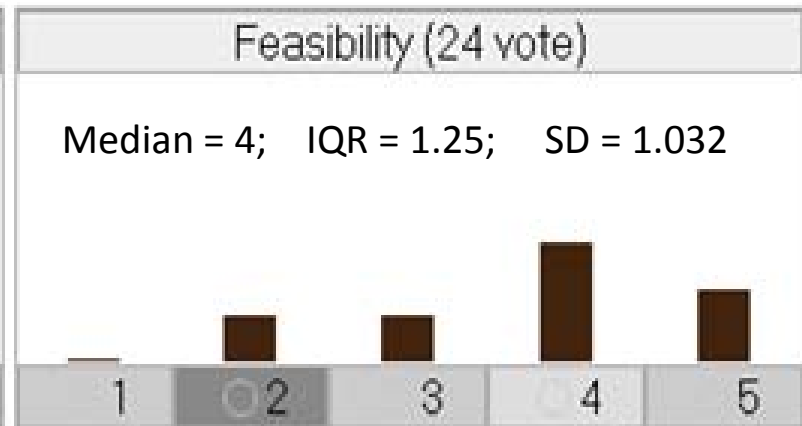
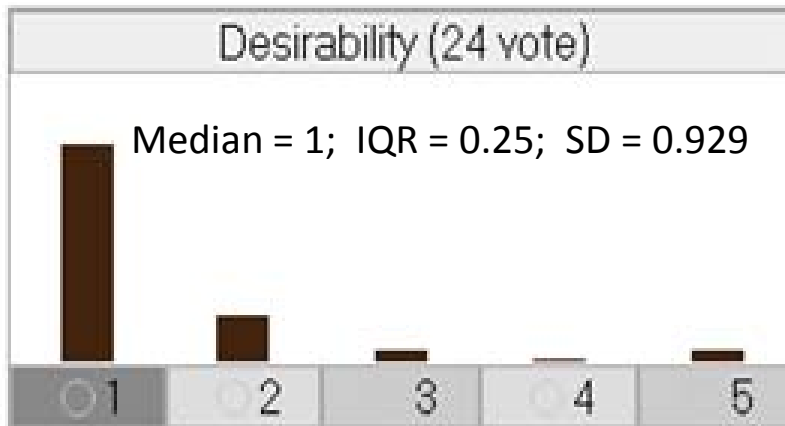
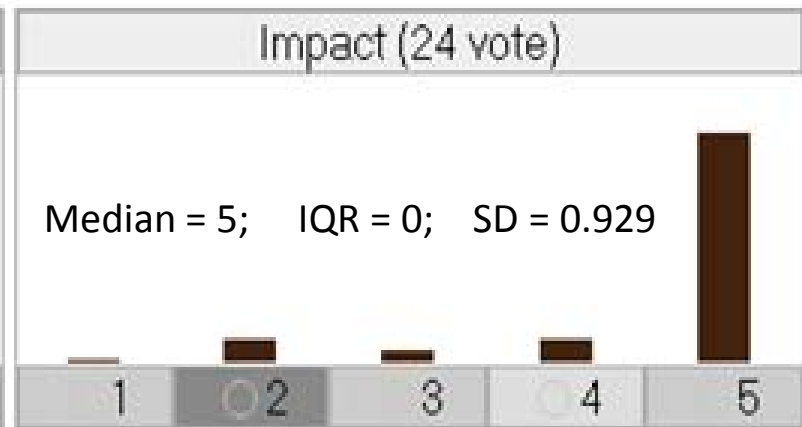
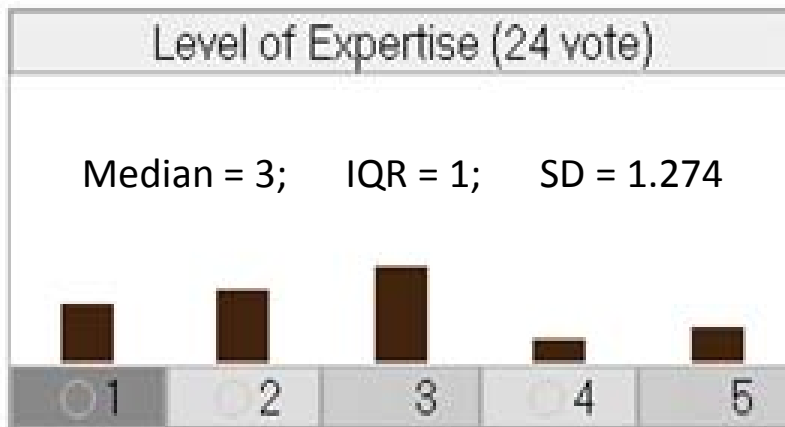
- Purpose: to verify the global strategic trends that drives the society up to 2050 and beyond.
  - Feasibility
  - Desirability
- Period: 15 June – 30 August, 2009
- Participated by international experts
  - Anonymity
  - Iterative (roundless) –max. 4 rounds
  - Controlled feedback

# Response rate and respondent profile

- 78 from 5 regions (Af, Am, As, Eu, Oc) invited
- 23-28 from 3 regions (28.2 - 35.9 %) answered
- Asia 21.8 - 26.9 %
- Thailand 7-9 out of 23-28
- Gender (male 15-19, female 6-9)

# Example of convergent opinions

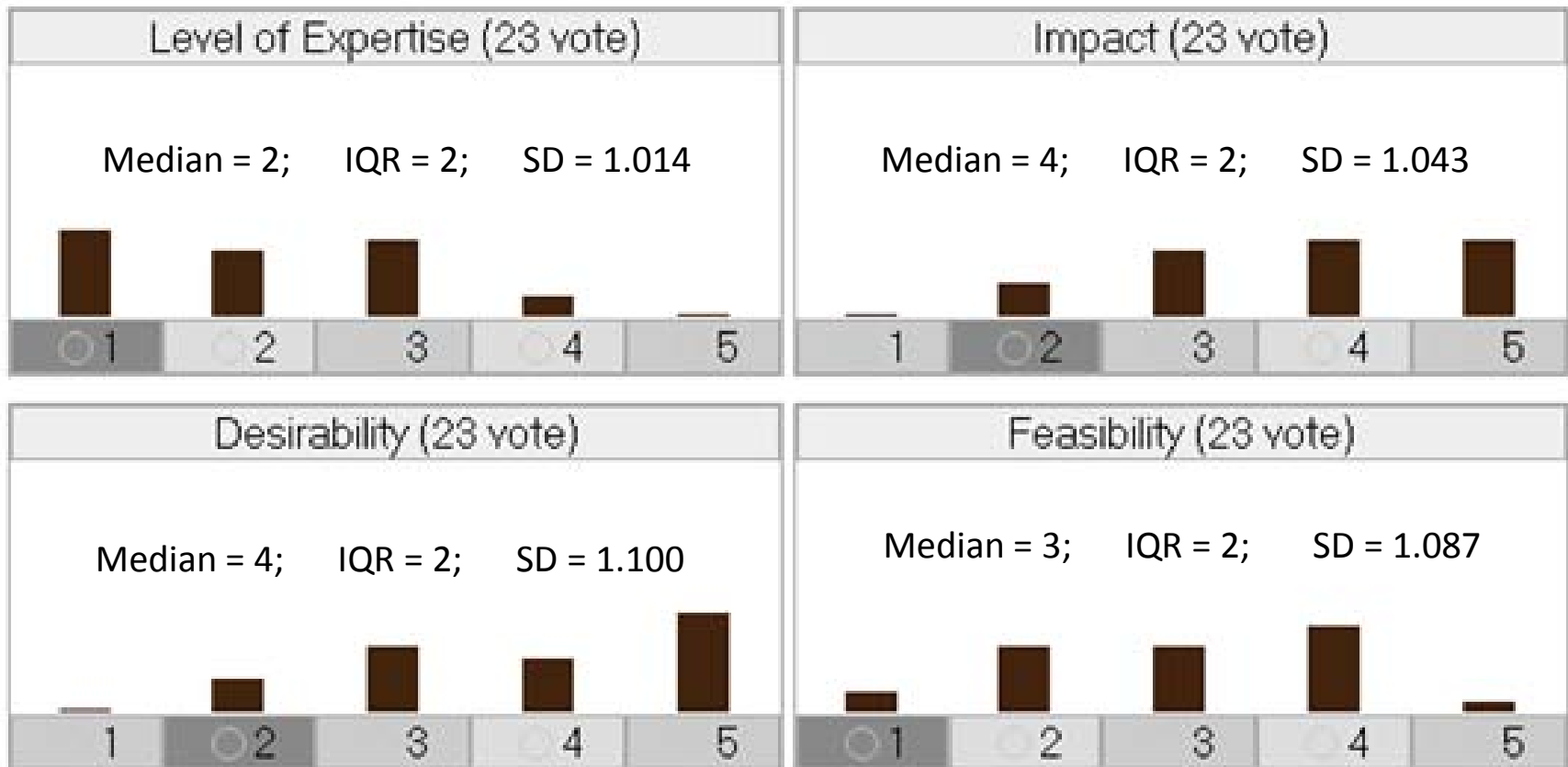
## Statement 15 : Water scarcity becomes a cause of war





# Example of divergent opinions

**Statement 13** : Algae technology capable of producing fuel (H<sub>2</sub>, oil, or ethanol) becomes commercially wide-spread.





# Top ranking on both feasibility and desirability

- **Shift of farming land to higher altitude and colder areas cause major destruction of the most important carbon sink (forests) (statement no. 8).**
- **Migration of people from coastal area towards inland induces major conflicts over land and resources (statement no. 9).**
- Technologies significantly improve the **healthcare system to cope with new infectious diseases stimulated from global warming (statement no. 16).**
- Most existing **commercial buildings are retrofitted to save 50% of energy use on average (statement no. 29).**
- Energy efficiency of **home and office appliances increases by 50% (statement no. 30).**
- **20% of electricity is generated by decentralized sources (statement no. 31).**



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# Bottom ranking on both feasibility and desirability

- Carbon capture and storage (CCS) is effectively and fully implemented (statement no. 2).
- Algae technology capable of producing fuel (H<sub>2</sub>, oil, or ethanol) becomes commercially wide-spread (statement no. 13)
- A global regulatory framework of low carbon is totally accepted (statement no. 18).
- Global IT network will reduce the traveling of people to the 1990 level (statement no. 25).
- Conventional fuels disappear completely from transportation sector (statement no. 28).
- Personal transportation, supplementing mass transportation, will mainly consist of shared, loaned or rents vehicles (statement no. 33).




# Comparing the level of agreements on feasibility and desirability



## Top 10 ranking

Level of feasibility	Level of desirability
29	30
30	16
20	32
16	11
23	31
8	15
9	8
4	9
31	10
7	29

## Bottom 10 ranking

Level of feasibility	Level of desirability
22	17
2	28
33	33
25	25
13	34
18	2
11	4
21	18
28	5
3	13

-  Climate change & its impacts
-  Migration, rural life & natural resources
-  Society/health

-  Trade of goods & services
-  Housing & construction/urban life/transportation

# Chronology of Future Events

2030



Economic

Global and regional earth system modeling (integrated assessment model) provides highly accurate

Food scarcity occurs as a result of a significant shift in land allocation from food crop to energy crop

Effective mechanisms are devised to cope with the direct impact of climate related events

Skilled immigration applicant increase and are easily accepted

Ecotourism becomes dominant in the tourism industry

Coastal ecosystem management becomes widespread and economically beneficial

New generations of well-educated people choose new knowledge-intensive, agriculture-based industries that are more sustainable

Water scarcity becomes a cause of War

Consumers are willing to pay more for low carbon footprint products

Technologies significantly improve the healthcare system to cope with new infectious diseases stimulated from global warming

Technological process changes toward producing food locally to serve societal demand while reducing carbon emission

Algae technology capable of producing fuel (H<sub>2</sub>, oil, or ethanol) becomes commercially wide-spread

Economies that were previously dominated by manufacturing industries /sectors have moved dramatically towards knowledge-based services

A low carbon related SR,ISO Standard is considered the norm of business practice

Carbon accounting becomes mandatory globally

Environmentally friendly goods is now the dominant consumer goods in the global market

Global IT network will reduce the traveling of people to the 1990 level

Energy efficiency of home and office appliances increases by 50%.

Majority of trips in daily life will be through efficient public transportation as opposed to personal mode

20% of electricity is generated by decentralized sources

Air freight shipments are down to 1990 level

2040

Carbon capture and storage (CCS) is effectively and fully implemented

Technology and management enable forest plantations to act as the main carbon sink

High demand on carbon deduction creates sustainable income from the poor rural people who plant trees and energy crops

Migration of people from coastal area towards inland induces major conflicts over land and resources

A global regulatory framework of low carbon is totally accepted

Shift of farming land to higher altitude and colder areas cause major destruction of the most important carbon sink

Political instability and inter-regional conflicts due to climate change impacts lead to little interaction between the major economic co-operations

It is realized that emission trading has had little effect on reducing the global green house gas emission

Most existing commercial buildings are retrofitted to save 50% of energy use on average

Personal transportation, supplementing mass transportation, will mainly consist of shared, loaned or rents vehicles

2050

Anthropogenic greenhouse gas emissions are stabilized at 1990 level

Breakthroughs in battery storage technology make obsolete all other fuels including H<sub>2</sub>

Beyond 2050

Conventional fuels disappear completely from transportation sector



# Scenario workshop

Econ

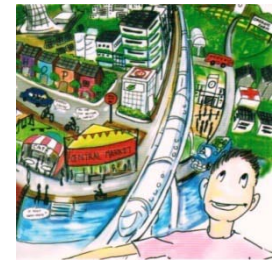
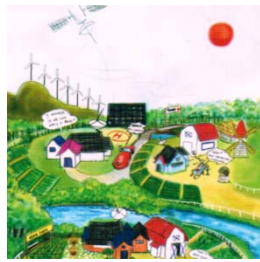
- 2-4 November 2009, Phuket, Thailand
- Brought together some 50 creative minds with diverse expertise, roles, ages, genders, and nationalities from across the Asia-Pacific to sketch out desirable low-carbon futures for the region and some paths for how to get there.
- Low carbon – high quality lifestyles, is it possible?





# THE 2050 SCENARIOS:

LOW CARBON - HIGH QUALITY LIFESTYLES for  
THE ASIA - PACIFIC



- **Section 1: Climate Change & Its Impact**

- Climate change would have adverse impact but had some doubts about the technologies like carbon capture and storage and earth system modeling as well as the effectiveness of international agreements.

- **Section 2: Migration, Rural Life, and Natural Resources**

- Rising sea level will force farmers to shift to higher altitude despite coastal ecosystem management. Impacts of ecotourism and skilled immigration are only moderate. Water scarcity of course is a major concern. There are conflicting views whether well-educated people will go farming and whether rural poor can gain benefits planting trees and energy crops.

- **Section 3: Society / Health**

- Experts were optimistic that technologies can improve healthcare system. The low carbon concept is spreading and some consumers are willing to pay more for green product.

- **Section 4: Trade of Goods and Services**

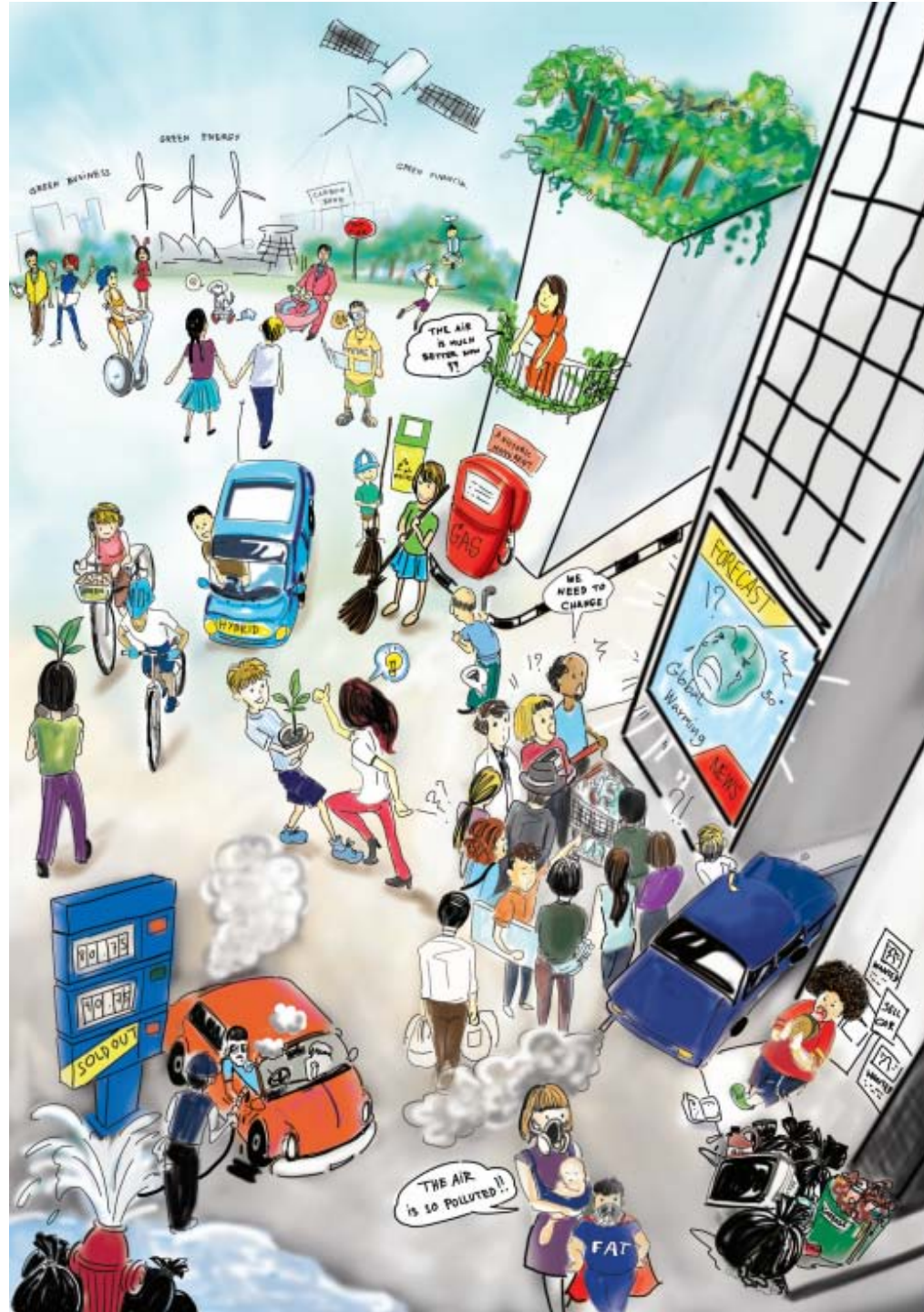
- Participated experts generally are positive regarding movements towards green trade and services despite some doubts about the effectiveness of implementation.

- **Section 5: Housing and Construction / Urban Life / Transportation**

- Experts have good faith in technologies to boost energy efficiency, public transportation, and renewable energy though conventional fuel will not disappear so quickly.



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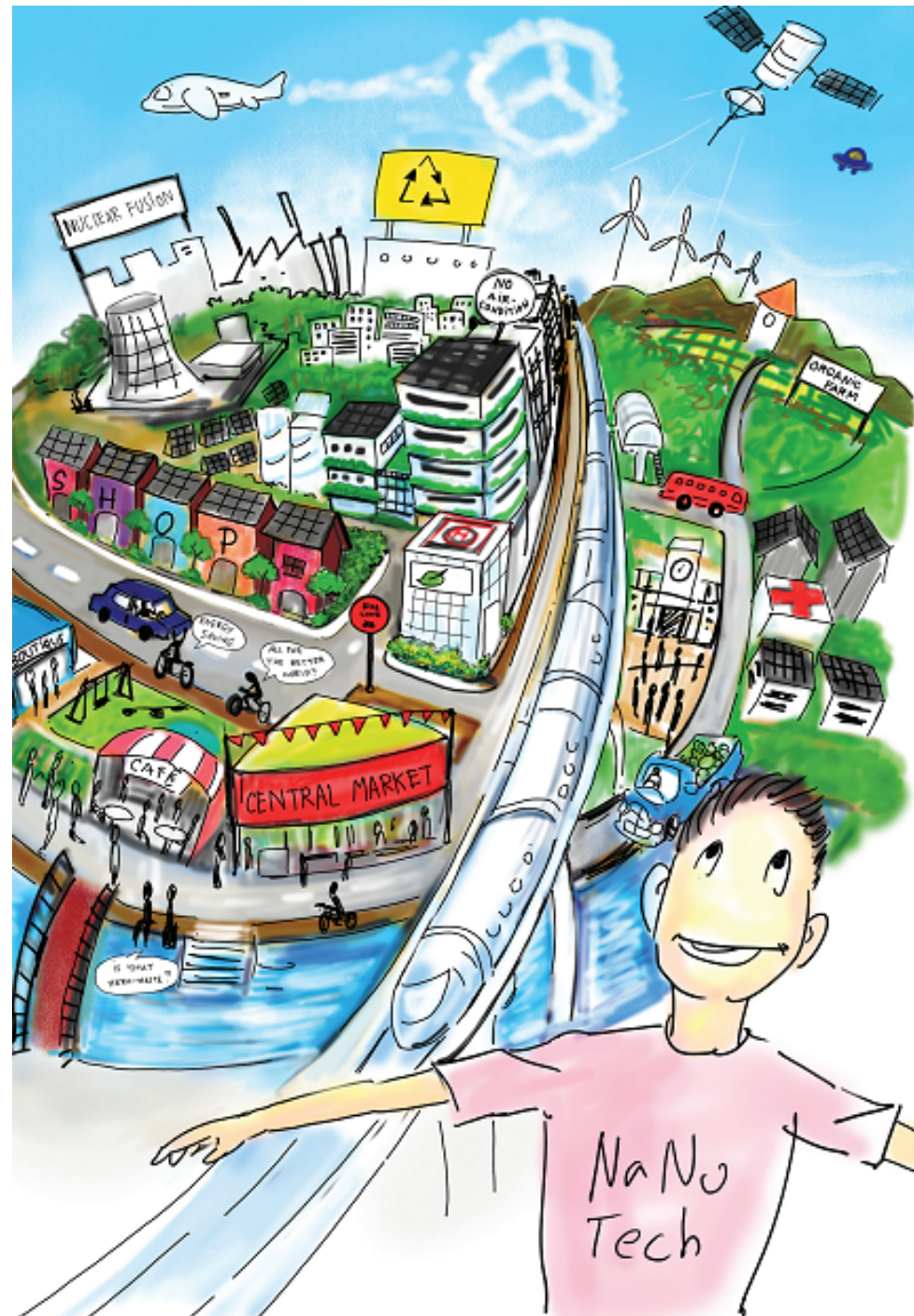


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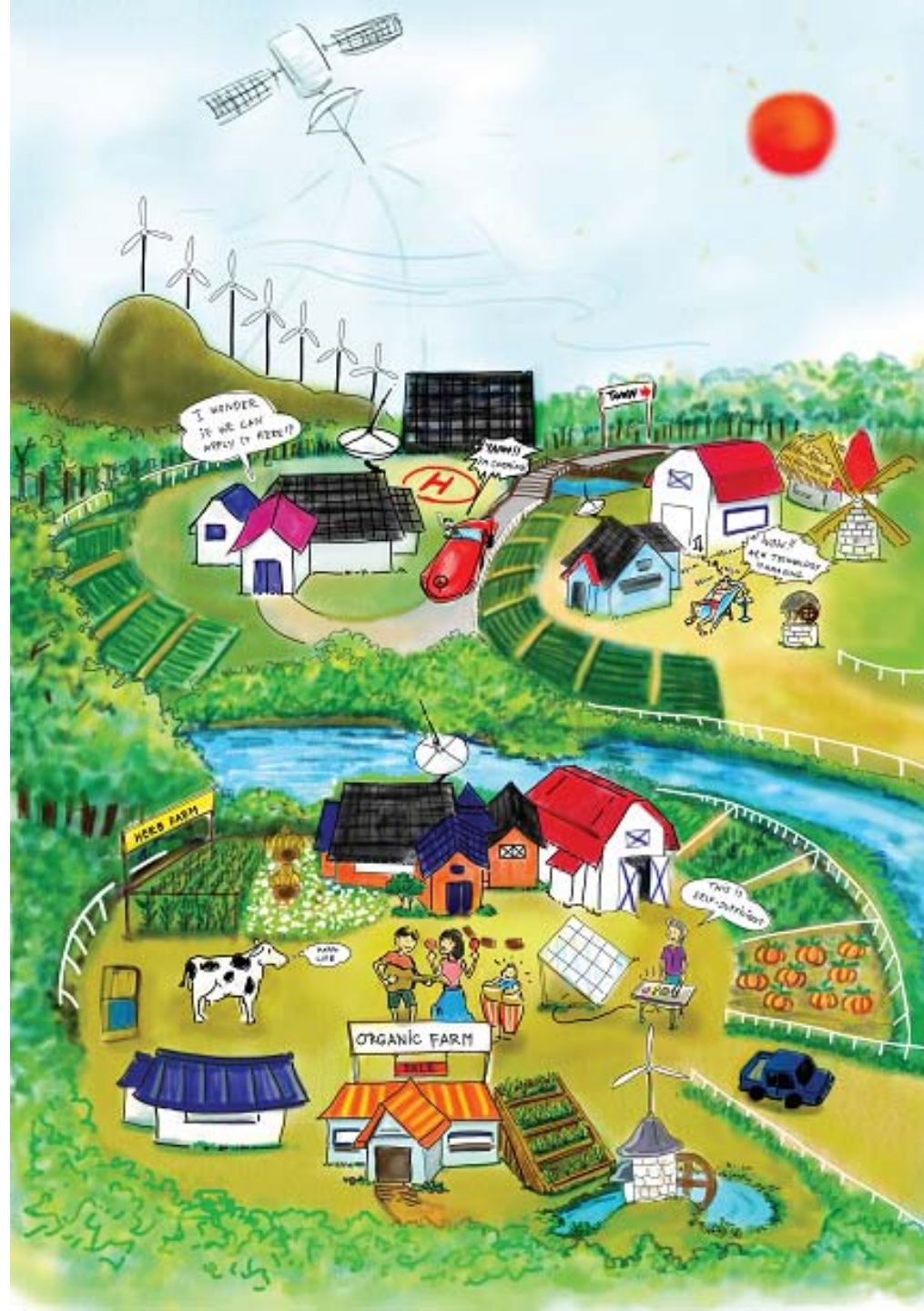
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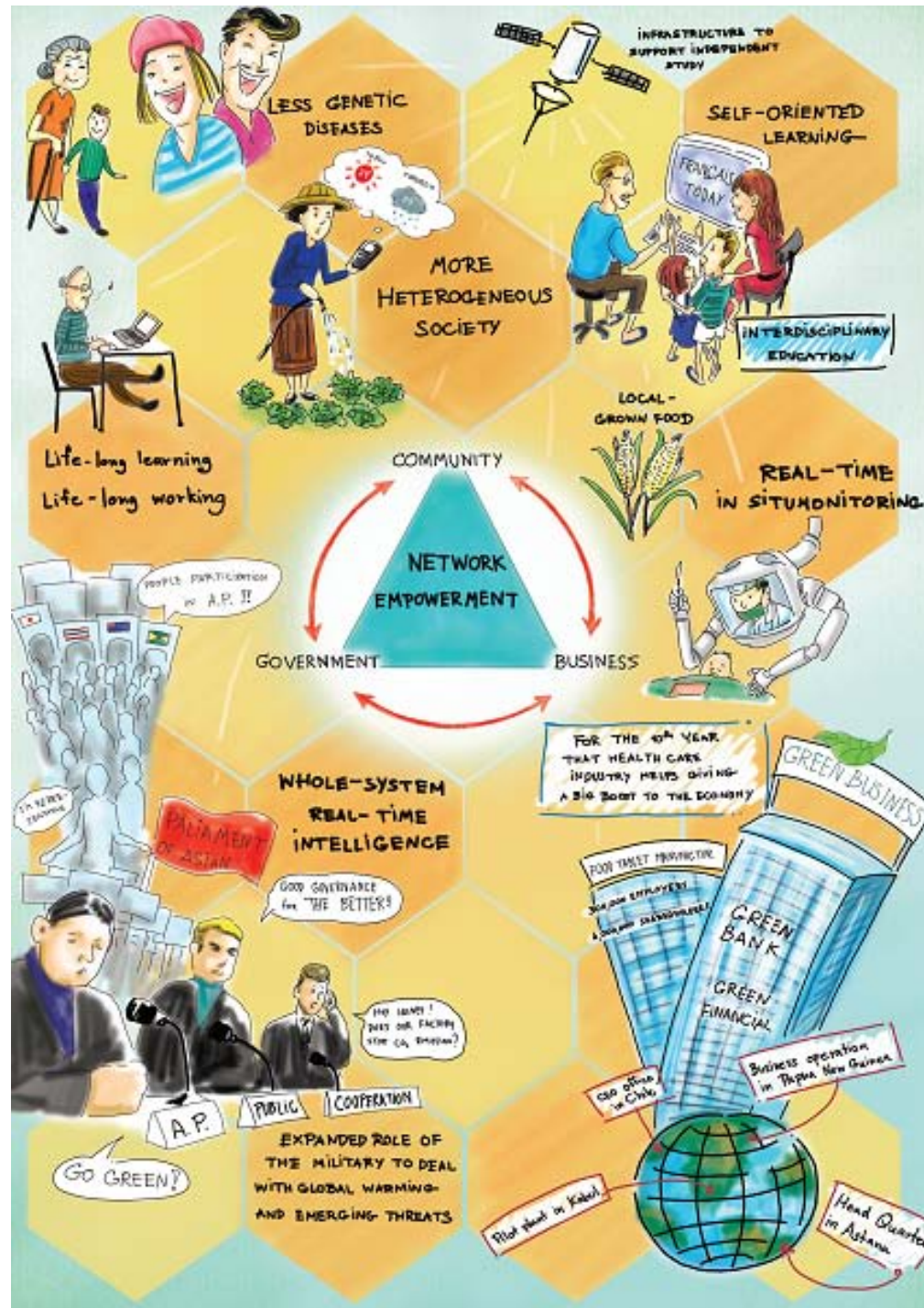


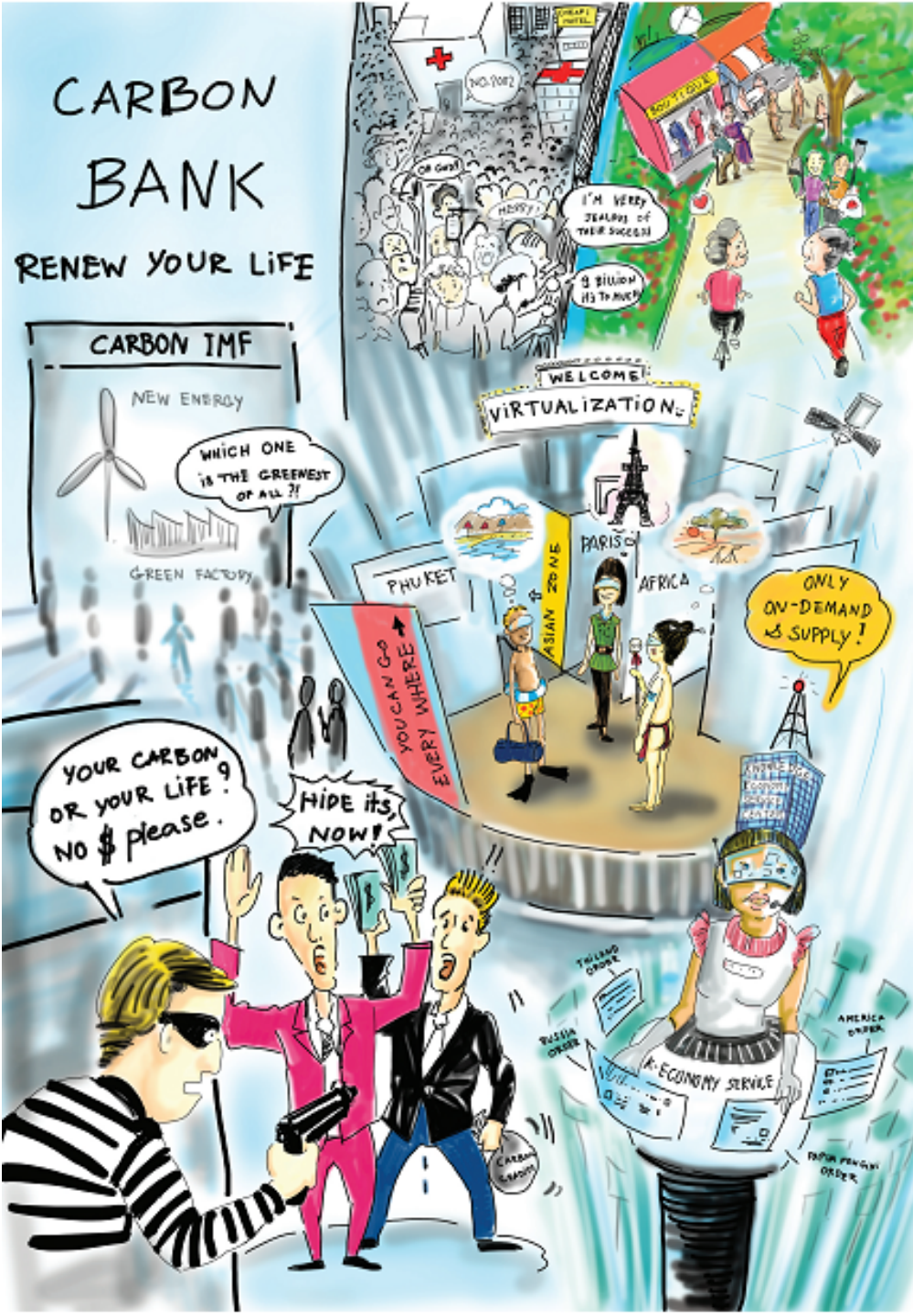
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# Recommendations for APEC

Devise a roadmap with clear objectives on the steps APEC should take to transition to low-carbon societies

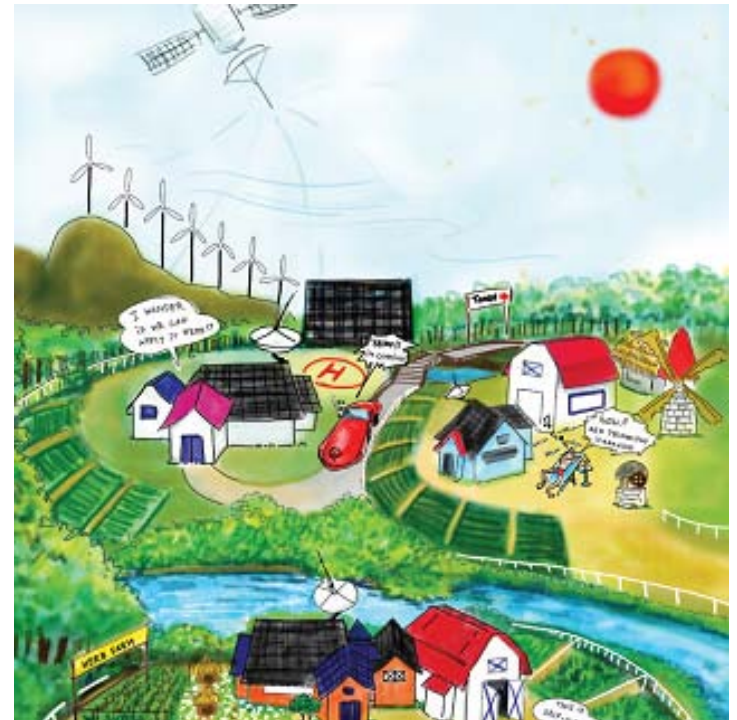
- Mandate and support incorporation of international climate mitigation and adaptation strategies into national development plans.
- APEC Energy Working Group has proposed “Low-Carbon Paths to Energy Security” and develop a technology roadmap.





# Advance public education toward low-carbon societies

- Support regional knowledge sharing and exchanges through communications and networking among APEC members.
- Promote **green values** by supporting APEC-wide media campaigns that recruit participation from private sector actors.





# Establish APEC group for climate change



- The group should enhance north-south and south-south collaboration and negotiation among international parties.
- **Political will must be mobilized.**



# Participating member economies

1. Hong Kong, China
2. Malaysia
3. Korea
4. Indonesia
5. Philippines
6. New Zealand
7. Canada
8. Japan
9. Australia
10. Vietnam
11. Chinese Taipei
12. Singapore
13. China
14. Russia
15. Thailand
16. United States



Macao, China  
United Kingdom  
Germany

## Some lessons learned from scenarios

- Low Carbon society could be **reachable within our lifetime** (at least for some of us).
- **Community networking is the key.** Community-driven initiatives drive the changes the world requires in pursuit of the low-carbon development path.
- **Emergence of computerized farming and other technological advances.**
- **Carbon** accounting becomes so dominant it replaces USD **as the global currency.**



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<http://www.lcs2050.com/>