



DOST-PCIEERD

Call for Proposals 2021-2022



Industry



Energy



Emerging
Technologies



Who is PCIEERD?



The **Philippine Council for Industry, Energy, and Emerging Technology Research and Development** (PCIEERD) is one of the three sectoral planning councils of the Department of Science and Technology (DOST).



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Our Mandate



Support for Research and
Development



Human Resource and
Institution Development



S&T Information
Dissemination and Promotion



Support for Technology
Transfer and
Commercialization



Policy Development and
Advocacy



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Our Sectoral Coverage

INDUSTRY



Electronic &
Semiconductor
Industries



Mining &
Minerals



Metals &
Engineering



Food
Processing



Process

ENERGY



Energy
efficiency



Transportation

EMERGING TECHNOLOGY



Materials
Science/
Nanotechnology



Genomics/
Biotechnology



Information &
Communications
Technology



Space
Technology
Applications



Photonics



Artificial
Intelligence



Data
Science



Creative
Industries

SPECIAL CONCERNS



Climate
Change
Adaptation



Disaster Risk
Reduction &
Management



Environment



Human
Security



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PRIORITY AREAS

Call for Proposals 2020



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ENVIRONMENT

Integrated Program for a Cleaner and Revitalized Environment (I-CARE) Program

- National R&D Program for the Prevention and Control of Air Pollution
- Innovative Solutions to Solid Waste Management
- Toxic and Hazardous Waste R&D Agenda



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Integrated Program for a Cleaner and Revitalized Environment (I-CARE) Program

1 National R&D Program for the Prevention and Control of Air Pollution

Support the inter-disciplinary research to and innovation for the **prevention and control of air pollution**

2 Innovative Solutions to Solid Waste Management

Support the inter-disciplinary research to understand the **risks that plastic pollution poses and provide technological interventions** to address the risks

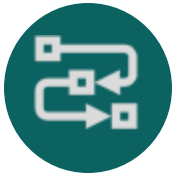
3 Toxic and Hazardous Waste R&D Agenda

Support the development of R&D plan on how to **address issues in the Minamata Convention** in terms of science, technology, and innovation.



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PROCESS



AGRO-INDUSTRIAL PROGRAM

Technological Support for the Upgrading of the Local Cacao and Cocoa Industry – Phase III



NATURAL PRODUCTS PROGRAM

Natural Dyes Color Stability Improvement Technologies for Food and Nutraceutical Applications



Improvement of Extraction, Processing, Application, Standardization Technologies and Performance Assessment of Selected Gums, Resins, and Oils



TEXILE PROGRAM

Technical Support to the Philippine Textile and other Allied Industries



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▶ PROCESS

Technological Support for the Upgrading of the Local Cacao and Cocoa Industry – Phase III

Technologies that will **uplift the status of other parts of the local cacao and cocoa industry** (e.g. production of chocolate, cocoa butter, cocoa powder, and other high-value products from cacao tree)



AGRO-INDUSTRIAL PROGRAM



NATURAL PRODUCTS PROGRAM

Natural Dyes Color Stability Improvement Technologies for Food and Nutraceutical Applications

R&D Programs to further **enhance extraction and application technologies for natural colorants** (specifically identifying compatibilities with the wide range of classifications for food and cosmetics.)

Technical Support to the Philippine Textile and other Allied Industries

Technologies that will **enhance textile production using natural fibers** and other low-cost, sustainable, and comparable sources and create new materials for textiles with improved properties.



TEXTILE PROGRAM



NATURAL PRODUCTS PROGRAM

Improvement of Extraction, Processing, Application, Standardization Technologies and Performance Assessment of Selected Gums, Resins, and Oils

Technologies that will enhance quality and even create new market segments for the use of gums, oils, and resins.



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FOOD

- Food Safety Program
- Food Innovation Program
- Halal S&T Program
- Facilities and Laboratories in Support of the Food Sector





FOOD

Food Safety Program



R&D to support risk assessment in Philippine Food

Food Innovation



R&D to enhance competencies of Food Innovation Centers on bringing products to the market

Halal S&T Program



R&D Program on Halal tourism and food service

Facilities and Laboratories for the Food Sector



R&D program on strengthening and enhancement of the OneLab network, development of proficiency testing materials for food safety and quality and new systems and services in support of the local food sector



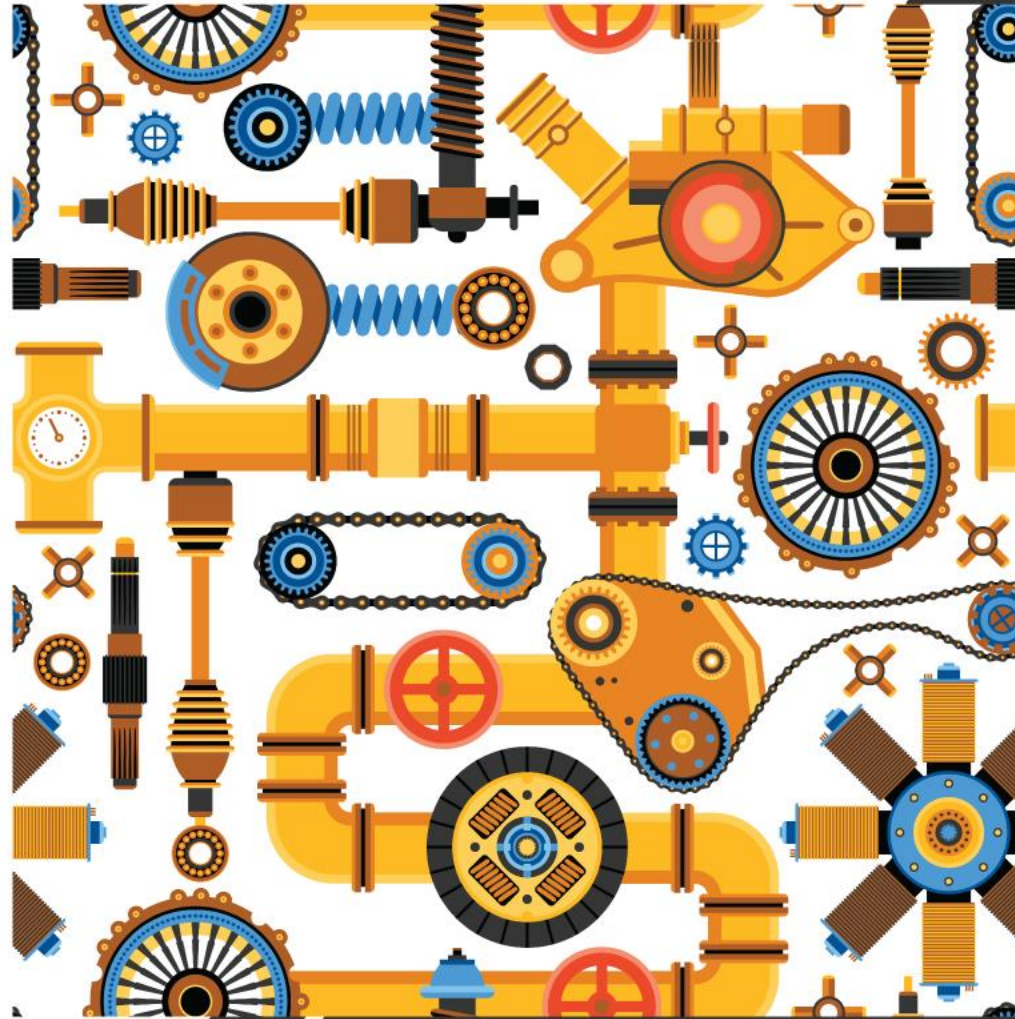
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METALS AND ENGINEERING

- Machining and Fabrication
- Tool and Die
- Metal Casting





METALS AND ENGINEERING

Machining and Fabrication Sector

Aims to enhance the manpower needs of the sector, support its equipment upgrading requirements, and develop new technologies

Metal Casting Sector

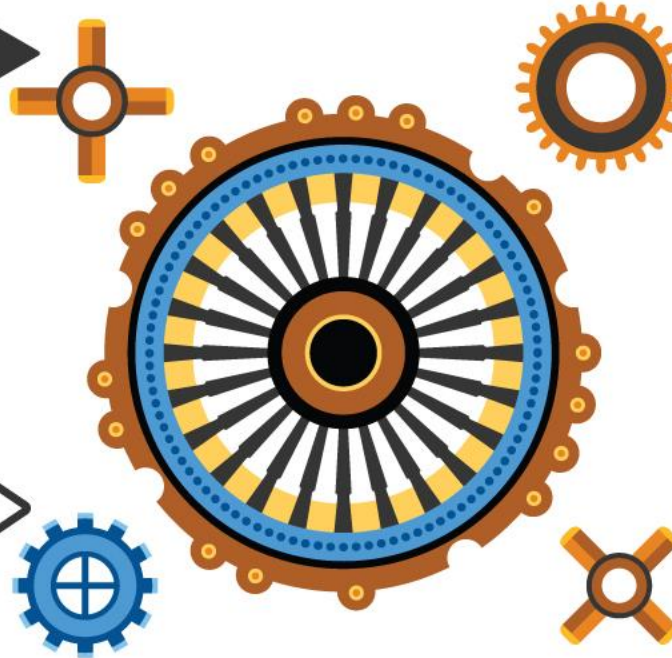
Aims to enhance the manpower needs of the sector, support its capability building initiatives, and make the metal casting industry export-capable on selected products

Tool and Die Sector

Aims to enhance the manpower needs of the sector, support its equipment upgrading requirements, and establish common service facilities that will cater to various sectoral industries

Other Priority Program Agenda

Surface Engineering
Heat Treatment
Additive and Subtractive Manufacturing
Surgical Implements and Implants
3D Printing



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MINING AND MINERALS

- Value-Adding of Metallic Minerals
- Value-Adding of Non-Metallic Minerals
- Exploration and Extract of E-tech Elements for Emerging Technologies Application
- Environmental Protection, Conservation, and Rehabilitation of Mined out Areas





MINING AND MINERALS

1

Value-Adding of Metallic Minerals

- Purification of **copper** for industrial use
- Production of engineering castings using laterite **nickel** pig iron
- Production of **iron** using low-grade magnetite ores

2

Value-Adding of Non-Metallic Minerals

- Product development for other applications of **marble**
- Utilization of **clay** for wastewater treatment and other applications
- Process improvement of **cement**
- Utilization of **silica** for industrial application
- Utilization of **lime** for paint, rubber, glass, plastic, and other applications

3

Exploration and Extract of E-tech Elements for Emerging Technologies Application

Exploration and extraction of the following from metallic and non-metallic minerals:

- **Rare Earth Elements** (Scandium, Yttrium, Neodymium)
- **Cobalt**
- **Tellurium**
- **Selenium**
- **Indium**
- **Gallium**

4

Environmental Protection, Conservation, and Rehabilitation of Mined out Areas

- Development of technologies that would **remediate and rehabilitate abandoned mines and dumped tailings**
- **Utilization of tailings/wastes** from mining into valuable products





CREATIVE INDUSTRIES

To support the development of creative industries in the country, effective programs and strategies should be developed for the following areas:



HERITAGE

- a. Arts and Crafts
(Furniture, Household Goods, Paper, etc.)
- b. Design



FUNCTIONAL CREATIONS

- a. New Media (Software, Animation, etc.)
- b. Industrial Craft
- c. Other creative related technologies





ENERGY

MSMEs Cost-Competitive Low Carbon Systems



DISASTER MITIGATION

Innovative Unmanned and Autonomous Vehicle Systems and Applications



CONSTRUCTION

Smart Approach for the Construction Industry



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ENERGY

MSMEs Cost-Competitive Low Carbon Systems

*R&D Programs that can develop S&T
intervention support to MSMEs through:*

- Development of **low carbon technologies**
- Monitoring, detection, analysis, and control of **energy utilization** of MSMEs
- Development of **energy efficient and energy conservation technologies**



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DISASTER MITIGATION

Innovative Unmanned and Autonomous Vehicle Systems and Applications

- R&D Programs to develop **innovative Autonomous Vehicle Systems with cost-effective designs**, as well as UAV technology intended for higher-end applications such as imaging, intelligence, and monitoring.





CONSTRUCTION

Smart Approach for the Construction Industry

R&D Program to **develop and deploy indigenous construction materials and innovative techniques/tools in support of the construction industry** program and for a resilient infrastructure, addressing the following:

- Innovative construction materials maximizing the potential application of indigenous, recycled, and industrial wastes;
- Improvement and upgrading of construction techniques/methods
- Localization and advancement of equipment/tools for construction, monitoring, and testing





EMERGING TECHNOLOGIES

- Advanced Materials
- Information and Communications Technology
- Electronics
- Data Science
- Space Technology Applications





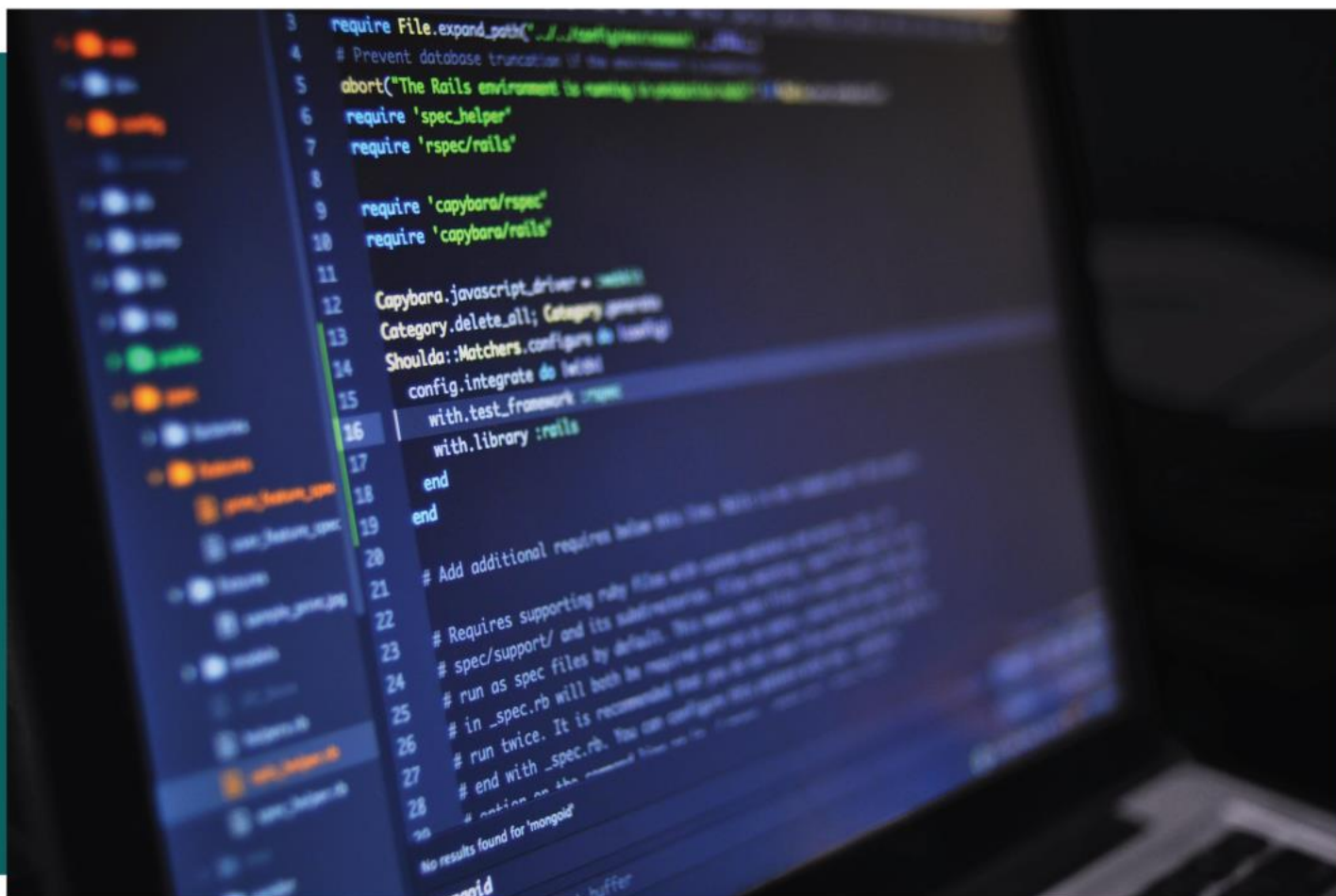
Space Technology Applications

- R&D Programs that will **utilize space technologies** such as the **Global Navigation Satellite Systems (GNSS)** for the **development of new applications** by creating niche for new services, user benefits, and business potentials.



Photo taken from DATOS Project Facebook Page.





Data Science

- R&D Programs for the **development of appropriate capabilities, systems, and technologies towards enabling LGUs and NGAs** to adapt data-driven governance and evidence-based management. Open to SPARTA Project training project participants only.

***SPARTA Project** aims to address a data-literate population able to collect and process big data for research through an online learning platform.*



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Advanced Materials

Semiconductor and Electronics Industry

- Design and fabrication of materials
- Use of additive manufacturing to improve properties of materials

Aerospace Industry

- Design and fabrication of materials
- Use of additive manufacturing to improve properties of materials

Energy

R&D Program to produce a market-ready material that will result in a spin-off company or IP licensure on **fuel cells** (*stack, polymer exchange membrane*) and **supercapacitors** (*non-platinum alternatives, pseudocapacitors, EDCL*)

Establishment of safety protocols for the use of nanomaterial safety (occupational and operational) Phase II

R&D Programs addressing the needs of the industry in terms of **occupational and operational safety in the use of nanomaterials** and the eventual adoption of risk assessment protocols by the industry and local regulatory agency





Information and Communications Technology

Artificial Intelligence (AI)



AI for Education

R&D program to construct a program or computer **capable of gauging students' knowledge and developing personalized curricula** based on their learning needs.



AI for Security

R&D Programs on Network Intrusion, Detection and Prevention and Hacking Incident Forecasting



AI for Communication

R&D program or computer **capable of generating and transcribing rich notes in Filipino** language, and applications for conversational agents.



AI for Traffic Management

R&D Program resolving control and administration problems by prediction and detection of traffic accidents and conditions.



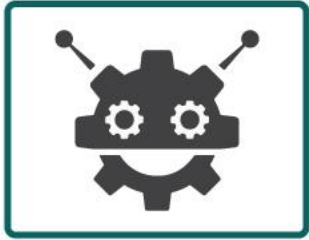
AI for Humanities

R&D program or computer **capable of human-level creativity** or can enhance human creativity.





Information and Communications Technology



Robotics AI

R&D programs on sensors and robot systems and programming that integrates Robotics and Artificial Intelligence.

Data Analytics

R&D Programs on the **integration and interoperability of big data across different government agencies and infrastructures** on national challenges such as unemployment, terrorism, and energy resources.



Gaming Development for Education

R&D Program that will **design and develop game-based learning** to effectively promote the acquisition of knowledge and skills in an exciting medium with an evaluation of impact and effectiveness compared to traditional learning.

VR/AR for aerospace, tourism, and human security

Use of Virtual Reality (VR) and Artificial Reality (AR) to **develop aerospace solutions, promotion of local tourism, and advancement in human security.**





Electronics

Wearable Electronics

Proposed projects must develop technologies on wearable electronics products and components such as the following:



PCBs



Memory



Battery



Sensor



Connectivity



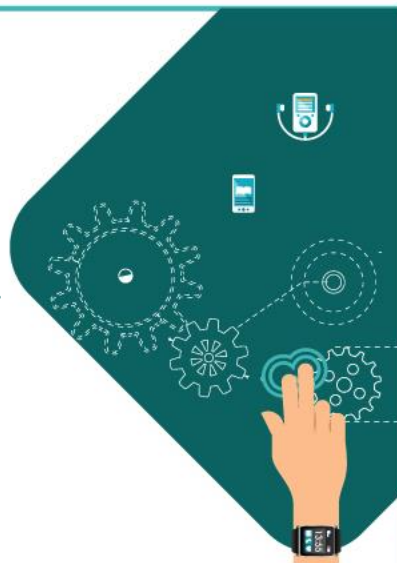
Audio



Display



Camera



Sensors and Actuators for Intelligent Factories

Proposed projects must develop technologies on:



Sensors



Nano- or micromechanics and microcontrol



Systems and control



Machine vision



Industrial IOT, AI, and Data Analytics



May 1-31, 2020

Call Duration for Industry, Energy, and Emerging Technologies



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