

Nanotechnology Roadmap

Updated as of 16 February 2024

Legend (Text Font):

- Ongoing
- Done
- Target

OVERALL STRATEGIES

Facilities and Services

- Continuous support for ADMATEL and PATHS Center

Human Resources

- Increase awareness of Advanced Materials and Nanotechnology in STEM curriculum, and in industry and among consumers
- Send 10 researchers abroad to raise local talent to global standards by providing exposure and training in renowned research laboratories
- Establish programs to obtain visibility into industry needs and open channels for collaboration (e.g. internships, immersions)
- Introduce targeted training electives in Advanced Materials and Nanotechnology to promote employment readiness of graduates for certain industry applications
- Balik Scientist Program to consolidate resources and lead R&D and collaboration efforts in the field (through Advanced Materials and Nanotechnology Hub)
- Improve workforce preparation for opportunities with multinational partners

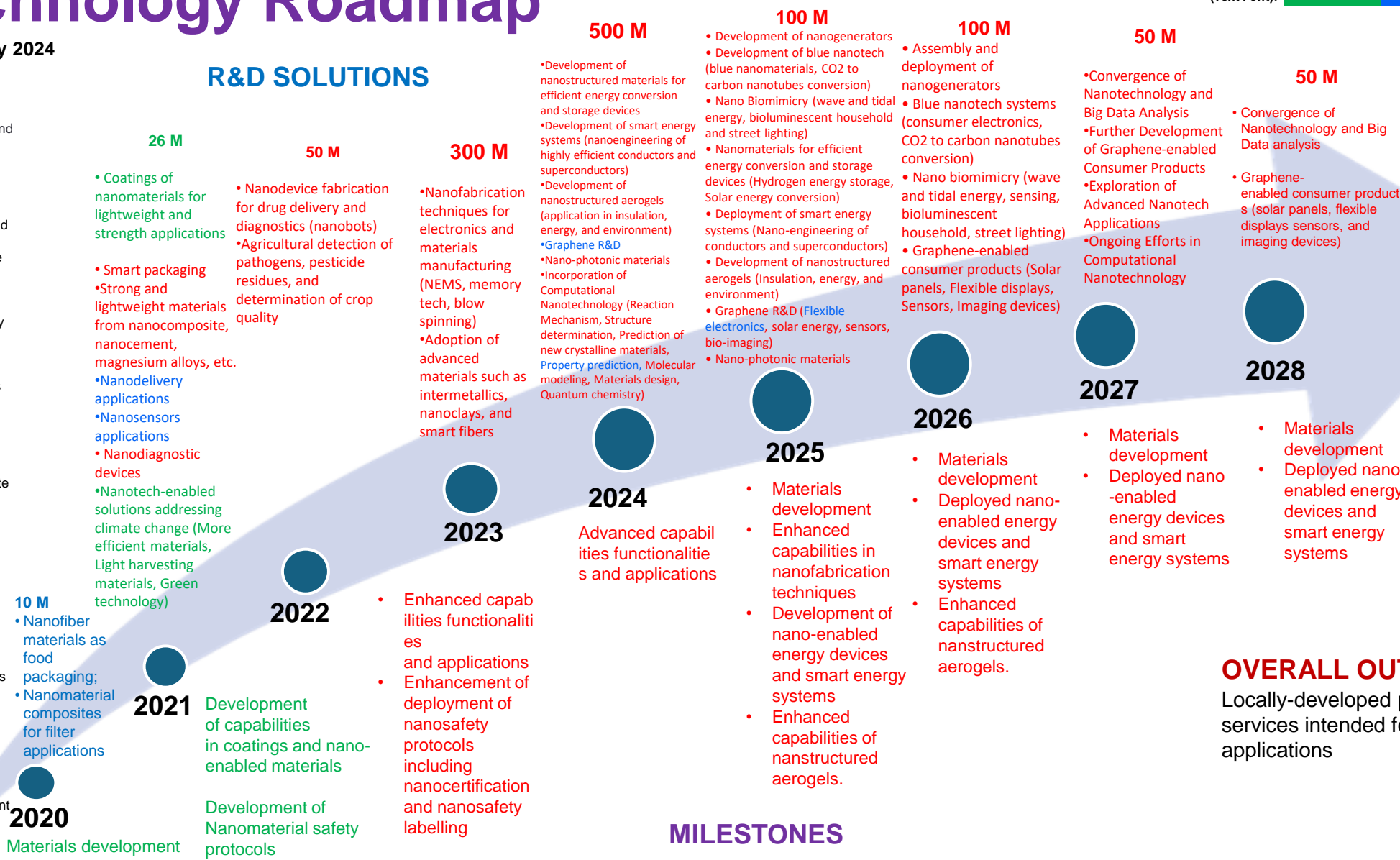
R&D Technologies

- Build and publish database with information regarding technology researches, publications, laboratories and equipment, and skills developed
- Partner with at least 10 entities for R&D applications and infrastructure co-development
- Materials Informatics R&D

S&T Policies

- Ensure communication of government policy incentives and benefits to stakeholders
- Nanosafety Policies / Standards

R&D SOLUTIONS



VISION

Provision of enabling technologies for applications beneficial to society.

OVERALL OUTCOME

Locally-developed products and services intended for wide-range of applications

MILESTONES



List of Nanotechnology Projects (for the whole duration of the roadmap)

R&D Technologies	Project Title	Budget Allocation ('000)							Status
		2022	2023	2024	2025	2026	2027	2028	
Nanotechnology	Development of Nanosilica-based Anti-Corrosion Coating Formulations for Carbon Steel Reinforcement Used in Farm Structures	3,828,555.38							Completed (PCIEERD-GIA)
Nanotechnology	Photoluminescent metal nanocluster to detect, disinfect, and suppress the spread of coronavirus and other microorganisms	4,889,192.00							Completed (PCIEERD-GIA)
Nanotechnology	Environment-Friendly Electrosynthesis of Urea from CO ₂ and Nitrate over Rationally Designed Cu-based Bimetallic Nanocatalysts			8,512,048.40	3,529,548.40	2,969,548.40			Ongoing (DOST-GIA)
Nanotechnology	Evaluating the Performance and Disposal of Kapok Sorbents for Marine Oil Spills (K4MOS)		7,949,367.40						Ongoing (PCIEERD-GIA)
Nanotechnology	Nanocellulose Self-Disinfecting (NACS) Filter: R&D Validation of an Innovative Low-Cost Nanotech-based Face Masks	7,990,079.00							Completed (PCIEERD-GIA)
Nanotechnology	Development of Biodegradable Nanofiber Filters as an Active Material for Medical-grade Facemasks	4,831,574.40							Completed (PCIEERD-GIA)



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		2022	2023	2024	2025	2026	2027	2028	
Nanotechnology	eAsia: Developing Green Degradable Polymers from Plant Based Oils and Investigation on Its Subsequent Functionalization and Utility as Heavy Metal Sequestrants	6,824,291.00	2,824,291.00						Ongoing (DOST-GIA)
Nanotechnology	Project 2: Nanostructured Scaffolds from Natural Fibers as Platforms for Stem Cell Growth and Differentiation	6,785,264.00							Completed (PCIEERD-GIA)
Nanotechnology	Design of Highly Active Kapok Fiber Electrodes for Energy Applications	1,361,014.88							Completed (DOST-GIA)
Nanotechnology	Kapok Fibers Absorbent With Switchable Hydrophobicity/ Hydrophilicity For Oily Water And Wastewater Treatment	2,668,416.64							Completed (PCIEERD-GIA)
Nanotechnology	Fabrication of Graphene-based Nanostructure Substrates for Applications in Ultrasensitive Detection	8,736,608.12							Completed (PCIEERD-GIA)
Nanotechnology	Heterojunction of Graphene-based Composites for Membrane Applications in Covid19 Pandemic Mitigation	3,194,900.80	2,173,900.80						Ongoing (DOST-GIA)
Nanotechnology	Development of Electro-responsive Membranes (DERM)			5,907,560.00					Ongoing (DOST-GIA)



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		2022	2023	2024	2025	2026	2027	2028	
Nanotechnology	In Silico Nanotoxicology Evaluation of Engineered Nanomaterials: Bridging the Data Gap on Experimental Approaches for Toxicity Appraisal with Implications to Nanomaterial Risk Assessment and Nano-safety	4,032,515.93	965,447.74						Completed (PCIEERD-GIA)
Nanotechnology	Printed Electronics and Nanotech Materials for the New Normal: Breathing with Coughing Sensor, Antiviral Nanotech for Air Circulator Filters, and Non-Invasive Health Monitoring through Sensor Array Patch	7,146,649.00							Completed (PCIEERD-GIA)
Nanotechnology	eAsia: Development of Innovative Nanobiodevices Based on Hybrid Materials by Combination of Endemic South Asian Biomolecules and Nanocarbons	2,334,019.09							Ongoing (DOST-GIA)

