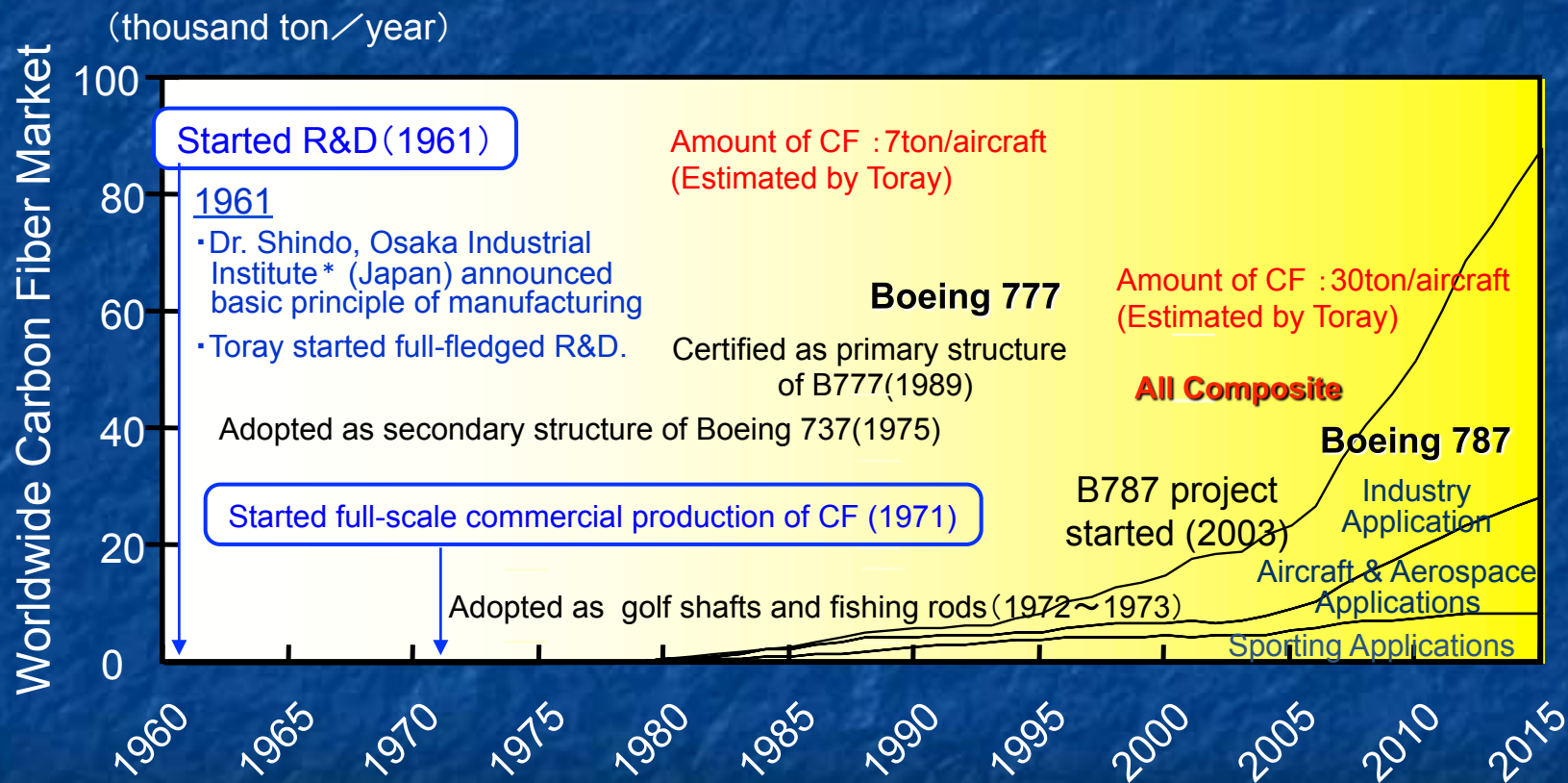
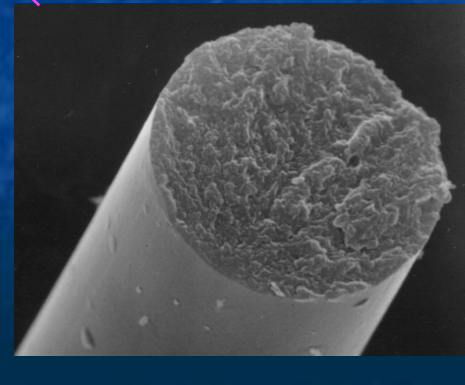
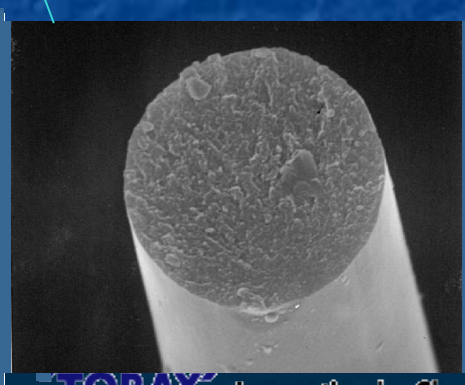
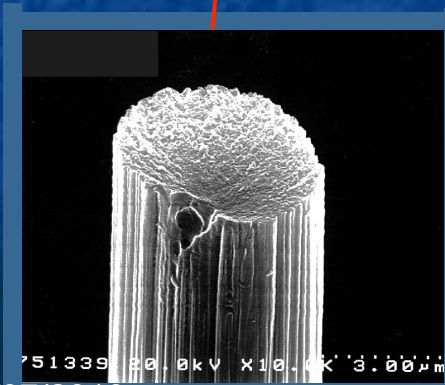
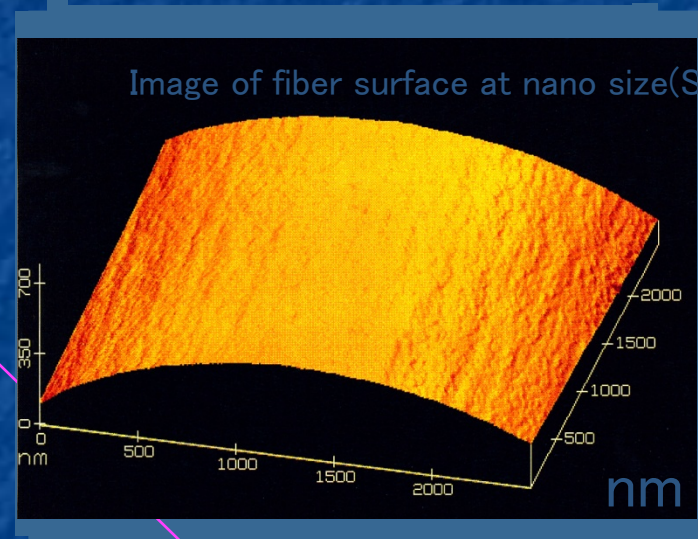
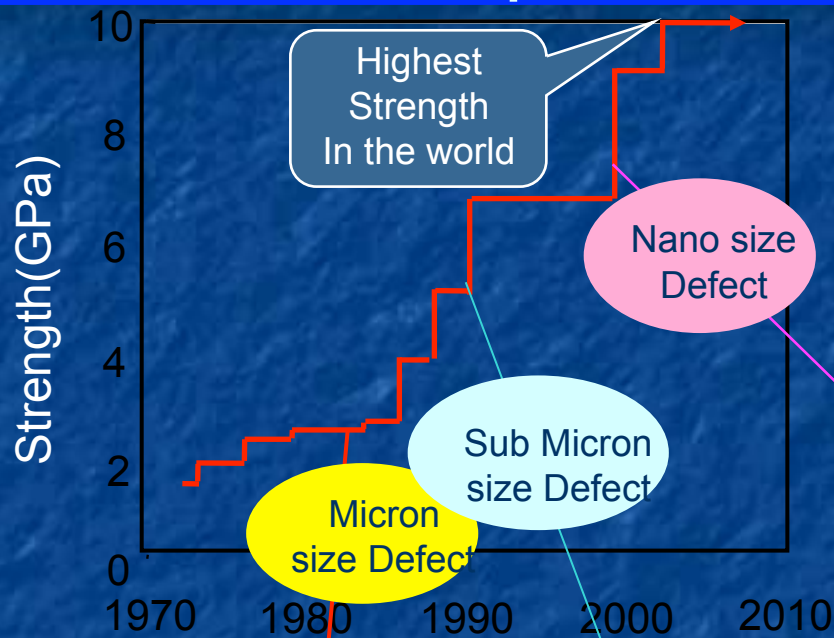


Long term perspective: Patience required



*Osaka Industrial Institute (at present: Kansai Center, NAIST)

Ultimate performance: Responsibility

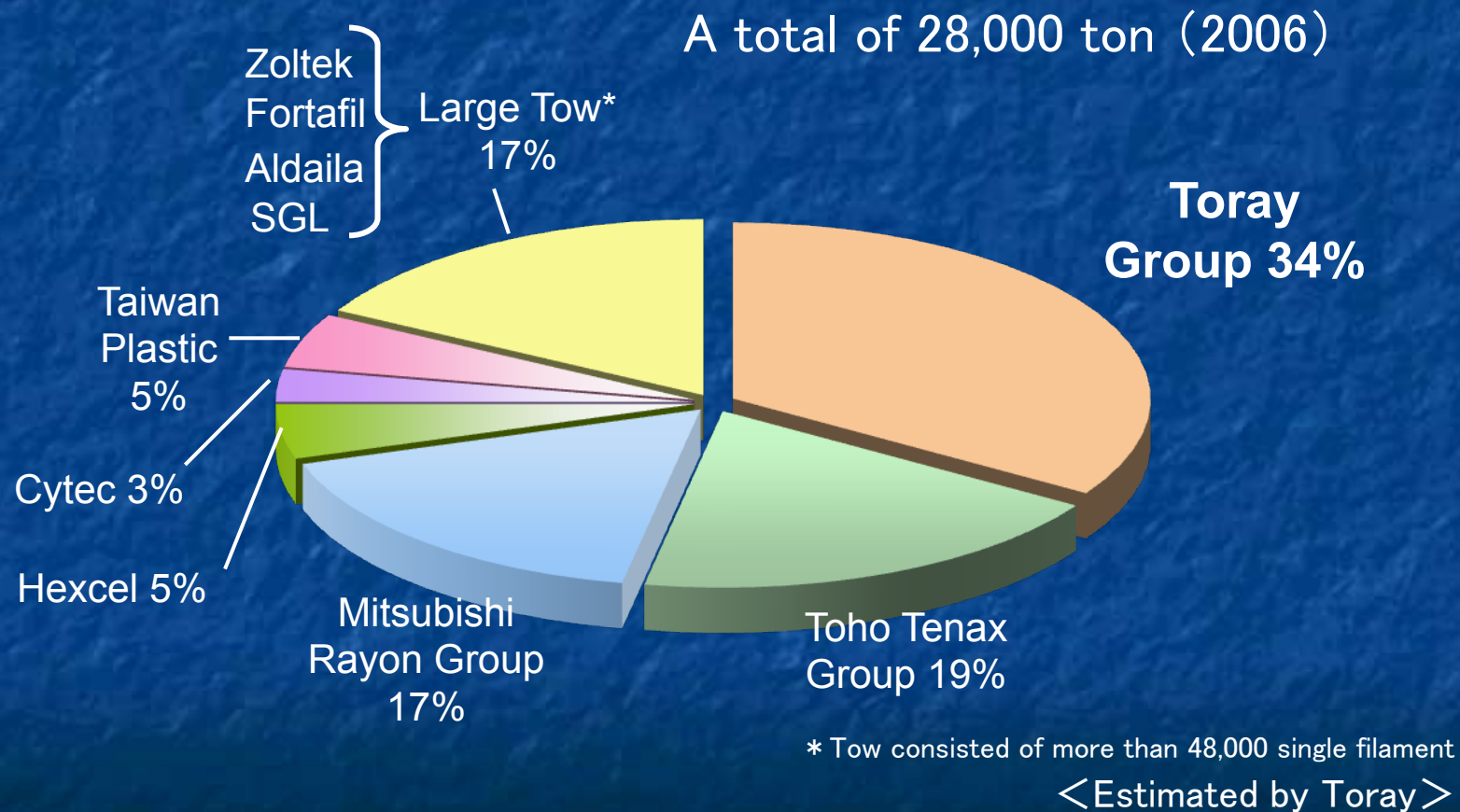


Advanced commodity: new approach?

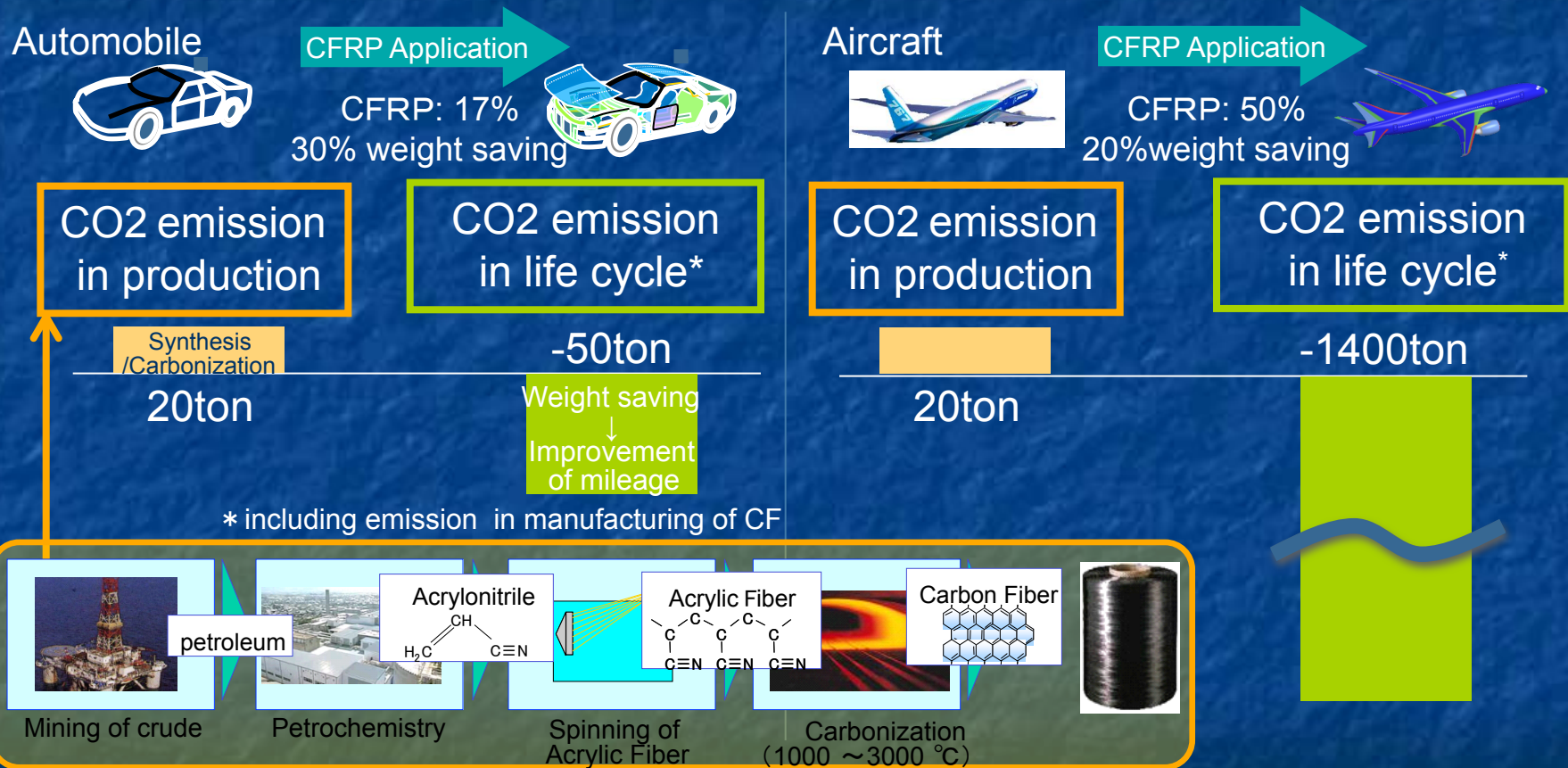
Entry Company	1970	1975	1980	1985	1990	1995	2000	Present Company Name
Toray								Toray
Toho Rayon								Toho Tenax
Mitsubishi Rayon								Mitsubishi Rayon
Nihon Carbon /Asahi Chemical								
Hercules								Hexcel
Great Lakers/Akzo								
Celanese/BASF								
UCC/BP Amoco								Cytec
Grafil								
Courtaulds								
Sigri/Hoechst								SGL Carbon
Enka/Akzo								

<PAN-based Regular Tow*type>
10/07/2010

World Market of PAN based CF's



Carbon Fiber: How much impact?



(The Japan Carbon Fiber Manufacturing Association model: Tokyo Univ., TOYOTA MOTOR Copr. et. al.)

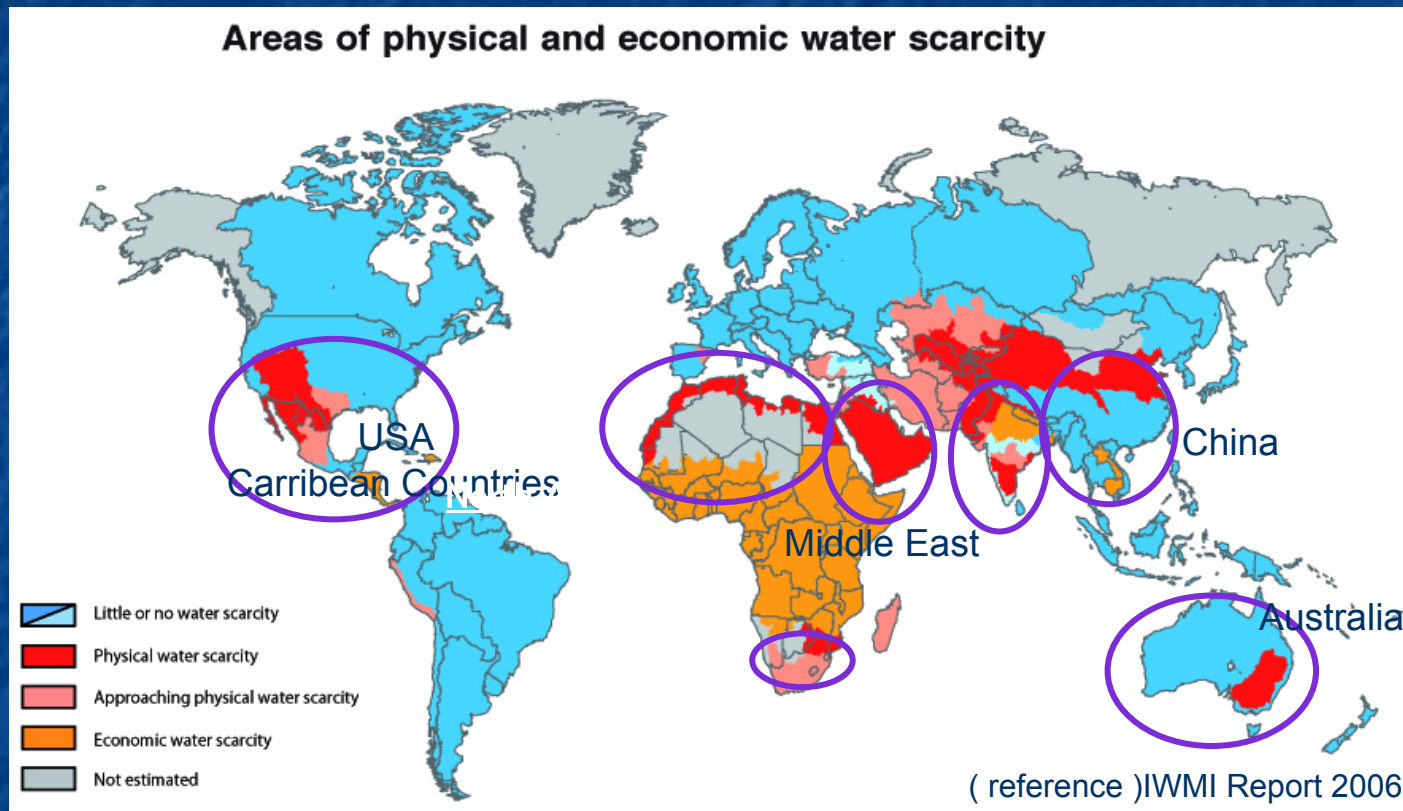
**Quantification of improvement on environment with utilizing CF" received the 5th LCA Japan Forum encouraging prize

10/07/2010

TORAY Innovation by Chemistry

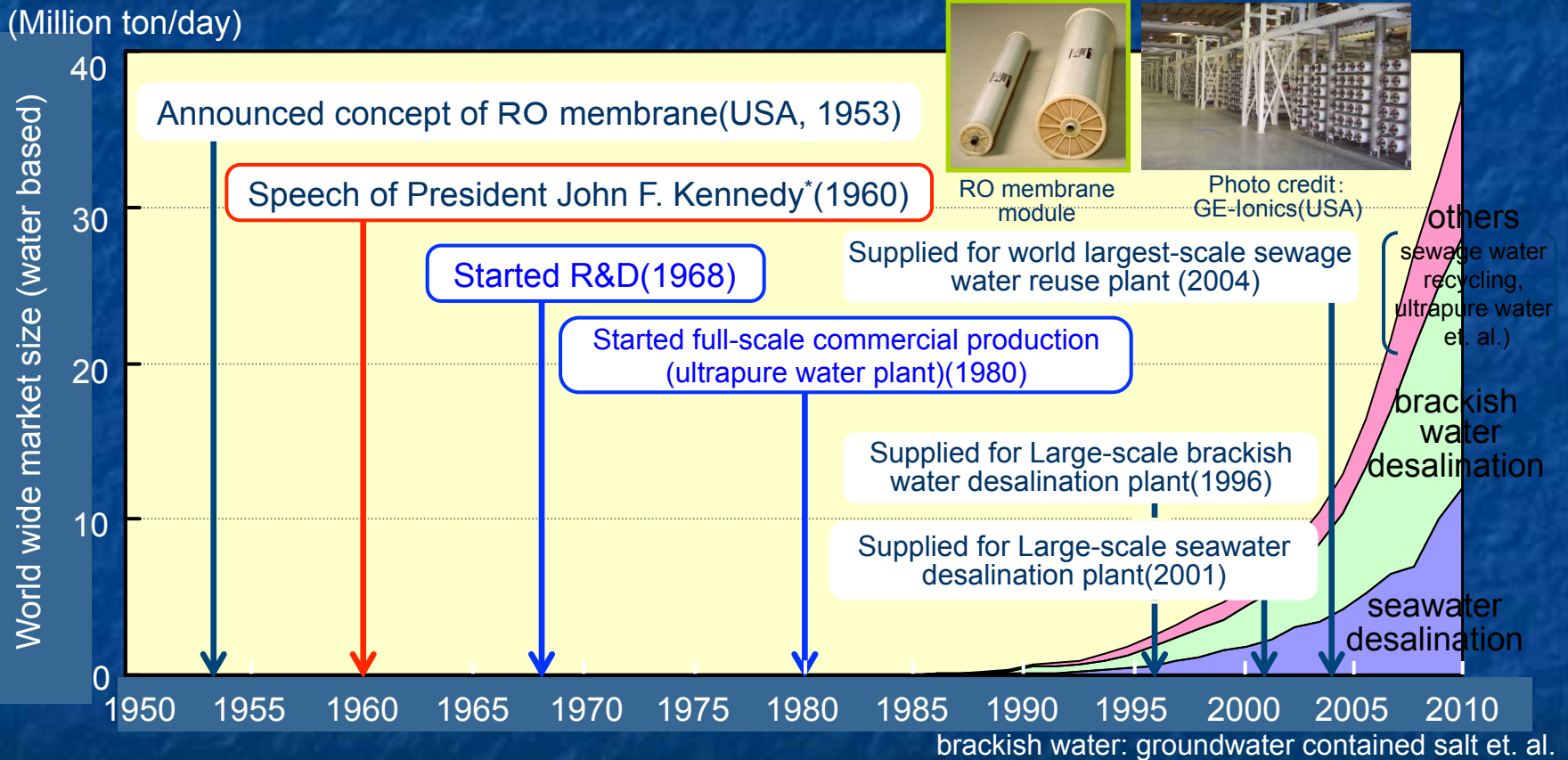
28

Fact: Water shortage



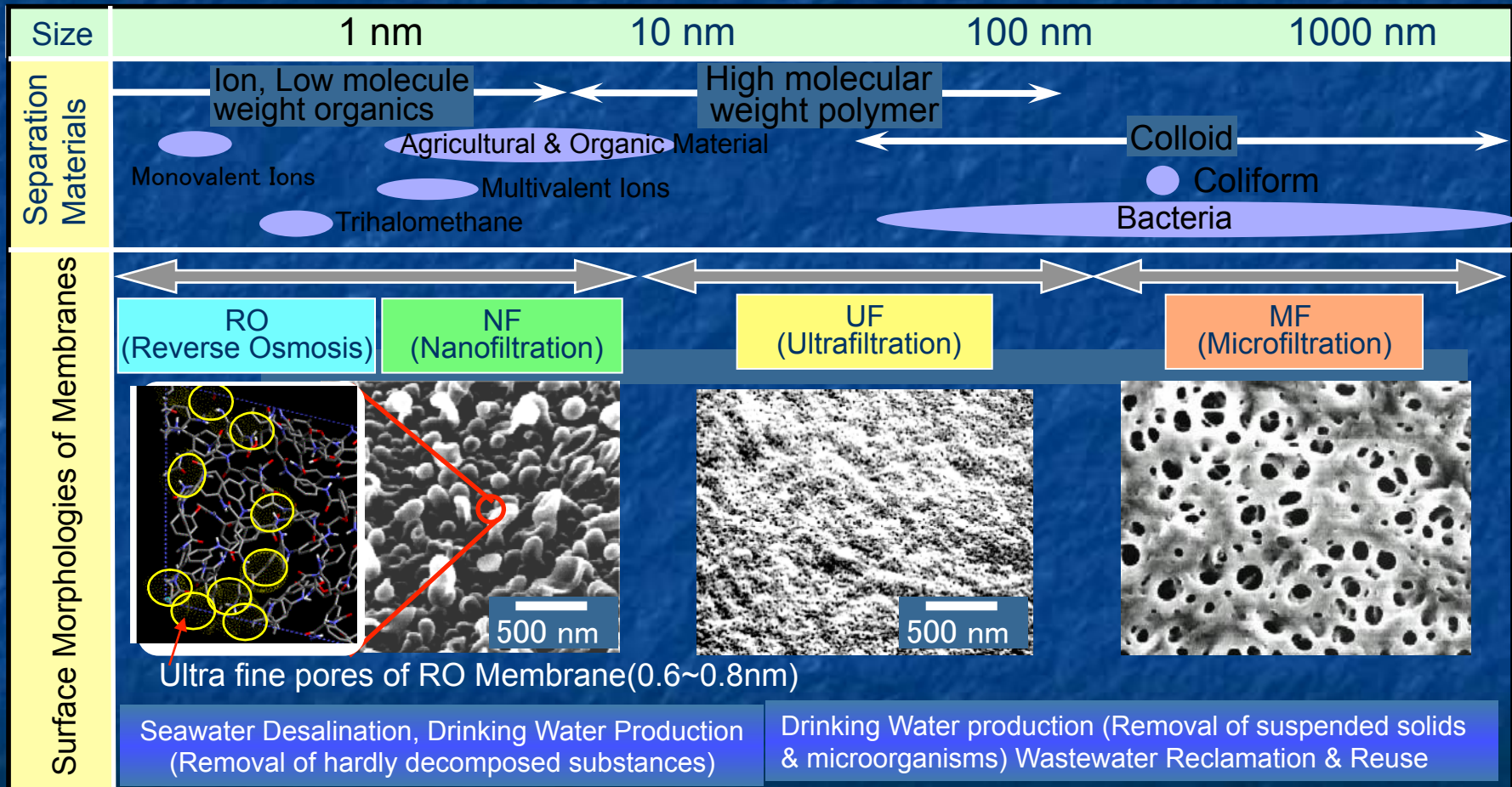
- 1.1 billion people(0.7 billion in Asia) don't have good drinking water (including water for daily life)
- 2.4 billion people(1.9 billion in Asia) don't have sanitary accommodations (wastewater and human waste treatment)

Another long term: water related



*Senator (at that time) John F. Kennedy has made a speech at 1960.
 (President has signed a law to address the seawater desalination as a national project at 1961)

Filtration: simple but complicated



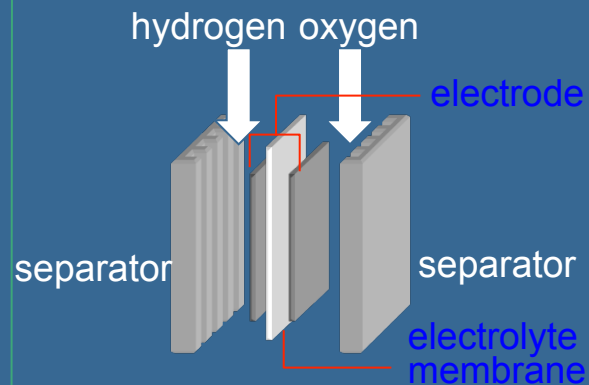
Energy: Effective business expansion

Wind-power Generation



Carbon fiber composite materials for Windmill blades

Fuel Cells



C/C Paper for Electrode

*C/C: Carbon Composites

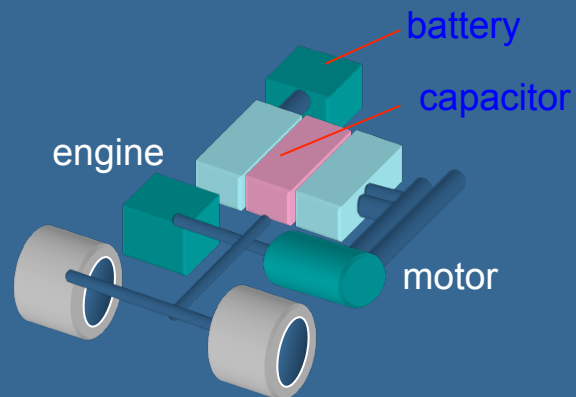
Polymer Electrolyte Membrane

Solar Cells



Back Sheet Films

Hybrid Cars

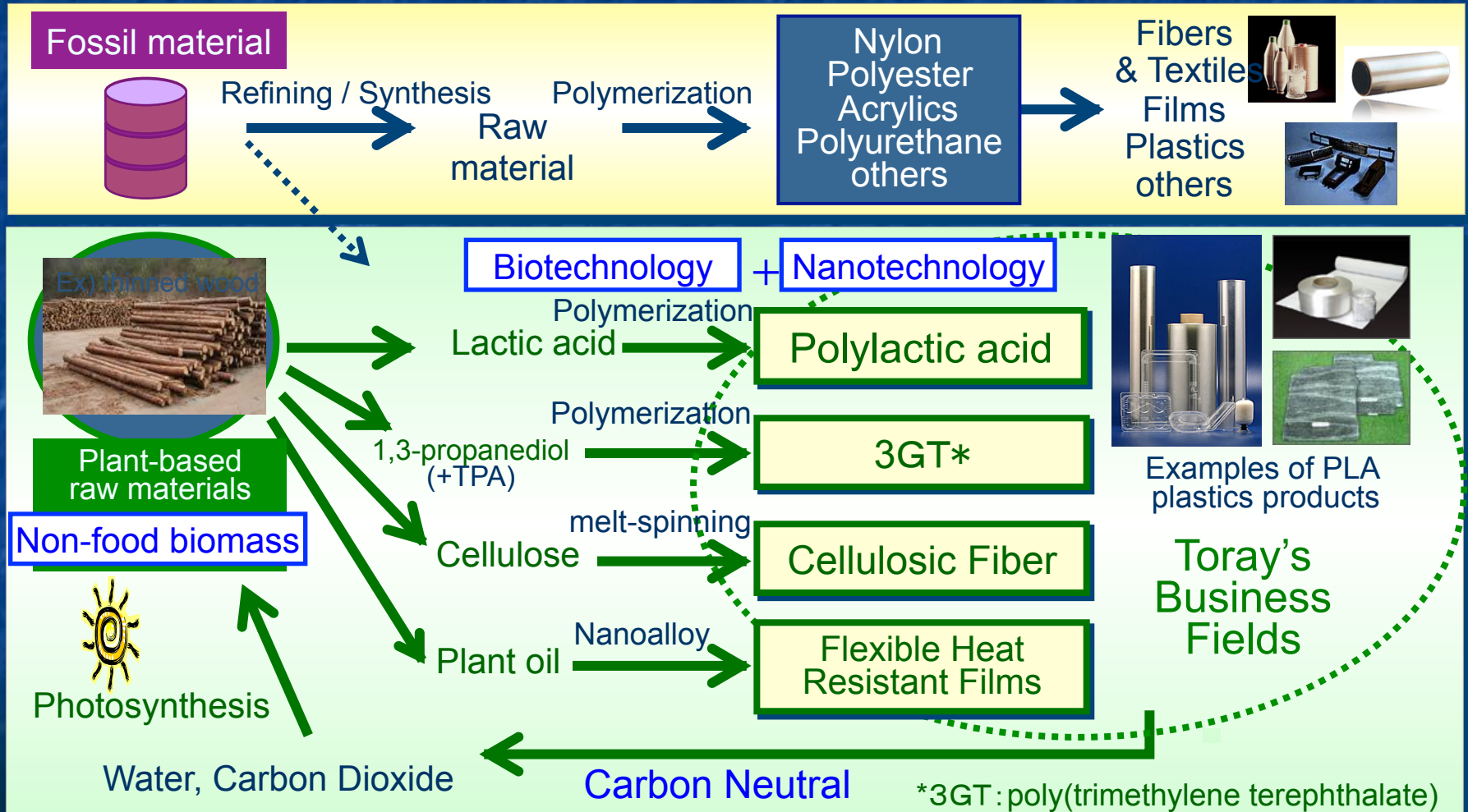


Separator(Aramid)

PP Film for high-capacity capacitors

Capacitor Case(PPS)

Bio-based chemical products



Past, Now, and Next decade:
My personal perspective
to contribute for sustainability

Toray's track in Green/Clean industries

- Past:

 - Tangible criteria to pursue material science

 - Japanese expertise in supply chain management

- Now:

 - Strategy of “Choose and Focus”

 - “Nano-tech” as New technology Platform

How materials provider stay “cool”?

For Next decade:

- Technical expertise

But we have to be “Open” technologists.

- Value Chain mix

Value of materials is defined not only from technical sense.

- Responsibility as “Serious” manufacturer

Becoming to “Materials and Solutions” provider

'TORAY'

Innovation by Chemistry