OVERALL STRATEGIES

Construction Sector S&T Roadmap

Human Resource
- Modelling Software trainings
- Training on New Construction Tools/Techniques/Equipment

THEMATIC AREAS:
- ♦ Sustainable Construction Materials
- ♥ Innovative Construction Methodology/System/Techniques

Vision

- Advance and reliable construction materials and services towards a safer and sustainable Infrastructures.

Needed R&D Technologies
1. Technologies for upland, coastal, flood and earthquake resistant infrastructures
2. Housing technologies
3. Advanced Laboratory testing facility
4. Value-adding agro-industrial waste for different construction products/applications
5. Modular testing, monitoring, surveying equipment
6. Adoption of new construction practices, tools, techniques
7. Advance preservation S&T based strategy of heritage sites

Facilities/Services
1. Laboratory testing facility for:
   - Durability & performance of concrete
   - Coastal, Earthquake and Wind Engineering simulation testing laboratory
   - Construction Materials/Product Testing Laboratory
2. Digital Technologies innovation Center for Construction
3. Heritage Site/Building Center
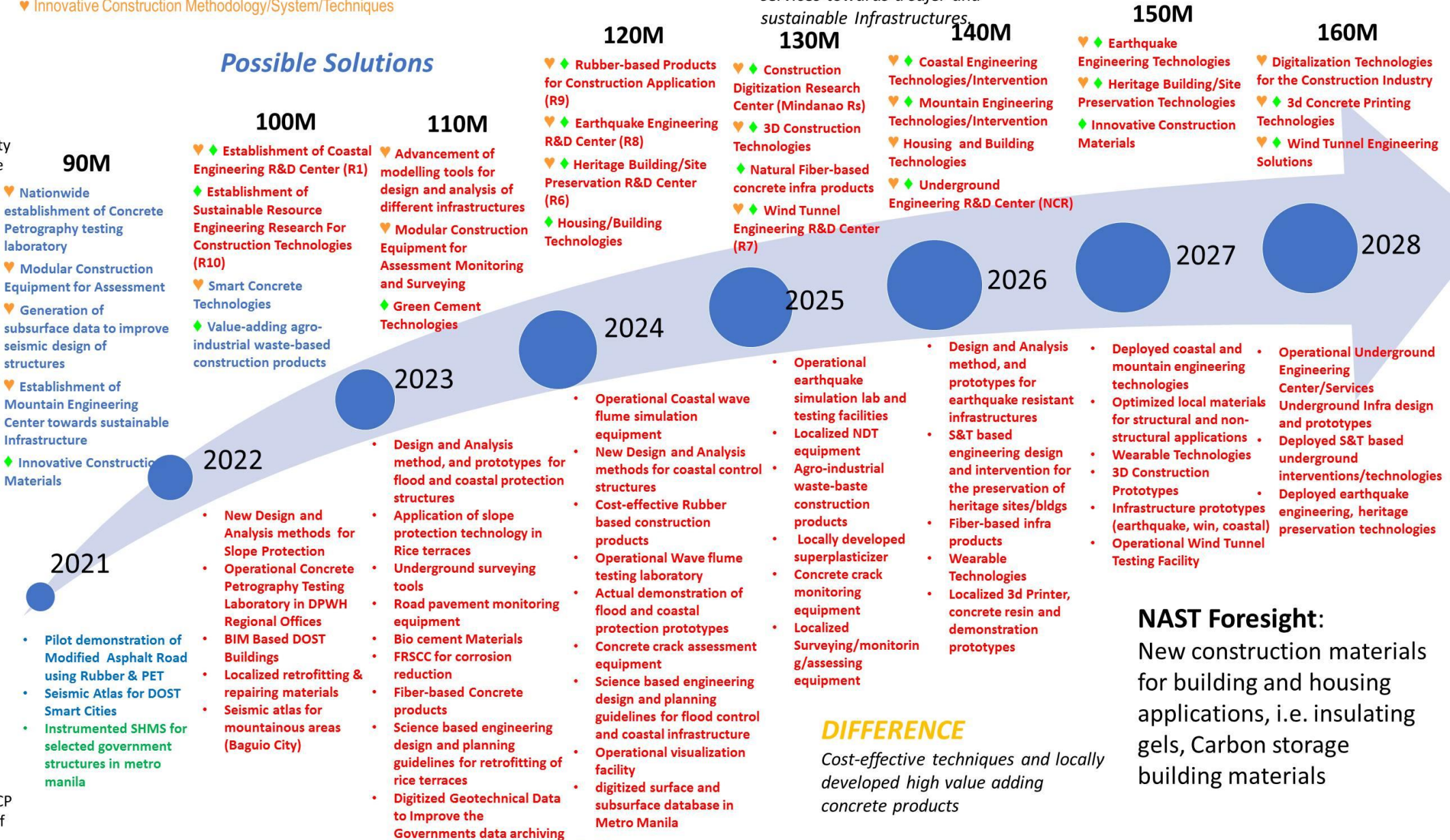4. Underground engineering

S&T Policy initiatives
1. Inclusion of locally developed construction products in the DPWH local standards and AITECH accreditation
2. Updating of NSCP to consider the generated seismic data in seismic design of structures, and the new materials developed
3. new testing requirement in the NBCP
4. Local utilization and prioritization of locally developed construction products

Possible Solutions

90M
- ♥ Nationwide establishment of Concrete Petrography testing laboratory
- ♥ Modular Construction Equipment for Assessment
- ♥ Generation of subsurface data to improve seismic design of structures
- ♥ Establishment of Mountain Engineering Center towards sustainable Infrastructure
- ♦ Innovative Construction Materials

100M
- ♥ ♦ Establishment of Coastal Engineering R&D Center (R1)
- ♦ Establishment of Sustainable Resource Engineering Research For Construction Technologies (R10)
- ♥ Smart Concrete Technologies
- ♦ Value-adding agro-industrial waste-based construction products

110M
- ♥ Advancement of modelling tools for design and analysis of different infrastructures
- ♥ Modular Construction Equipment for Assessment Monitoring and Surveying
- ♦ Green Cement Technologies

120M
- ♥ ♦ Rubber-based Products for Construction Application (R9)
- ♥ ♦ Earthquake Engineering R&D Center (R8)
- ♥ ♦ Heritage Building/Site Preservation R&D Center (R6)
- ♦ Housing/Building Technologies

130M
- ♥ ♦ Construction Digitization Research Center (Mindanao Rs)
- ♥ ♦ 3D Construction Technologies
- ♦ Natural Fiber-based concrete infra products
- ♥ ♦ Wind Tunnel Engineering R&D Center (R7)

140M
- ♥ ♦ Coastal Engineering Technologies/Intervention
- ♥ ♦ Mountain Engineering Technologies/Intervention
- ♥ Housing and Building Technologies
- ♥ ♦ Underground Engineering R&D Center (NCR)

150M
- ♥ ♦ Earthquake Engineering Technologies
- ♥ ♦ Heritage Building/Site Preservation Technologies
- ♦ Innovative Construction Materials

160M
- ♥ Digitalization Technologies for the Construction Industry
- ♥ ♦ 3d Concrete Printing Technologies
- ♥ ♦ Wind Tunnel Engineering Solutions

2021
- Pilot demonstration of Modified Asphalt Road using Rubber & PET
- Seismic Atlas for DOST Smart Cities
- Instrumented SHMS for selected government structures in metro manila

2022
- New Design and Analysis methods for Slope Protection
- Operational Concrete Petrography Testing Laboratory in DPWH Regional Offices
- BIM Based DOST Buildings
- Localized retrofitting & repairing materials
- Seismic atlas for mountainous areas (Baguio City)

2023
- Design and Analysis method, and prototypes for flood and coastal protection structures
- Application of slope protection technology in Rice terraces
- Underground surveying tools
- Road pavement monitoring equipment
- Bio cement Materials
- FRSCC for corrosion reduction
- Fiber-based Concrete products
- Science based engineering design and planning guidelines for retrofitting of rice terraces
- Digitized Geotechnical Data to Improve the Governments data archiving

2024
- Operational Coastal wave flume simulation equipment
- New Design and Analysis methods for coastal control structures
- Cost-effective Rubber based construction products
- Operational Wave flume testing laboratory
- Actual demonstration of flood and coastal protection prototypes
- Concrete crack assessment equipment
- Science based engineering design and planning guidelines for flood control and coastal infrastructure
- Operational visualization facility
- digitized surface and subsurface database in Metro Manila

2025
- Operational earthquake simulation lab and testing facilities
- Localized NDT equipment
- Agro-industrial waste-baste construction products
- Locally developed superplasticizer
- Concrete crack monitoring equipment
- Localized Surveying/monitoring/assessing equipment

2026
- Design and Analysis method, and prototypes for earthquake resistant infrastructures
- S&T based engineering design and intervention for the preservation of heritage sites/bldgs
- Fiber-based infra products
- Wearable Technologies
- Localized 3d Printer, concrete resin and demonstration prototypes

2027
- Deployed coastal and mountain engineering technologies
- Optimized local materials for structural and non-structural applications
- Wearable Technologies
- 3D Construction Prototypes
- Infrastructure prototypes (earthquake, win, coastal)
- Operational Wind Tunnel Testing Facility

2028
- Operational Underground Engineering Center/Services
- Underground Infra design and prototypes
- Deployed S&T based underground interventions/technologies
- Deployed earthquake engineering, heritage preservation technologies

DIFFERENCE

Cost-effective techniques and locally developed high value adding concrete products

NAST Foresight: New construction materials for building and housing applications, i.e. insulating gels, Carbon storage building materials

Milestones