#### **EXPEDITIOUS TRANSITIONS TOWARD SAFE, RESOURCE EFFICIENT & DECARBONIZED NOW, FUTURE**

Professor Nay Htun, Ph.D., FIC. Dept. of Materials Science & Chemical Engineering Stony Brook University, State University of New York, USA Keynote Presentation TNChE Asia 2023 Pattaya, Thailand 20 June 2023 **The Presentation draws upon the peer –reviewed article** "Holistic and integrated systemic policies and practices for decarbonization" in the 2023 Special Issue of AICh.E EPSE {American Institute of Chemical Engineers Journal Environmental Progress & Sustainable Energy}, published by WILEY

#### IPCC SIXTH ASSESSMENT SUMMARY FOR POLICYMAKERS

### March 2023. Some Highlights, "with high confidence"

- ✓ CO2 in the atmosphere highest in 2 million years.
- ✓ World now warmer than at any time in the past 125,000 years and will likely get warmer still over the next decade.
- ✓ Even in the near term, global warming is more likely than not to reach 1.5C even under the very low greenhouse gas scenario.
- ✓ Every increment of global warming will intensify & multiple hazards.
- ✓ Delayed mitigation and adaptation action would lock-in high-emissions infrastructure, raise risks of stranded assets and cost-escalation, reduce feasibility, and increase losses and damages
- ✓ Feasible, effective, and low-cost options for mitigation and adaptation are already available
- ✓ Effective climate action is enabled by political commitment, well-aligned multilevel governance, institutional frameworks, laws, policies and strategies and enhanced access to finance and technology.
- ✓ inclusive governance processes facilitate effective climate action.
- ✓ Climate resilient development benefits from drawing on diverse knowledge
- ✓ Enhancing international cooperation is through multiple channels.

## INTERCONNECTED



#### **INTERCONNECTED & LINKED**



[NAY HTUN 2007]

DECARBONIZE FRAMEWORK **COMPONENTS \*** TRANSFORMATIONAL ✓ LEADERSHIP & VISION. ✓ ENABLING PRINCIPLES ✓ BUILDING BLOCKS

# LEADERSHIP VISION DECARBONIZE

#### **ENABLING PRINCIPLES**

## For POLICY, STRATEGY, MANAGEMENT, APPLICATION, SCIENCE & TECHNOLOGY

 $\checkmark$  Responsive.  $\checkmark$  Transformative.  $\checkmark$  Innovative.  $\checkmark$  Integrative. ✓ Holistic.  $\checkmark$  Inclusive.  $\checkmark$  Equitable.  $\checkmark$  Conserving. ✓ Sustainable. ✓ Resilient

#### **SOME BUILDING BLOCKS Supporting Enabling Policies**

- > Whole-of-Institutions approach/process
- > Decarbonizing transition process: low-carbon, decarbonize
- > Reducing methane emissions.
- Increasing new, renewable, energy substitution, efficiency, conservation, harvesting. Hydrogen
- > Greening Urban, Periurban, Rural
- Phasing out health & environment harmful substances, beginning with single use plastics. Fine particles 2.5
- > Restoring natural habitats & critical ecosystem functions.
- Expanding use of nature-based systems, eco-mimicking materials, designs and indigenous knowledge.
- > Transformational changes in education, training, research, behavior, life styles, designs.
- Caring, sharing, less wasteful,

## WAY FORWARD

- DO NOTHING ?
- BUSINESS AS USUAL !
- ADDRESS CHALLENGES, Many
- SEIZE OPPORTUNITIES, Many MORE
  BOLD ACTIONS NOW!!!

**IPCC Sixth Assessment Summary for Policymakers 2023** 

# RESPECT, DIGNITY, MOBILITY. AGEING. YOUNG. INFIRM. VULNERABLE.

**SUSTAINED** Inter-generational Responsibilities & Benefits, enhancing Quality of Life. **RESILIENT** society. DECARBONIZE !