

GREEN CHOICE PHILIPPINES

NELP-GCP 20250040 STEEL PRODUCTS

I. BACKGROUND

The environment underpins human life but faces serious threats from industrial activities, leading to issues like global warming, acidification, and resource depletion. The construction industry is a major contributor to resource use and environmental impact due to its reliance on materials.

One significant contributor to resource consumption and environmental impact is the construction industry, which relies heavily on natural resources and energy. As the Philippines is considered to be a continuous rapidly growing state, study shows that demand for heavy duty construction products, particularly, steel and iron, will increase, and that it will directly affect the imports and domestic production of steel in the country.

Steel is one of the major products that is used in the construction industry as it is widely used to shape a building's foundation, mostly used in bridges, roads and other types of infrastructures. As the Philippines continues to urbanize, demand for steel is expected to rise significantly, further affecting local production and imports. Ensuring sustainable and high-quality steel production is vital for the safety, stability, and environmental performance of construction projects.

A. Market Description

The global steel industry in 2024 faced weakened demand due to inflation, high costs, and geopolitical tensions. China's demand is expected to decline by 1.0% in 2025, while India and emerging markets show steady growth.

Locally, the Philippines remains a key importer of steel, importing 7.2 million tons of steel from manufacturing states like China, India, South Korea, and Japan in 2021 that will be used for public infrastructures and road projects, and urbanization developments in different regions.

Study shows that the growth in the iron and steel industry is further supported by the Philippine government's visions to invest in infrastructure building and spending. The government also aims to build more local mills to reduce import dependency.

B. Environmental Impacts

The production of steel has significant effects on the environment and the consumption of natural resources. Steel production relies heavily on coke coal, a carbon-rich fuel with major environmental and health impacts. Coke ovens release carcinogenic substances, while coal mining causes deforestation, soil erosion, and water pollution. Globally, coke and coal use in steelmaking significantly contribute to air pollution, acid rain, and biodiversity loss.

Some studies show that steel production accounts for 7–9% of global CO₂ emissions, primarily through coal-powered methods like the Blast Furnace–Basic Oxygen Furnace (BF-BOF) route, which remains the dominant process globally. In contrast, the Philippines mainly uses the more sustainable Electric Arc Furnace (EAF) method, which relies on recycled scrap and produces less carbon. It was mentioned that carbon emissions by EAF method was measured at 0.5 per ton of crude steel.

Another environmental hotspot during the production is the water consumption which is mainly used in the cooling process. It was estimated that the average water intake for an integrated steel plant equates to 28.6 m³ per ton of steel produced with average water discharged being 25.3 m³.

At the end-of-life, steel is considered highly recyclable and can be easily recovered. Research highlighted that steel scraps can be purified from its impurities through the use of oxidation. Typically for the construction industry, steel scrap recyclability mostly reaches 85% of reusability, above 95% for automotive industry, and around 70% for packaging that uses iron and steel. The industry has begun adopting more sustainable practices, such as improving recycling processes, maximizing the amount of steel scraps being used in the production process with the addition of using EAF technology to recycle scrap steel. Although steel is considered highly recyclable, demand for virgin steel is still continuously growing as infrastructure demand, like bridges and buildings, demand the product.

C. Environmental Initiatives

To lessen the carbon emissions, there is an effort to introduce decarbonization of the industry. This move to decarbonization will be necessary to meet specifically the EU's GHG reduction in emissions by 2030-2050. Although one of the major challenges in terms of implementing this initiative would be the support from the government and the industry itself.

One article highlighted that there are thirty (30) companies in the steel industry that have set GHG emission reduction targets with time frames ranging between the years 2025-2060. Locally, through the Board of Investment's One-Stop Action Center for Strategic Investments (BOI OSAC-SI) recognized a hot rolling mill project of Real Steel (RSC) in San Simon, Pampanga. The said Steel Mill features the EAF technology combined with a horizontal charging system which will drastically increase the efficiency of the mill, along with its productivity and RSC also claims that it will generate 23 MW of Renewable Energy Solar and Heat Recovery System. For the past decades, the steel industry has reduced its consumption of energy per tonne of steel by almost 61%, although there is still a demand for the industry for innovation in terms of technology, and implementations of new roadmaps.

D. Existing Local Policies

There are also national policies in the Philippines that help promote sustainability in the steel industry, like the Republic Act No. 7103 or the Iron and Steel Industry Act, which create a guideline or framework to rationalize the steel and iron program while confining the program itself to follow the existing government environmental initiatives that are focused on environmental preservation. Further, the Department Administrative Order (DAO) 18-08 s. 2018 enforces product certification to ensure quality and safety in steel products, aligned with Philippine National Standards (PNS) for construction steel. Importers must also secure

Import Commodity Clearance (ICC) to guarantee compliance with national or international standards.

II. DEFINITION OF TERMS

BI (Black Iron) Pipes - Uncoated steel pipes used in structural and general plumbing applications (TKL Steel Corp, (2024).

Finished Steel - Steel that has completed all manufacturing processes and is ready for use or sale, such as beams, rebars, and pipes. [Eurofer, 2020]

Flat Steel Products - Steel items rolled into flat shapes, typically used in construction applications such as roofing sheets and steel plates. [TampaSteel Supplies, n.d.]

GI (Galvanized Iron) Pipes - Steel pipes coated with a layer of zinc to prevent rusting and corrosion (TKL Steel Corp, (2024).

Import Commodity Clearance (ICC) - A document issued by DTI attesting that the quality and/or safety of an imported product conforms to a Philippine National Standard or BPS - recognized international/foreign standard. [DTI DAO 05:2008, n.d.]

Long Steel Products - Includes steel items like rebars and angles used in reinforcing concrete and other structural applications they are also usually elongated. [IMTS, n.d.]

PS Quality and/or Safety Certification Mark - A mark of conformity to quality and safety standards appearing on a product. [DTI DAO 04:2008]

Rebars (Reinforcing Bars) - Steel bars embedded in concrete structures to provide tensile strength and enhance load-bearing capacity. [Concrete Reinforcing Steel Institute, n.d.]

Semi-Finished Steel - Steel that has undergone initial processing but requires further shaping or treatment to become a finished product e.g., billets, blooms, or slabs. [Corrosionpedia, n.d.]

Scrap Steel - Steel material recycled from manufacturing leftovers or post-consumer sources, used as a raw material in steel production. [Worthington Steel Glossary,n.d.]

Steel Plates - Thick flat steel sheets commonly used in large construction applications and structural components. [Service Steel Warehouse, 2025]

Structural Steel Shapes - Steel components such as H-beams, I-beams, and W-flanges used to form the framework of buildings and infrastructures. [Service Steel Warehouse, 2021]

Seven-Wire Steel Strand (Low Relaxation) - A type of high-strength steel product composed of seven wires twisted together, commonly used in prestressed concrete applications for improved tensile performance. [ASTM, 2024]

III. SCOPE

These criteria shall apply to the following:

- Flat Steel products (Roofing)
- Long Steel Products (Rebars and Equal Leg Angle)
- Steel Pipes (BI and GI)
- Structural shapes (H beam, I Beam, W Flange, Sheet piles, Steel plates, including accessories)
- Low Relaxation Seven - Wire Steel Strand Prestressed Concrete

IV. GREEN CHOICE PHILIPPINES REQUIREMENTS

To carry the Green Choice Philippines Seal of Approval, a product must meet the following requirements:

CRITERIA	VALIDATION METHOD
A. Quality Criteria	
The product shall comply with the following latest Philippine National Standards (PNS): • PNS 67 Steel Coils & Sheets - Hot-Dip Metallic-Coated and Pre-Painted Galvanized Steel Coils and Sheets for Roofing and General Applications • PNS 49 - Steel bars for concrete reinforcement – specification • PNS 26 - Black & hot-dipped zinc-coated (galvanized) longitudinally welded steel pipes for ordinary use – Specification • PNS 201 - Pre-painted galvanized steel sheets and coils – Specification Other Standards & Related Regulations: • DAO 18-08 Series of 2018 - The New Technical Regulations concerning the Mandatory Product Certification of the Deformed Steel Bars, Rolled Steel Bars and Equal Leg Angle Steel Bars • AASHTO M 202/ASTM A328 - Standards for Carbon Steel Sheet Piling • ASTM A36 - Standard for Mild Carbon Structural Steel • ASTM A572 - Standard for	The manufacturer/importer must submit a Philippine Standard (PS) license. For importers, the applicant may also present an ICC Certification. The applicant must submit a proof of compliance with the DAO 18-08 Series of 2018, such as but not limited to certification and test results, ensuring alignment with the corresponding steel product. The importer shall present documents related to product shipments when the ICC mark is being secured.

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high-strength, low-alloy (HSLA) columbium-vanadium structural steel used in general construction and other structural applications • ASTM A416 - Standard Specification for Uncoated Seven-wire Steel Strand for Prestressed Concrete • ASTM A325 - Standard for Heavy Hex Structural Bolts • ASTM A307 - Specification for Carbon Steel bolts and studs	
B. Environmental Criteria	
Local Laws & Regulations For local manufacturers, the production process of the product shall comply with the applicable social and environmental laws and regulations, including but not limited to: - PD 1586: Philippine Environmental Impact Statement System - RA 9003: Ecological Solid Waste Management Act - RA 8749: Clean Air Act - RA 9275: Clean Water Act - R.A. 6969: Toxic Substances and Hazardous and Nuclear Waste Control Act of 1990 - RA 7942: Philippine Mining Act of 1995 - RA 7103: Iron and Steel Industry Act - RA 11058: Philippine Occupational Safety and Health Standards - Other equivalent or applicable local and international social and environmental laws and regulations	The applicant shall submit valid permits and clearances from DENR and other relevant agencies as proof of compliance. These may include: • Environmental Compliance Certificate (ECC) or Certificate of Non-Coverage (CNC) • Established Material Recovery Facility (MRF) • Permit to Operate for Air Pollution Source Equipment • Discharge Permit • Hazardous Waste Generator ID • DENR Compliance Monitoring Reports • OSH Compliance Certificate In addition, the applicant must submit self-monitoring reports for compliance and/or third-party certification on environmental management system (EMS), occupational health and safety (OH&S) management system, or its equivalent.
Raw Material Sourcing The product must be made from at least fifty (50%) (by weight of the steel content) of scrap sourced from post-consumer products or leftover scrap from the manufacturing process.	• Certification signed by the company's CEO • Documentation on the use of scrap materials, such as but not limited to bill of materials, mass balance record, etc. • Visual inspection

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Emissions The manufacturer's carbon emissions shall not exceed 0.7 tCO₂eq/ton of semi-finished steel and 0.8 tCO₂eq/ton of finished steel.	The applicant shall submit the calculation of CO₂ emissions using the recognized international tools, standards, and methods such as but not limited to the tools provided by the Greenhouse Gas Protocol.
Freshwater Consumption The manufacturer shall implement a water conservation program covering at least ninety (90%) of their freshwater consumption per unit output of the product.	The applicant shall provide information on its implemented program for water utilization, demonstrating consumption such as but not limited to water consumption data, water bills, water recycling facilities, rainwater harvesting, etc.
Chemical Use in the Production Importers, distributors, and users of chemicals in the production under the Priority Chemical List (PCL) and Chemical Control Order (CCO) shall apply for permits at EMB and other appropriate agencies for compliance.	The applicant shall submit a compliance certificate for chemicals under PCL.

V. PERIOD OF VALIDITY

The product criteria is valid for **five (5) years** from the date of its approval unless otherwise revised or withdrawn by the NELP-GCP Board, if proven necessary at any period of time.

VI. TECHNICAL COMMITTEE MEMBERS

Institution	Technical Committee Members
Department of Environment and Natural Resources - Environmental Management Bureau (DENR-EMB)	Mr. Angelo Villegas
Department of Science and Technology - Metals Industry Research and Development Center (DOST-MIRDC)	Mr. Florante A. Catalan
Philippine GeoAnalytics Inc.	Mr. Federico O. Mendoza
University of the Philippines - Department of Mining, Metallurgical and Materials Engineering (UP-DMMME)	Assoc. Prof. Eduardo Magdaluyo Jr. (Chairperson)
Philippine Green Building Council (PhilGBC)	Engr. Cyrean C. Silva Engr. John Reniel Englis

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