

Subject: Global Infrastructure and Networks Logistics Guidelines

Application Areas

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Infrastructure and Networks*

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THE HEAD OF GLOBAL INFRASTRUCTURE AND NETWORKS
Livio Gallo

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1. DOCUMENT AIMS AND APPLICATION AREA

This policy aims at defining the guidelines to be followed in the design and operation of logistic services in support to the Global Infrastructure and Networks Business Line.

Main objectives to be pursued with this Global Logistics Guidelines are:

- Assets and stocks lightening
- Improvement of performances
- Reduction of value leakages;

Main features of this policy are:

- Standardization of logistic structure and operating model
- Uniformity of approach to Third-party Logistics Service Provider (hereinafter 3PL) in case of outsourcing decision (perimeter, contract, remuneration scheme, SLA and penalty scheme)
- Consistency in main direct and reverse logistic flows
- Definition of monitoring process for Logistics performance & costs.

Further objective of this Guideline is to define a standard set of information to share among Country Operation & Maintenance units (hereinafter O&M), Country Network Development units and Global ND.

It shall be responsibility of each Country Network Development Unit to define the proper implementation actions of the present Guideline and Global Network Development shall monitor its implementation.

This policy shall be implemented and applied to the extent possible within the Global Infrastructure and Networks Business Line and in compliance with any applicable laws, regulations and governance rules, including any stock exchange and unbundling-relevant provisions, which in any case prevail over the provisions contained in this document.

2. DOCUMENT VERSION MANAGEMENT

Version	Data	Main changes description
1	21/12/2015	Issuing of the Global Infrastructure and Networks Logistics Guidelines
2	29/09/2016	<ul style="list-style-type: none"> - Modified chapter 11.2 – Performance logistic infrastructure - Deleted: appendix “A” KPIS Description - Added “Annex KPIS Data compilation guideline”
3	16/11/2017	<ul style="list-style-type: none"> - Modified “Annex KPIS Data compilation guideline” - Modified chapter 4 References - Modified chapter 10.3 – added Material Quality Approval

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3. UNITS IN CHARGE OF THE DOCUMENT

Responsible for drawing up the document:

- Global Infrastructure and Networks: Network Development;

Responsible for authorizing the document:

- Global Infrastructure and Networks: Head of Health, Safety, Environment and Quality unit;
- Global Infrastructure and Networks: Head of Human Resources and Organization unit.

4. REFERENCES

- Enel Group Code of Ethics;
- Zero Corruption Tolerance (ZCT) Plan;
- Enel Human Rights Policy;
- Organization and management model as per Legislative Decree no. 231/2001 or equivalent documents adopted in the Countries;
- Enel Global Compliance Program (EGCP);
- Global Infrastructure and Networks RACI Handbook;
- Enel group general contract conditions and their attachments
- Global Procurement RACI Handbook;
- Policy no. 156 dated 21/11/2016 "Tender";
- Organizational Procedure No. 214 dated 22/03/2014 "Global Procurement Planning";
Policy no. 158 dated 26/10/2016 "Purchase Request Management";
- Policy no 221 dated 25/11/2016 "Global Infrastructure and Networks Material management and inventory global guidelines
- Policy no 232 dated 19/12/2016 "Warranties activation criteria for materials failures
- Operative Instruction no 41 dated 23/12/2015" Factory Acceptance Tests Execution Operating Instruction"
- Document no. DM-2016-003 "Materials packaging guidelines".

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5. ORGANIZATIONAL PROCESS POSITION IN THE PROCESS TAXONOMY

Value Chain/Process Area Networks management

Macro Process: Material management

Process: Materials logistics management

6. DEFINITIONS AND ACRONYMS

Acronym and Key words	Description
RLOU	Relevant Operating Unit
Transit Point	Platform with reduced or zero stock level
Warehouse	Physical and logical infrastructure dedicated to move and storage materials stocks.
Material	Generic term to mean any component, equipment, spare part or consumable, essential for the network operation, which characteristics must be properly defined and recorded into the system, also by setting suitable parameter in order to optimize their management
Layer	Hierarchical section of the logistic network characterized by homogeneous warehouses (in terms of size and operation)
Global ND	Network Development units at Global level within Global Infrastructure and Networks Business Line
Local ND	Network Development units at country level within Global Infrastructure and Networks Business Line
Contractor	Entity in charge of activities on the network (both for new installations both for maintenance) as per the mandate of a multizonal – multiservice contract in force
SLA	Service Level Agreement
Supplier	Entity responsible for the manufacturing/production of material
3PL	Third-party Logistics service provider
FAT	Factory Acceptance Test: Tests conducted at supplier's factory before the components and materials are delivered to their destination site, to check if the requirements of a specification or contract are met

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7. PERIMETER IN SCOPE AND CLASSIFICATION OF MATERIALS

7.1 PERIMETER IN SCOPE

This Guideline shall apply to all the materials used by Infrastructure & Network functions. Non-core materials and materials with limited unit value shall be considered out of this policy's scope and shall be managed in accordance to alternative simplified methodologies hereinafter described:

- Electronic catalogue materials (with limited unit value, non-corporate, non-connected to field operations) – which shall be ordered directly via web interface and delivered to local field units (hereinafter RLOUs) by Suppliers
- Contractors-supplied materials (supplied directly by the Contractor and installed in worksites – this supply can be included in the normal O&M activities regulated by the Contract or can be justified in specific cases of out-of-stock¹).

Local ND units shall evaluate the materials excluded from the overall logistic and periodical update them with the support of Global ND.

7.2 CLASSIFICATION OF MATERIALS

The classification is aimed at defining materials which shall be delivered either directly in main platforms or directly to other sections of the chain (e.g. secondary warehouses, worksites).

Logistic flows shall be optimized with the aim of assuring prompt and efficient deliveries of materials to final usage, while reducing stock. Each Local ND units shall apply the structure for classifying materials of the local logistic process according with the following criteria:

1. Usage specificity
2. Transportation difficulties and warehouse accessibility ²
3. Stock rotation.

¹ The Contract shall regulate this supply through specific terms and conditions.

² It is understood transportation difficulties in the mainland. Classification criteria 1 and 2 shall not be applicable for remote islands.

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The first criteria classifies the materials in consideration of specificity of usage: materials non-project specific or project-specific materials. Examples of project-specific materials are HV or customized transformers and special MV switchboards.

The second criteria classifies the materials in consideration of difficulties in the transportation: materials with difficulties in transportation (e.g. pole) and materials without difficulties in transportation. The first two criteria shall lead to the following clusters:

- M1: materials without difficulties in transportation and without usage specificity
- M2: materials without difficulties in transportation and with usage specificity
- M3: materials with difficulties in transportation and without usage specificity
- M4: materials with difficulties in transportation and with usage specificity.

The third criteria classifies the materials in consideration of stock rotation, dividing Slow Moving Inventories (SMI), Normal Moving Inventories (NMI) and Fast Moving Inventories (FMI).

The third criteria shall lead to the following clusters:

- SMI materials: Inventory Turnover Ratio³ lower than 0,5
- NMI: Inventory Turnover Ratio between 0,5 and 5
- FMI: Inventory Turnover Ratio greater than 5

The classification of materials based upon Inventory Turnover Ratio shall be updated by Local ND units every year.

According to the above mentioned criteria Local ND units shall identify, for each material, the related cluster M1-M2-M3-M4 and SMI-NMI-FMI.

³ Inventory Turnover Ratio = Logistic outbound flow value / Average Stock value. The inventory turnover shall be calculated for each typology of materials.

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8. STRUCTURE OF THE LOGISTIC NETWORK

The general purpose of Logistics is the management of goods received from the Suppliers up to the final point of use, meeting the requirements of quality and in-time delivery.

Logistic process involves the integration of information flow, material handling, picking, inventory, transportation, warehousing, and security.

Logistics is to be considered in full support of RLOUs, with the aim of guaranteeing an optimized stocking of materials to be used during works and maintenance activities and a subsequent transportation and in-time delivery to final needs.

A logistic network is generally characterized from an infrastructure of n-hierarchical layers connected through a transportation service.

Number of logistic model hierarchical layers, number of warehouses per layer, level of service (e.g. time of delivery), overall size of stock and cost of logistics are strongly linked. This guideline provides indications on the optimal logistic model set-up, in terms of hierarchical layers and warehouses management.

Enel has defined a two-layers logistic network, composed by primary warehouses (hereinafter defined platforms) and secondary warehouses, that shall be implemented.

Exceptions to the general rule are applicable in the following conditions:

- in case of very limited operating area, a single hierarchical layer can be implemented
- in case of remote areas (e.g. geographical areas with long lasting connecting journeys with platforms), the creation of a Transit Point (intermediate stop between platform and secondary warehouses) can be implemented.

Logistic infrastructure shall be managed using all techniques to reduce the overall cost of this service, while maintaining a service level in line with Enel Global standards.

With reference to the classification identified into the par.-⁴ 7.2:

- platforms shall stock only M1 materials delivered from Suppliers,
- secondary warehouses shall receive directly from Suppliers M2 and M3 materials and M1 materials delivered from platforms
- M4 materials shall be delivered directly in worksites from Suppliers.

⁴ Applicable for a 2-layers structure.

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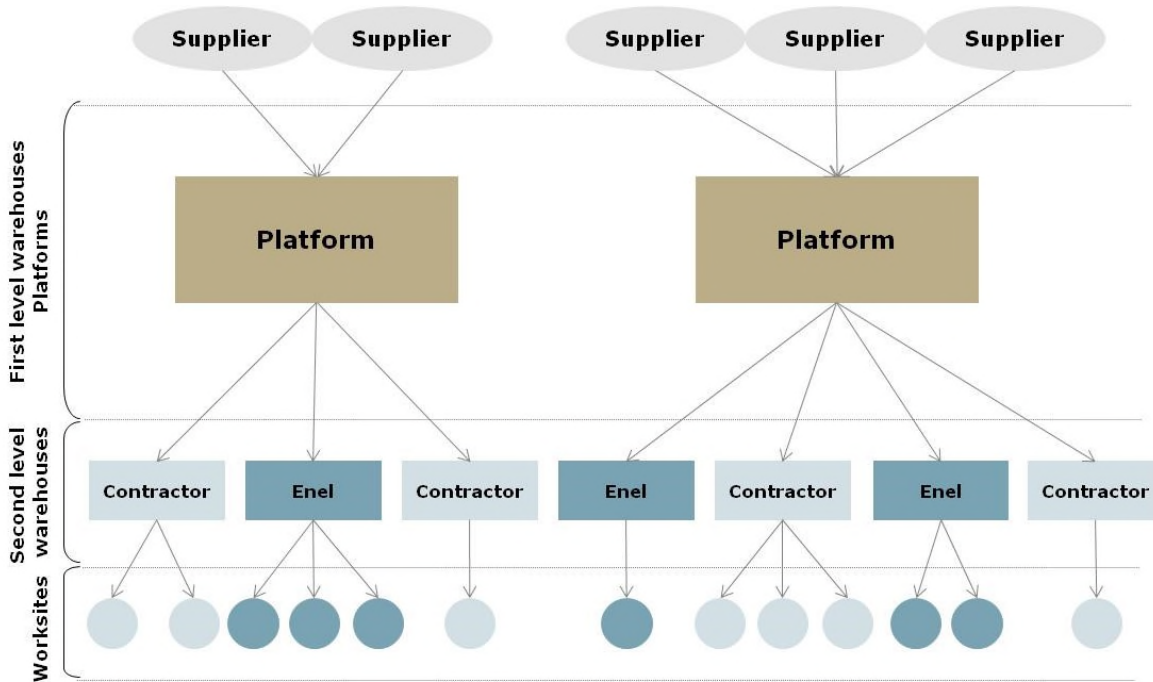
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Local ND units shall stock properly emergency materials in accordance with specific regulatory constraints, norms.



Reference structure of the Logistic Network

Number and location of platforms and warehouses shall be optimized with the aim of reducing the overall logistics costs (stock level, materials management and materials transfer).

As a general rule, Countries shall have a single platform per each contiguous covered area below around 5 million Clients and can introduce additional platforms when the number of Clients is above around 5 million per each covered contiguous area.

Exceptions to the general rule are applicable when a cost-benefit analysis shows that the introduction of additional platforms decreases the total cost of logistics.

The definition of optimal number of platforms and warehouses shall be done by Local ND units through an optimization study aimed at minimizing logistic costs and carried out in accordance with global guidelines, taking into account the following elements:

- optimal materials stock level
- geographical extension of operating area
- geographical distribution of customers
- particular geographical constraints
- network extension (km of lines)

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- projection of O&M needs with geographical indications
- availability and strength of transportation infrastructures around the area.

Results of this study shall be shared with Global ND and will provide indications for the optimal positioning of platforms which Local ND units shall consider for the detailed design of the logistic network, both in case of out-sourcing and in-sourcing decision.

This study shall be updated when a significant change in the logistic structure takes place (e.g larger perimeter due to organic or inorganic growth, significant changes in the organizational structure with impact on the logistic structure, etc.).

9. OPERATING MODEL AND THIRD-PARTY LOGISTICS PROVIDER

9.1 OUTSOURCING DECISION AND FIRST LAYER OPERATING MODEL

As a general rule, the management of first layer warehouses (platforms) and transports from platforms to second layer warehouses shall leverage on Third-party Logistics service provider (hereinafter 3PL).

Local ND units shall evaluate the logistic outsourcing services preparing a cost-benefit analysis report with the aim of explaining which rationales and motivations are behind the *make or buy* decision implemented for the logistic services for the relevant perimeter.

This cost-benefit analysis report shall be submitted to Global ND for the approval.

The report shall contain at least the following point of induction:

- estimation of make costs (internal logistics) versus buy costs (external suppliers)
- evaluation of possible critical areas of the logistic value chain which can be considered of high strategic relevance and motivations
- constraints and regulations which have advantaged make or buy decision
- ownership of specific assets (i.e. warehouses, trucks, etc.) or presence of teams trained to logistic activities, including evaluation on the assets owned.

9.2 PERIMETER OF THE THIRD PARTY LOGISTICS PROVIDER

As a general rule, activities included in the standard perimeter of 3PL Provider shall be:

- management of inbound materials (including reverse flows materials, cfr. 10.8)

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- warehousing (handling, cross-docking⁵)
 - picking
 - delivery to secondary warehouses
 - reverse logistic flows (as per description in chapter 10.8)
 - treatment of waste packages in accordance with Country's environmental laws
 - inventory of materials with the support of Enel references⁶ (cfr. 10.6)
 - transportation from supplier production site / supplier warehouse - optional
 - international transports from/to platforms belonging to Enel Logistics structures abroad (in the region)⁷ - optional

3PL Provider shall be responsible of making available all the infrastructures required for the optimal fulfilling of the logistic service (e.g. platforms, trucks, handling equipments, etc.⁸).

In case of outsourcing decision, Local ND units shall maintain a close control over logistic processes. Moreover key logistic processes and activities can be considered strategic because of the related financial impact (such as accounting registrations or selling of recovery materials).

Therefore, as a general rule, Local ND units shall identify Enel references (leveraging on internal Logistics resources, if available) in support of specific areas such as:

- inbound deliveries - registrations in Enel systems
- outbound deliveries - registrations in Enel systems
- control and verification of volumes handled by 3PL Provider
- inventory
- reverse logistic flows (selling of reels, critical waste disposal, transformers maintenance or disposal, etc.).

⁵ Cross-docking is the practice of unloading materials from an incoming transportation and loading these materials directly into outbound trucks, with little or no storage in between.

⁶ Enel shall identify references (leveraging on internal Logistics resources) for the oversight of key logistic processes

⁷ Regional transports among Enel Logistic networks in different countries shall be coordinated directly by Network Development, which has the mandate of optimizing cross-country stocks.

⁸ Logistic platforms and equipments must be in line with Enel requirements, specified in Technical Specification (cfr. 9.3)

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3PL Provider contract shall include access and ability to operate in platform for Enel references and the creation of all the needed interfaces.

As a general rule, any kind of direct input from 3PL in Enel system, impacting directly Enel accountability, shall be avoided.

Local ND units shall monitor and supervise this process, identifying appropriate solutions such as interfaces among Enel and 3PL systems.

9.3 TECHNICAL SPECIFICATION OF THIRD PARTY LOGISTICS PROVIDER

Technical Specification for the tender to select 3PL Provider shall be defined by Local ND units in accordance with the present Guidelines. Technical Specification shall be included in tendering phase for the selection of 3PL Provider.

Technical Specification shall include:

- Defined Logistic Network
 - ○ Structure of first layer warehouses
 - ○ Structure of the second layer warehouses
- 3PL perimeter (ref. 9.2)
- Remuneration scheme
- Service Level Agreement (hereinafter SLA)
 - ○ Performances
 - ○ Minimum requirements and standards
- Penalties scheme.

Hereinafter general rules on remuneration scheme, SLA – Performance, SLA – Minimum requirements & Standards, penalties scheme are reported.

Remuneration scheme

The remuneration of 3PL Provider shall follow the cost structure typical of the Logistics industry, in order to have a scheme oriented at minimizing the mutual risks in the agreement.

As a general rule, the remuneration scheme shall be composed by three main parts:

- remuneration linked to rental of internal and external space in platforms

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- variable remuneration – warehousing operations (proportional to handled volumes in warehousing operations)
- variable remuneration – transportation (proportional to transported volumes).

Remuneration linked to rental of internal and external space in platforms shall be a fixed price in accordance with the space/volumes effectively reserved for the logistic service. In order to take advantage from 3PL scales economies, as general rule no warehouses fully dedicated to Enel logistic service shall be implemented⁹.

Local ND units shall evaluate on a yearly basis the space/volumes required for the optimal performance of the logistic service and shall inform in advance 3PL Provider, with the aim of adapting the remuneration linked to the rental of platforms to the effective space/volumes reserved during the following year.

This component shall be connected to the fixed 3PL costs: rental/leasing of internal and external space in platforms, personnel costs (connected with the minimal level of activity), rental/leasing of transportation fleet and handling, general and administrative expenses, etc).

Variable remuneration for warehousing operations shall be connected to the variable costs of 3PL Provider. This component shall be proportional to the handled volume (measured in Equivalent Loading Unit - ELU¹⁰), such as personnel costs (volume-dependent), connected with volumes in the following operations:

- inbound delivery/handling
- outbound delivery/picking
- cross-docking.

Variable remuneration of transportation shall be connected to variable costs of transportation (fuel, tools, transports-dedicated personnel, etc.). This component shall be proportional to the transported volume (measured in Equivalent Loading Unit – ELU).

Components of variable remuneration – transportation shall be the following:

- standard transportations (from platform to secondary warehouses – among platforms – among secondary warehouses)
- special transportation (using special vehicles)
- international transportation (from/to platforms located outside the National territory)

⁹ Local ND units can propose the implementation of dedicated warehouses upon a cost/benefit evaluation

¹⁰ for Equivalent Loading Unit – ELU the following dimensions are suggested:

- Pallet commonly used in Europe: 80 (L) x 120 (P) x 250 (H) cm. Maximum weight = 1000 kg.
- Pallet commonly used in Latin America: 100 (L) x 120 (P) x 190 (H) cm, maximum weight 1000 kg.

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- transportation from Supplier production facility to platform.

Urgent deliveries shall be subject to the application of correction factors.

Local ND units, with the aim of incentivizing a performance driven remuneration scheme, shall design together with 3PL Provider specific *gain-sharing* mechanisms.

Equivalent Loading Unit definition and calculation

Local ND units shall define the correct Equivalent Loading Unit to be used for 3PL remuneration, according to the size and weight of the pallet in use.

Number of ELU handled or transported, calculated by 3PL Operator through WMS, shall be verified by Enel reference using a conversion table, accessing directly to WMS information (managed by 3PL but accessible from Enel systems). The conversion table shall be defined by Local ND units for each single material code, in consideration of the general packaging (pallet composition) and the conversion volume associated in ELU. Using this information, for each handled material (according to inbound/outbound deliveries registration in Enel systems and 3PL WMS) an associated volume in ELU can be calculated.

Service Level Agreement (SLA) of Third Party Logistics Provider

The contract of 3PL Provider shall include as an Annex a Service Level Agreement, mutually accepted among the Parties.

SLA of 3PL Provider shall be made up of two components:

- SLA – Performance
- SLA – Minimum requirements & Standards.

1. SLA – Performance

Scope of SLA - Performance shall be to obtain from 3PL Provider a level of service in line with Enel Group targets and expectations. At this regard, Enel Group is pursuing a target of logistics excellence declined in:

- Accuracy of all warehousing operations
- Accuracy of inventories in all the warehouses
- Accuracy and promptness of inbound and outbound deliveries registrations
- Full traceability along the logistic chain

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- Complete alignment among physical flow of the materials and IT/Accounting registrations.

For each Key Performance Indicator (described hereinafter) a target value is associated; not reaching the target level of performance SLA shall imply the application of penalties for the 3PL Provider (cfr. Section Penalties).

SLA shall be linked to objective indicators measured from standard Enel systems and from data collection in platform (e.g. during inventory phases).

As a general rule, key indicators for performance evaluations shall be:

- Order Fill Rate

Order fill shall represent the key performance logistic indicator since its scope is to measure shipments performed in a complete way and on-time. A shipment effected by whatsoever failure in the completeness (not performed, partially performed, performed with wrong items) or effected by delays shall be considered a failed shipment.

Therefore this formulation of Order fill Rate (OFR) includes two sub-indicators:

1. Complete deliveries (Picking precision)
2. On time deliveries. (Delivery punctuality)

The OTIF (on time in full rate) is the value of deliveries both complete and in time

- Order fill rate (OFR) = value delivered OTIF (on time in full) / total value delivered.

In case 3PL Provider is not responsible for the complete perimeter described in 9.2, the two indicators of completeness and punctuality shall be adjusted to the perimeter of scope (e.g. delivery punctuality at the platform gate instead of at the secondary warehouse gate in case transport is out of scope)

- Inventory & operation accuracy

- Warehousing Reliability (WR) = right stock allocation / total verified¹¹ stock allocations
- Differences number DN = number of codes without differences / total verified codes

¹¹ Verifications shall be done through sample controls. Samples shall cover at least 10% of the analysed dimensions. ¹² i.e. for Order fill rate considering deliveries done with 90% picking precision and 90% punctuality as correctly performed. Ranges shall be proposed by Local ND units and accepted by Network Development.

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- Differences entity DE = (Inventory value – Value of inventory with differences) / Inventory value

• Transport Monitoring

- TM = GPS-tracked routes / total routes verified

As a general rule, Enel aims for these Key Performance Indicators to reach 99% target in a medium-term timeframe.

Local ND units shall set acceptability ranges¹² for each indicator also in consideration of the impact over 3PL bidding prices.

The targets applied to 3PL Provider in each Country shall be defined by Local ND units and approved by Global ND in the phase of preparation of Technical Specifications for 3PL Provider.

2. *SLA – Minimum requirements & Standards*

SLA shall include other minimum requirements & standards that the 3PL Provider shall respect.

3PL Provider shall respect all the Health, Safety and Environment procedures of Enel Group which shall be reflected in 3PL Provider Contract.

As a general rule, systems and tools connected with the "full-traceability target" shall be considered minimum requirements and therefore included in the Technical Specifications:

- WMS – Warehouse Management System in association with automated warehouses to control movement and storage within the platforms, including visibility of warehouse location of each single material
- Transportation fleet shall be equipped with GPS in order to guarantee a real-time tracking of the deliveries (each delivery shall be associated to a GPS-tracked transportation) and a route storage for each performed delivery.

TMS – Transportation Management System – to optimize transports from platforms to other warehouses shall be considered an advantage but not mandatory.

The above listed systems shall be fully compliant and linked with Enel SAP infrastructure.

3PL Provider shall have all the equipments necessary to implement a full reading of barcode/passive RFID within the platforms and in general for the exploitation of the logistic service.

As a general rule, other minimum requirements to be included in SLA are:

- Assurance covering materials stocked in platforms and during the transportation service
- Recent transportation fleet and operative machinery in platform (i.e. newer than 5 years)

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- Transportation fleet respecting relevant environmental standards
- Real-time and storage (at least 3 months) video surveillance in the platform
- Motion detection system in the platform and anti-intrusion barriers (e.g. infrared + ultrasound) in the platform.

Penalty scheme of Third Party Logistics Provider

Main objective of the Penalty scheme shall be *in primis* to improve 3PL Provider performances (as per the definition in SLA – Performance) and, at the same time, penalize any violation to SLA - Minimum requirements & Standards.

As a general rule, penalty scheme shall be set up in the following four categories:

- Non-respect of Performance targets
- Serious faults in fulfillment of Contractual obligations
- Deficiencies in fulfillment of Contractual obligations
- Lack of reporting.

In case of missed performance targets, 3PL Provider shall receive a penalty for each target not reached calculated as a multiplication of the entity of the violation by a unit fee (unit fee is a percentage of contract value, with increasing percentages with the range of violation).

This component of Penalties scheme shall be considered substantial with the aim of encouraging 3PL Provider to deliver strong performances.

Typical serious faults in fulfillment of Contractual obligations are:

- incorrect use of HSE procedures in the platform operation
- platform not ready at the commencement date of the contract.

In case of serious faults in fulfillment of Contractual obligations, 3PL Provider shall receive a penalty for each obligation not respected calculated as a percentage of the contract value.

Typical deficiencies in fulfillment of Contractual obligations are:

- Incomplete functionalities with respect to contractual terms in WMS / TMS systems
- Use of vehicles with registration date older than the contractually agreed
- Use of operative machinery older than the terms contractually agreed
- Use of transportation fleet non-respecting relevant environmental standards
- Lack of satellite controlled fleet

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- Lack of or incomplete assurance
 - Lack of video surveillance in the platform
 - Lack of motion detection system in the platform
 - Lack of anti-intrusion barriers (e.g. infrared + ultrasound) in the platform.

In case of deficiencies in fulfillment of Contractual obligations, 3PL Provider shall receive a penalty for each obligation not respected calculated as a percentage of the contract value. The percentage applied in deficiencies shall be smaller than the percentage of serious faults.

In case of lack of reporting, 3PL Provider shall receive a fine.

Local ND units, according with Global ND, shall evaluate the design of specific incentivizing schemes (e.g. bonus or reduction of penalties) in order to improve the 3PL Provider performances during the years of contractual duration.

9.4 OPERATING MODEL OF THE SECOND LAYER WAREHOUSES

Second layer warehouses shall be managed by the entities in charge of the grid operational activities (operation, maintenance, new infrastructures development): Enel and Contractors.

The network of Enel workforces and Contractors shall be optimized with the aim of covering the territory through dedicated multizonal – multiservice contracts.

Enel workforces on the territory (if present) and Contractors shall provide warehouses¹², periodically replenished by the Logistic Operator.

In any case Local ND units can decide to extend the perimeter of 3PL Provider also to secondary warehouses on the basis of a cost/benefit analysis.

As a general rule, activities included in the standard perimeter of secondary warehouses shall be:

- management of inbound materials delivered from platforms or directly delivered from Suppliers
- warehousing (handling, cross-docking)
- simplified picking activities
- contribution to reverse logistic flows (as per description in chapter 10.8)

¹² Enel network of secondary warehouses shall typically reflect Enel structure on the territory. Each Contractor shall make available a warehouse (one for each specific O&M Contract in force).

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- • treatment of waste packages in accordance with Country's environmental laws
- inventory of materials (cfr. 10.6).

Local ND units shall ensure the correct execution of the above mentioned activities and shall take all the necessary measures to assure an optimal execution of the direct and reverse logistics processes which involve secondary warehouses (as per the detailed description of processes reported in chapter 10).

Targets oriented to optimal warehousing and precision of inventory shall be reported in O&M contracts for warehouses managed by Contractors.

10. PROCESSES OF DIRECT AND REVERSE LOGISTICS

Local ND units shall implement in the optimal way, direct and reverse logistic flows, in order to guarantee the effective, in-time delivery of materials to final worksites and to assure recollection of specific materials back to the platforms, minimizing the overall stock allocation.

Main processes related to direct flows described in this chapter are:

- Short-term planning of materials needs
- Deliveries and transfers of materials
- Inbound delivery registrations
- Material handling
- Outbound delivery registrations
- Inventories in platforms and secondary warehouses.

Main processes related to reverse flows described in this chapter are:

- Recovery material reverse flow
- Drums reverse flow.

10.1 SHORT-TERM PLANNING OF MATERIAL NEEDS

This process is aimed at defining short-term material needs (considering Annual Need Plan which is the result of long term annual material planning and any relevant update from RLOUs) in order to put in place all the necessary steps for Suppliers' contract activation up to the materials' delivery to the correct platform.

Local ND units shall manage the contracts for materials supply issuing purchase orders for materials in Enel system and manages schedules and destinations of delivery.

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The general description hereby presented is valid for M1, M2 and M3 materials (cfr. 7.2).

Description of the process

Local ND units shall ensure with the necessary prior notice (in consideration of Suppliers' lead-time) all the actions needed to obtain an in-time delivery of materials for final usages.

As a general rule, management of material contracts shall be done in accordance with the following steps:

- STEP 1 – planning of needs and subsequent alignment with Suppliers
- STEP 2 - Purchase Orders (POs) emission to Suppliers and deployment.

STEP 1 – planning of needs and subsequent alignment with Suppliers

As a general rule, Local ND units shall collect from RLOUs any special requirements against planned business needs (performing possible optimization among substitute materials¹³, neighboring areas and warehouses) and with the aim getting an updated view of next months material needs.

Local ND units shall determine in advance net monthly needs starting from Annual Need Plan which is the result of long term annual material planning.

This result, elaborated by Local ND units, shall net in-Country stock availabilities and shall take into account:

- backlog of POs issued
- remaining capacity on existing contracts
- stocks.

Net monthly need shall be calculated with the target of maintaining in platforms an Optimal Stock Level (cfr. 10.7) for each material after the deployment phase.

Local ND units shall use the net monthly need to allocate needs to the Supplier, in consideration of the active contracts and their effective usage. If applicable, these needs shall be communicated in advance to Suppliers, including delivery points (if already known). This action allows the Supplier to have a short term view in advance of Enel orders (longer than one month), starting the production accordingly to have an ontime final delivery.

In general, the short term planning for HV materials should consider a longer planning timeframe because of longer production lead-times for this kind of materials with comparison to other distribution materials.

¹³ Substitute materials in accordance with "Substitute matrix" elaborated by each Local ND units: this matrix shall identify substitute products for each material.

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Business Line: *Infrastructure and Networks***STEP 2 - Purchase Orders (POs) emission to Suppliers and deployment**

Considering contract conditions and typical production lead-time, Local ND units shall create a delivery plan for M1 materials for each platform, secondary warehouses (for M2 – M3 materials) or to worksites (for M4 materials), proceeding with the issuance of POs to Suppliers.

Deployment is the process of definition of materials transfers to secondary warehouses.

Deployment of materials for secondary warehouses shall be done with the aim of respecting the Optimal Stock Level (for each warehouse and for each material) and to guarantee the availability of materials to be used for worksites activities, at least until a new delivery is planned.

The process shall be in general a *pull-process*, with re-ordering of materials / transfers from main platforms when the stock level in secondary warehouses is below the Optimal Stock level (cfr. 10.7).¹⁴

For all secondary warehouses (Enel / Contractors), Transfer Orders TOs shall be emitted by RLOUs in order to satisfy business needs maintaining stock level equal to Optimal Stock Level for the specific warehouse and materials (cfr. 10.7).

10.2 DELIVERIES AND TRANSFERS OF MATERIALS

As a general rule, all deliveries and transfers of materials between platforms and warehouses, among platforms and among warehouses shall be defined and managed by Local ND units as per the process described in 10.1.

Global ND shall evaluate in case of needs, specific cross-country transfers, monitoring transfer' execution.

In case of oversize load transportation or material with specific transportation needs, Local ND units shall verify with Global Network Technologies the correct application of dedicated transportation procedures.

As a general rule, main deliveries and transfers shall be managed with the following allocation of responsibilities:

- from Supplier to platform: operated by Supplier; exceptionally and when economically advantageous, Local ND units can order transfers operated by 3PL Provider
- among platforms: operated by 3PL Provider
- from platform to secondary warehouses: operated by 3PL Provider (assuming this is the most convenient solution to assure full traceability of materials across the logistic chain). Exceptionally Local ND units can decide to allow workforces (Enel or Contractors) to collect materials directly from platform, when this is considered more convenient.

¹⁴ Exceptions shall be allowed in case of implementation of a model completely based on actual needs and not historical consumptions (cfr, 10.7)

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- among secondary warehouses: operated by entities in charge of second warehouses management (Enel or Contractors).

Local ND Unit shall ensure the complete traceability of materials during all transfers.

Delivery of materials from Suppliers to platforms – M1 materials

This process shall apply to M1 materials, delivered from Supplier to platforms.

Following the reception of a PO, the Supplier shall prepare the materials to be delivered.

During this phase the Supplier must carry out Acceptance tests in accordance with Enel – HSEQ requirements and prescriptions. Enel can send delegates to witness the execution of acceptance tests.

The Supplier shall inform in advance Enel references in platforms about the proposed delivery date (including also bill of quantities and volumes shipped) and then shall prepare consequently the materials to be transported.

Enel references in platforms, after checking the documents received from the Supplier, shall give the authorization to the Supplier to proceed with the shipment, informing also 3PL Provider of the agreed delivery.

The 3PL Provider, at the receipt of materials, shall perform the following checks:

- Check of Transportation Document (TD) – where applicable
- Check of coherency with related PO
- Check of Acceptance Tests documents included in the transportation – when applicable
- Visual integrity of the materials (included, when indicated from Local ND units, also checks on packaging coherence with technical specifications).

In case of discrepancies, 3PL Provider shall inform immediately Enel delegates in Platform (if present) or Local ND units in order to ensure appropriate actions according with Global Infrastructure and Networks Components and Materials Quality guidelines.

In order to have a univocal traceability of materials, a specific code (barcode, RFID, QR code) shall be applied in advance from Supplier to all shipments (in accordance with Enel standards). In case this will not be possible, the operation shall be done by 3PL Provider in the platform.

After these checks, the materials shall become part of Enel stock through an Inbound Delivery registration (cfr. 10.3).

Local ND units shall implement schemes of Supplier's delivery oriented to the reduction of working capital (e.g. model of “*consigna*” in some Countries) in accordance with Country laws and restrictions.

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This process shall be the same also in case of delivery of materials from Supplier to secondary warehouses.

Transfer of materials from platform to secondary warehouse – M1 materials

As a general rule, transfer of materials between platforms and secondary warehouses shall be activated by Local ND Unit and performed by 3PL Provider.

Transfers of materials from platforms to secondary warehouse shall take place, following a schedule agreed among Local ND units, RLOUs, platforms and warehouses.

RLOUs, considering the plan for O&M activities and the platform – secondary warehouse deliveries calendar, shall issue TOs, in accordance with the process described in 10.1.

Enel reference in the platform, considering TOs coming from secondary warehouses, shall prepare Outbound Deliveries (cfr. 10.5) for the materials and the 3PL Provider shall be responsible for the picking process, completing Outbound Deliveries registrations.

3PL Provider shall prepare the Transportation Documents, informing in advance the secondary warehouse of the coming delivery, therefore 3PL shall deliver the materials accordingly.

Transfer of materials among platforms

Local ND units can transfer materials among platforms, when this is – for particular reasons – more convenient than the normal delivery from the Supplier.

As a general rule, transfer of materials among platforms shall be activated by Local ND units and performed by 3PL Provider. In case of different 3PL Provider, Local ND units shall select the most effective and less expensive solution.

International transfers among platforms shall be under the responsibility of Global ND which shall verify, through involved LNDs and 3PL Providers, feasibility and cost of the transfer, also in comparison with other international logistics companies. After these checks, in case of feasibility, Local ND units shall support NDs to coordinate the international transfer among platforms.

Delivery of materials directly to secondary warehouses/worksites

As a general rule, M2 and M3 materials (cfr. 7.2) shall be delivered directly to secondary warehouses (Enel and Contractors) or to worksites (M4).

The Supplier shall inform in advance relevant RLOU about the delivery and then prepare the materials to be transported.

RLOU shall be responsible of authorizing the Supplier to the delivery. RLOU shall also benefit of consignment stock procedures, if necessary.

Following the shipment done from the Supplier, reception of materials in Enel secondary warehouses / worksites managed by Enel personnel shall be done in accordance of the following steps (done by Enel reference):

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-
- Check of Transportation Document (TD) – where applicable
 - Check of coherency with related PO
 - Check of Acceptance Tests documents included in the transportation – when applicable
 - Visual integrity of materials (included, when indicated from Local ND units, also checks on packaging coherence with technical specifications).

In case of discrepancies, Local ND units shall ensure appropriate actions according with HSEQ guidelines.

Same checks shall be performed by the Contractors in case of delivery to Contractors' secondary warehouses / worksites managed by Contractors. Contractors shall send a copy of Transportation Document TD (where applicable) within 24h from the delivery to relevant RLOU. In case of discrepancies during the checks at the receipt of materials, Contractor shall inform immediately Local ND units. It shall be under the responsibility of Local ND units ensure appropriate actions according with Global Infrastructure and Networks Components and Materials Quality guidelines.

M2 – M3 materials delivered to secondary warehouses (Enel or Contractors) shall become part of Enel stock though an Inbound Delivery registration (cfr. 10.3), to be done by RLOU both for Enel and Contractors' warehouses. M4 materials, directly delivered to worksites, shall not become part of Enel stock but shall be directly assigned to works.

Transfer of materials among secondary warehouses

In case of lack of materials in the secondary warehouses for the execution of O&M activities, RLOU can verify the availability of materials in other secondary warehouses of the surrounding area and can decide the transfer among secondary warehouses, in case this is objectively more convenient than the transfer from the platform.

RLOU shall inform Local ND units about this decision in advance and the related stocks shall be updated by RLOU accordingly (through Outbound and Inbound delivery registrations).

As a general rule, transfer of materials among secondary warehouses shall be performed by the entities managing secondary warehouses (Enel or external Contractors).

Considering the availability and the delivery calendar from platforms, RLOUs can decide to transfer material from another secondary warehouse in the area.

10.3 INBOUND DELIVERY REGISTRATION

Inbound Delivery process enables Enel to register delivered materials in its stock and to prove the actual delivery from the supplier (pre-requisite to allow supplier bill payment).

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As a general rule, inbound delivery registrations shall be under the responsibility of Enel references¹⁵ and RLOU¹⁷ and shall be done through the use of Enel IT systems. In case Enel references not present in platform, 3PL Provider shall be entitled to register inbound deliveries only in WMS and using dedicated interfaces to dialogue with Enel systems. The transactions shall become effective in Enel systems only after an approval from Enel personnel.

The material delivery transportation document shall always include also the Material Quality Approval (FAT), without it the material could not be accepted in the logistic platform and to any other delivery point.

In case of partial acceptance due to damaged material, an inbound delivery registration shall be done only for the non-damaged materials.

All deliveries shall be monitored with the aim of calculating any delay in respect to contractual delivery dates and reported in consideration of Penalties Management process.

Results of this monitoring shall be considered in Vendor Rating.

10.4 MATERIALS HANDLING

Handling of material (including picking) within platforms shall be done by 3PL Provider.

Handling of materials in secondary warehouses shall be done by the entities managing the secondary warehouses (Enel/Contractors).

10.5 OUTBOUND DELIVERY REGISTRATIONS

Local ND units shall communicate on a daily basis the schedule of material to be transferred to other warehouses with quantity, deadline and destinations.

As a general rule, creation of Outbound Delivery documents shall be performed by Enel (Enel references in the platform or RLOU for secondary warehouses). In case Enel references not present in platform, 3PL Provider shall be entitled to register outbound deliveries only in WMS and using dedicated interfaces to dialogue with Enel systems. The transactions shall become effective in Enel systems only after an approval from Enel personnel.

Local ND units shall assure a complete traceability of materials across the different stages of the logistic chain.

As a general rule all the materials stocked in each layer (platforms and secondary warehouses) must be accounted as stock, independently from the final usage (even materials already assigned to particular works and needs but stocked in platforms or secondary warehouses must be considered part of Enel stock, therefore registered in Enel systems as quantity and value).

Platforms

¹⁵ For deliveries to platforms and for deliveries to secondary warehouses, in this second case inbound delivery registrations shall be done simultaneously to outbound delivery registrations. ¹⁷ For deliveries to secondary warehouses (Enel or Contractors).

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As a general rule, Enel references shall prepare Outbound Delivery documents according with the calendar of platform's deliveries.

Enel references shall register the stock variation (updating platform stock and, consequently, second level warehouses stocks).

In case Enel references not present in platform, 3PL Provider shall be entitled to register outbound deliveries only in WMS and using dedicated interfaces to dialogue with Enel systems. The transactions shall become effective in Enel systems only after an approval from Enel personnel.

Secondary warehouses

As a general rule all materials picked from secondary warehouses for specific activities and works shall be promptly registered in outbound deliveries and, therefore, deducted from Enel stocks.

Enel or Contractor workforces in worksites shall register quantities and materials used for field activities immediately after the usage. These registrations shall be verified daily by RLOU (in charge of the area where the secondary warehouse is located) which shall authorize the corresponding Outbound Delivery registration.

In order to have an on-line attribution, Enel or Contractor workforces can be equipped with portable devices (i.e. palmtop).

The Outbound Delivery registration shall be completed by RLOU within one day from the receipt of list of used material from Enel workforces / Contractors.

Main target of these Outbound Delivery registrations is to get a precise visibility of stock present in secondary warehouses and of materials installed in worksites.

In the transient phase, it shall be responsibility of Local ND units to put in place concrete actions to assure the complete traceability of materials stocked in secondary warehouses and installed in worksites.

10.6 INVENTORY IN PLATFORMS AND SECONDARY WAREHOUSES

The aim of this policy is to obtain an high accuracy of stocks located in all warehouses of the logistic infrastructure and a complete alignment between physical stocks and registration in Enel systems.

As a general rule, inventories shall be done in platforms at least twice a year and at least once at year in secondary warehouses (Enel and Contractors), Inventory calendar should be defined according with local laws and regulations.

An Operative Instructions for the correct performance of inventories shall be issued by Local ND units at country level.

Besides yearly inventories, each six months Local ND units shall select some secondary warehouses for performing inspections on specific materials or for performing complete inventories.

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Inventory shall start with the definition of a program of checks to be performed during the following year.

Local ND units shall schedule, together with 3PL Provider, date and duration of the inventory; the inventory shall be performed by 3PL Provider, under the supervision of Enel references.

Local ND units shall validate inventory results and deviations and for charging penalties to 3PL Provider, when applicable (cfr. 9.3).

Differences in the inventories due to thefts shall be communicated to the relevant Authorities from Local ND units supported by the relevant Country Security, as soon as this issue comes to light. 3PL Provider shall be deemed responsible of the lack of materials and this shall be charged to 3PL Provider in accordance with contractual conditions.

Secondary warehouses

Inventory shall start with the definition of a program of checks to be performed during the following year. This document shall be prepared by Local ND units and sent to the people in charge of secondary warehouses.

Local ND units shall define with entities in charge of secondary warehouses operation (Enel references or Contractors) a date for performing the Inventory.

Entities in charge of secondary warehouses operation shall be responsible of closing the final registrations of materials used in worksites as a preliminary activity before starting the inventory procedures.

Dedicated inventories shall be performed by Local ND units at the due date of Contractors' cooperation with Enel. Materials present in Contractor's warehouse shall be counted and transported back to platform as recovery materials (cfr. 10.8).

Differences in the inventories due to thefts shall be communicated to the relevant Authorities from Local ND units supported by the relevant Country Security, as soon as this issue comes to light. 3PL Provider shall be deemed responsible of the lack of materials and this shall be charged to 3PL Provider in accordance with contractual conditions.

10.7 OPTIMAL STOCK LEVEL & VOLUMES OF POs/TOs

As a general rule for platforms, Optimal Stock Level for each materials is defined according to the relevant safety level calculated considering supply lead time and variance of consumption.

As a general rule, Optimal Stock Level for secondary warehouses shall be calculated according with:

- Deterministic needs and usage of material for each single activity scheduled and assigned
- Statistic needs according with the historical usages.

A local procedure shall be issued by Local ND units for the definition of Optimal Stock Levels for each materials class and for each warehouse layer.

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Local ND units shall identify the right mix of the two above mentioned components with the aim of optimizing the service level, while reducing stock.

The above mentioned standard procedure for the calculation of Optimal Stock Level shall consider also the SMI – NMI – FMI clustering (cfr. 7.2), with the aim of optimizing the level of stock.

With the aim of increasing the overall Inventory Turnover Index, materials in the SMI cluster¹⁶ shall be subject to periodical adjustment of the Optimal Stock Level (reduction of n months of standard consumption or in the safety level), oriented at reducing progressively stock.

Materials permanently in SMI cluster shall be subject to obsolescence procedures. Local ND units shall activate the relevant procedures jointly with Administration, Finance and Control units.

Virtual warehousing

Analysis of SMI – FMI (Slow Moving Inventory – Fast Moving Inventory) shall be applied from Local ND units also with the target of identifying cluster of materials eligible for "virtual warehousing" applications.

Virtual warehousing techniques shall be used with the aim of lightening working capital needed.

In virtual warehousing, there's a fast procedure for orders placing to accredited Suppliers which can store the materials in own warehouses and deliver it promptly and directly to secondary warehouses or worksites. It's crucial to have a list of accredited Suppliers which have demonstrated to have the internal capabilities to deliver materials Just in Time, with very stringent SLA (i.e. delivery in 12h).

Local ND units shall perform a feasibility analysis on the introduction of Virtual Inventory, sharing the results with Global ND.

10.8 REVERSE LOGISTIC FLOWS

Reverse logistic flows shall be introduced with the objective of recollecting in platforms:

- materials in excess to be stored back in platforms
- broken materials to be repaired
- residual materials with a market value which can be sold
- obsolete material for technological or regulatory changes
- waste materials to be disposed.

¹⁶ Emergency materials shall be excluded from the application of these techniques and shall be stored in accordance with Country prescriptions and regulations, under the responsibility of Local ND units.

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Local ND units shall set up reverse logistic flows on the basis of cost/benefit evaluations for each materials. Global ND could integrate the costs/benefit evaluations with a cross-country perspective.

Considering the implications of these reverse flows under an environmental and economic point of view, Local ND units shall maintain a close supervision over the flows, also in the case of outsourcing decisions.

Detailed description of reverse logistic flows for recovery materials and drums is hereby presented.

Recovery materials

Local ND Units shall ensure the optimal performance of reverse flows for materials recovered from secondary warehouses and worksites according with the following standard status classification:

- new or new-equivalent: materials ready to be used in other construction sites
- revision needed: materials to be used only after revision/restoration
- materials to be disposed.

The following approach shall be used for the management of the recovery materials:

- New or new-equivalent materials shall be transferred to a platform and reused (transfer operated by 3PL Provider, in the way back of the normal direct logistic flow).
- Revision needed materials: in case the materials is repairable, a maintenance process shall be activated (if economically advantageous). After the maintenance the materials shall be considered new-equivalent. In case the maintenance process is not economically advantageous, the materials shall be considered materials to be disposed. For transformers, PCB values shall be considered to decide special transports and to include a decontaminating phase in advance with respect to maintenance.
- Materials to be disposed: the materials shall be considered waste, except the case in which the materials has a residual market value. In this second case the materials shall be sold. Disposal of waste shall be done in accordance with all environmental laws in force.

Local ND units shall ensure that the transportation of PCB contaminated transformers takes place in accordance of any specific country environmental law in force.

Drums

Local ND units shall define the optimal solution for drums management, based on a cost-benefit analysis.

In particular Local ND units shall estimate drums volumes and selling prices to Suppliers or dedicated companies and related volumes, considering also costs associated to reverse logistics (impact on 3PL prices, effort of Enel people in the process, etc).

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As a general rule, inbound deliveries registrations for cables in platforms or other warehouses, shall trace also the presence of the relative drum in order to assure the traceability of this material.

Empty drums shall be collected from by entities in charge of the operation of second layer warehouses from worksites to second layer warehouses (an Inbound Delivery registration shall be done accordingly).

3PL Provider, in the way back of the normal direct logistic flow, shall collect empty drums back to platforms.

Enel references in platforms shall be responsible of identifying the correct drums' treatment in consideration of the materials status and following Local ND units prescriptions.

In case of contractual agreements with the Supplier or with specialized companies Enel references in platform shall be responsible of agreeing with Supplier an access to the platform for the recollection of used drums.

In the other cases drums shall be treated as waste and correctly disposed.

11. LOGISTICS COSTS AND PERFORMANCES

Local ND units shall establish and execute a measurement KPI scheme with the aim of having under control costs and performances of the Country logistic infrastructure, managed in accordance with this Guideline and defined as described in the attachment "Instruction for KPI data compilation" Global ND shall ensure global monitoring of logistic costs and performances, identifying initiatives and corrective actions for best practice sharing among the Countries.

11.1 COST OF THE LOGISTIC INFRASTRUCTURE

As a general principle, Logistics' costs which Local ND units shall measure cover the overall Logistics infrastructure:

- first level warehouses
- second level warehouses
- Enel local Logistics team.

These costs include:

- Cost of the 3PL Provider (with details on warehousing, operations and transports)
- Cost of Enel people dedicated to Logistics (full-time and part-time)
- Rental costs for second layer warehouses (to be explicitly mentioned in O&M Contractors standard contracts)
- Rental of equipment dedicated to Logistics

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- Other warehousing and transportation costs¹⁷
- Other fixed or variable costs dedicated to Logistics.

With a particular focus on 3PL Provider, Local ND units shall monitor the parameters on which the remuneration of the Provider is based (cfr. 9.3).

Global ND shall benchmark logistic costs among different Countries and share it with Local ND units. In order to have comparable indicators, costs will be normalized considering other business dimensions, such as:

- ELU managed - Homogenized quantity of stock managed through platforms
- Logistic flow value - Value of stock managed through platforms
- Stock value - Value of stocked inventory (Working capital)

11.2 PERFORMANCE OF THE LOGISTIC INFRASTRUCTURE

As a general principle, Logistics' performance indicators measured from Local ND units shall cover different areas:

- First level warehouses
- Second level warehouses
- Overall Country Logistics performance.

The details for type of datas collecting for sending to Global ND is describe on ANNEX: "KPIs data compilation guideline"

Logistics performances shall be measured along different metrics:

- Working-capital
- Quality of service
- Logistic Cost
- Stock volume.

¹⁷ Not included in 3PL Provider or in Contractors perimeter

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KPIs related to Working-capital metric shall be:

- First level stock rotation (n°)
- MT/BT First level stock rotation (n°)
- Out of stock (rate & impact) (%)
- Fast Moving Inventories (%)
- Slow Moving Inventories (%)

KPIs related to Quality of Service metric shall be:

- Order fill rate (deliveries complete and on- time) (%)
- Complete deliveries rate (%)
- On-time deliveries rate (%)
- Inventory accuracy rate (%)
- Inventory accuracy impact (%)

KPIs related to Logistic cost shall be:

- Unit cost of Logistics (% of total log. Cost)
- Unit Infrastructure cost (% of total log. Cost)
- Unit Handling cost (% of total log. Cost)
- Unit Transport cost (% of total log. Cost)
- Unit Cost of internal personnel employed (% of total log. Cost)

KPIs related to Stock volume shall be:

- Stock at the end of period (value)
- Average stock (value)
- Total Logistic flow (value)
- Total Stock available (number of month of stock available):

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11.3 MONITORING PROCESS

Local ND units shall monitor the performance of the logistic infrastructure, keeping the costs under control, through quarterly analysis of the KPIs mentioned in 11.1 and 11.2.

With this objective, Global ND shall collect automatically from Enel systems the complete set of measures uploaded from Local ND units.

In the transition period, waiting the complete alignment among Enel SAP systems, Global ND shall receive quarterly¹⁸ from Local ND units the complete set of measures, as per dedicated Country data requests formats, as described in Annex (cfr. 12).

In case of specific needs, Local ND units could perform jointly with Global ND a deep dive analysis in order to identify improvement activities.

As a general rule, Global ND shall communicate the results of the monitoring and best practices to Local ND units each quarter. A specific calendar could be defined according with local laws and regulations.

12. RELATED ORGANIZATIONAL DOCUMENTS TO BE IMPLEMENTED AT COUNTRY LEVEL

This document does not require implementation at organizational level or of further organizational documents at Country level

¹⁸ Q1 by April, 15 - Q2 by July, 15 - Q3 by October, 15 - Q4 by January, 15

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13. ANNEX: KPIS DATA COMPILATION GUIDELINE

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This Instruction aims at defining the guidelines for the logistic data extraction and successive KPI computation of the logistic chain services in support to the Global Infrastructure and Networks Business Line.

1. DEFINITION

KPI (Key Performance Indicator): acronym that indicates a coefficient obtained from the analysis of elementary factors of the process by which it's possible to monitor a business process progress.

Supplier: Entity responsible for the manufacturing/production of material

Supply Logistic Chain: system of organizations, people, and resources involved in moving a material to a contractor.

SLA: Service Level Agreement

Contractor: Entity in charge of activities on the network (both for new installations both for maintenance) as per the mandate of a multiarea – multiservice contract in force

3PL: Third-party Logistics service provider

FMI: Fast moving inventory

SMI: Slow moving inventory

2. PERIMETER OF THE KPI CALCULATION

Local ND units shall monitor the performance of the logistic infrastructure, keeping the costs under control, through monthly analysis of the KPIs defined at local level. In the same time, according with the policy n. 39, Global ND has defined a global logistic KPI's to collect from all the countries using a data template for each set of measures. After the data analysis, check and consolidation in a global GI&N KPI's dashboard (as is described in the next paragraph), Global ND jointly with each local ND unit shall be define any recovery actions.

Global ND shall receive periodically from local ND the complete set of measures and KPI (using the dedicated Country data request template). The KPIs analysis period defined is quarterly:

- Q1 KPIs data at end of March;
- Q2 KPIs data at end of by June;
- Q3 KPIs data at end of September;
- Q4 KPIs data at end of December;

The required information shall sent to Global ND within maximum three weeks from the end of reference period (Q).

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As a general rule, Logistics' performance indicators measured from local ND shall cover:

- Logistic network levels:
 - First level warehouses
 - Second level warehouses
 - Overall Country Logistics performance.
- Logistics performances:
 - Working-capital
 - Stock volume
 - Quality of service.
 - Logistic cost

2.1. DATA MANAGEMENT (COLLECTING, EVALUATION, VALIDATION AND STORAGE)

Global ND is in charge of collecting all the logistic data from Local ND with the schedule indicated.

In order to receive the correct information required, the data request sent by global ND is done using a template that refers to this operating instruction. After the data collecting, Global ND shall perform the following steps:

- completeness of the data check (sending any missing data request);
- data coherence check according with the previous periods one and any other information available to Global ND;
- cross data coherence;
- validation data analysis;
- global logistic dashboard preparation and sharing with Global ND head and all the local ND heads; - action plan definition jointly with each country regarding the critical KPI's;

In order to perform this process, clarifications will be asked to Local ND that shall reply in order to correct or justify the given data promptly.

After the validation and consolidation phase, all the data shall be charged in a Global GI&N KPI dashboard shared with Local ND in order to evaluate the performance level and relevant recovery actions.

All the received series of data (together with eventually modifications and clarification) and the consolidated dashboard shall be collected and stored in a dedicated folder of Global ND repository shared area.

3. KPI DESCRIPTION

KPIs related to Working-capital metric are:

First level stock rotation (n): the stock rotation index expresses the number of time the stock is renewed. A high rotation stock reduce the losses from deterioration and obsolescence in the period in analysis

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MT/BT First level stock rotation (n): like first level stock rotation index, but with focus on MT/BT material

Out of stock rate (%): is the percentage (considering the value and the number) of material not available in the first logistic layer. A high value expresses a low supply logistic liability due to a not correct inventory procedure or a not correct material demand planning process.

Fast moving inventory (%): value of all items (material codes) with stock rotation index upper than 5 time per year in first and second logistic layer.

Slow moving inventory (%): value of all items (material codes) with stock rotation index lower than 0,5 time per year in first and second logistic layer.

Fast and Slow moving inventory indicators are useful in order to organize the warehouse internal material allocation and represent a measure of how fast the stock is renewed.

In order to measure the business dimension some KPIs related to Stock volume metric shall be calculated:

Stock at the end of period (value): is the value of all material stock available in all logistic layers, including a value estimation of "Precio zero" stock (for the returned material) and "Imputado stock" if present in some country. This value shall also clustered as indicate in the next paragraph.

Average stock (value): is the material value average in a specific logistic layer in the rolling year period, including a value estimation of "Precio zero" stock (for the returned material) and "Imputado stock" if present in some country;

Total Logistic flow (value): is the value of all material moved in the first logistic layer (inbound, outbound, reverse flow);

Total Stock available (number of month of stock available): numbers of months of stock available in all logistic network layers considering the stock value respect to material accounted value expressed in local country currency (material accounted in the rolling year period (Capex + Opex) officially communicated to AFC/P&C). This value shall be also calculated respect to the second layer available stock separated for Enel warehouse (if any) and contractor's one.

KPIs related to Quality of service metric are:

Order fill rate (%): this is a value describes the logistic operator performance efficiency calculated considering jointly all the material deliveries performed "on time" and "full" (complete with all the material codes requested). The failure or delay in materials delivery can affect the delay or incapability to carry out the work on the network. The KPI shall consider jointly for first the value of all the order delivered complete and then considering the only the part of them delivered also on time.

- **Complete deliveries rate (%):** the general purpose of this KPI is to measure the deliveries quality and liability respect to the required quantity to deliver.
- **On-time deliveries rate (%):** the general purpose of this KPI is to measure the deliveries quality and liability respect to the scheduled delivery date

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Inventory accuracy rate (%): is the number of all inventory discrepancies (material code quantity) detected with a physical count. An high number express an inaccurate stock management

Inventory accuracy impact (%): is the value of all inventory discrepancies (material code value) detected with a physical count. An high value express an inaccurate stock management

KPIs related to Logistic cost are useful to compare logistic chain cost and efficiency in all the GI&N countries (where a logistic supplier is involved):

Unit cost of Logistics (% of total log. Cost): is the percentage of total logistic cost that affect the material moving management.

Unit Infrastructure cost (% of total log. Cost): is the percentage of the logistic infrastructure cost respect to the total logistic cost.

Unit Handling cost (% of total log. Cost): is the percentage of the material handling cost respect to the total logistic cost.

Unit Transport cost (% of total log. Cost): is the percentage of the material transport cost respect to the total logistic cost.

Unit Cost of internal personnel employed (% of total log. Cost): Is the percentage of cost for the logistic internal Enel employed (if any) with respect to the total logistic cost.

4. DATA INPUT DESCRIPTION

In the logistic data collection template are presents the following data request. All value the data input shall express in a local country currency, in Global ND in the consolidation phase, converted all the value in Euro applying the official exchange rate communicated by AFC (using also for the BIP):

F5 > Logistic inbound flow (m3): total material volume (expressed in m3) delivered by supplier to the first logistic layer (calculated summing the single material code volume managed inbound). This value for each single material code should be managed directly into the logistic operator WMS system and should be present also in SAP R/3 in a dedicated field in the material master data.

F6 > Logistic outbound flow (m3): total material volume (expressed in m3) delivered from first to the second logistic layer including also the reverse logistics flow (calculated summing the total (outbound and reverse) single material code volume managed). This value for each single material code should be managed directly into the logistic operator WMS system and should be present also in SAP R/3 in a dedicated field in the material master data.

F7 > Total order positions managed (number) for logistic outbound flow and reverse logistics flow: all the material orders position managed for deliver material from first to second logistic layer including reverse logistics flow position orders (e.g.: each order could include one or more positions); This number should be managed directly into the logistic operator WMS system and/or in SAP R/3.

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F8 > Total delivery order managed (number) for logistic outbound flow and reverse logistics flow: all the material orders managed for deliver material from first to second logistic layer including reverse logistics flow orders (without consider each single order position like F7); This number should be managed directly into the logistic operator WMS system and/or in SAP R/3.

F10 > Logistic inbound flow (value): total material value (expressed in local country currency) delivered by supplier to the first logistic layer (calculated summing the single material code value managed inbound). Each single material code value should be managed directly into SAP R/3 standard field in the material master data.

F11 > Logistic qua flow (value): total material value (expressed in local country currency) managed in outbound from the first to the second logistic layer without consider reverse logistics flow and movement between platform of first level (calculated summing the single material code value managed outbound). Each single material code value should be managed directly into SAP R/3 standard field in the material master data including “estimated” value for the “imputado” material code.

F11-bis > Logistic MT/BT outbound flow value (rolling year period): MT/BT material value (expressed in local country currency) managed in outbound from the first to the second logistic layer without consider reverse logistics flow and movement between platform of first level, calculated considering the rolling yearly value according with the Q period reference; (e.g.: for the 2Q 2017 the rolling period shall be the average stock value from 01.07.2016 to 30.06.2017).

F11-ter > Logistic outbound flow value (rolling year period): total material value (expressed in local country currency) managed in outbound from the first to the second logistic layer without consider reverse logistics flow and movement between platform of first level, calculated considering the rolling yearly value according with the Q period reference; (e.g.: for the 2Q 2017 the rolling period shall be the average stock value from 01.07.2016 to 30.06.2017).

F12 > Reverse logistic flow (value): total material value (expressed in local country currency) managed in inbound from the second to the first logistic layer (calculated summing the single material code value managed). This value for each single material code should be managed directly into the logistic operator WMS system and should be present also in SAP R/3 including “estimated” value for the “imputado” material code.

F13 > Average stock value (rolling year period): average stock value (expressed in local country currency), calculated considering the rolling yearly average value according with the Q period reference; (e.g.: for the 2Q 2017 the rolling period shall be the average stock value from 01.07.2016 to 30.06.2017).

F13-bis > Average MT/BT stock value (rolling year period): average MT/BT stock value (expressed in local country currency), calculated considering the rolling yearly average value according with the Q period reference; (e.g.: for the 2Q 2017 the rolling period shall be the average stock value from 01.07.2016 to 30.06.2017).

F14 > Stock value at the end of period: stock value (expressed in local country currency) at the end of period analyzed (in this value should include all the logistic layers, first and second, therefore including a value estimation of "Precio zero" stock (for the returned material) and “Imputado stock” if present in some country). Stock clusterization defined is:

- **F14-bis:** MT/BT material ;
- **F14-ter.:** Special Projects;
- **F14-quater:** Funded Projects;

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- **F14-quinquies:** AT material.

F15 > Total number of inventory lines inspected (number): sum of all inventoried material codes.

F16 > Total inventory lines inspected (value): total value, (expressed in local country currency), of all material codes.

F17 > Out of stock (number): sum of all the material deliver order lines, from first to second logistic layer, delivered without respect of standard lead time due to missing inventory (lack of material); This value should be managed directly into the logistic operator WMS system and should be present also in SAP R/3

F18 > Out of stock (value): value (expressed in local country currency) of all deliver order lines, from first to second logistic layer, delivered without respect of standard lead time due to missing inventory (lack of material); This value should be managed directly in SAP R/3

F19 > Stock devaluation (value): stock devaluation value expressed in local country currency, identified through inventory. Is the stock value of the depreciated material due to obsolescence, carelessness or wasting including transformers, meters, cable heads, etc.

The value to provide is the sum of depreciations effectuated in the considered the whole analyzed period. This value should be managed directly in SAP R/3.

F20 > Missing material (value): missing material value expressed in local country currency, identified through inventory that will be invoiced to logistic provider. This value has to be provided even if in the contract agreement is a quote that he has to be refund by logistic provider. This value should be managed directly in SAP R/3.

F21 > Fast moving inventory (value): value, expressed in local country currency, of all items (materials) in stock at the end of Q period reference, with rotation index upper than 5 time in the rolling year (e.g.: for the 2Q 2017 the rolling year shall be considered from 01.07.2016 to 30.06.2017).

F22 > Slow moving inventory (value): value, expressed in local country currency, of all items (materials) in stock at the end of Q period reference, with rotation index lower than 0,5 time in the rolling year (e.g.: for the 2Q 2017 the rolling period shall be the average stock value from 01.07.2016 to 30.06.2017).

F23 > Total cost of Logistics (value): cost of the logistic process, expressed in local country currency. This cost is the sum of all costs paid in order to manage the logistic process (should be sum of Infrastructure cost, Handling cost, Transport and Delivery Cost, Cost of internal personnel employed, any other costs; (F23= F24+F25 +F28+F29+F30)

F24 > Infrastructure cost (value): fix costs for dedicated physical logistic structure (e.g. buildings or infrastructure) and facility. (Provide an estimation in case that this value in not contractually contemplated)

F25 > Handling cost (value): cost expressed in local country currency of material handling in the first logistic layer that consider the inbound and outbound processes (provide an estimation in case that this value in not is not contractually contemplated). (F25 = F26 + F27)

- **F26: inbound operations cost:** cost expressed in local country currency of inbound operations (e.g.: materials reception). Provide an estimation in case that this value in not contractually contemplated

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- **F27: outbound operations cost:** cost expressed in local country currency of outbound operations (e.g.: materials picking). Provide an estimation in case that this value is not contractually contemplated.

F28 > Transport cost (value): total transport cost services expressed in local country currency, performed by logistic supplier or other provider or by contractor. Provide an estimation in case that this value is not contractually contemplated.

F29 > Cost of internal personnel employed (value): cost, expressed in local country currency, of people internally employed and allocated in logistic process (i.e.: logistic planning team, inspectors, warehousemen)

F30 > other costs (value): all any other costs, expressed in local country currency, not included in previous categories, if any;

F31 > Penalties issued value, expressed in local country currency, of all penalties issued for SLA unfulfilled by logistic provider.

F32 > Order fill rate (value): value (expressed in local country currency) of all orders delivered full and on time. The value shall be calculated considering the value of all the order delivered full (F33) and the order delivered on time (F34). All the orders delivered on time but partially, shall not be considered and also all the order delivered full but not on time shall not be considered. In first value calculation (order delivered full), the out of stock for reason not imputable to 3PL logistic provider (e.g. lack of materials in platform), shall not be considered:

- **F33 Complete deliveries:** value (expressed in local country currency) of all orders full/completely delivered (*quantities delivered are the same of each order requested*).
- **F34 On-time deliveries:** value (expressed in local country currency) of all orders delivered on-time (value of order material delivered according with the transfer order timing requested)

Therefore:

- $F32 = F33 = F34$ if all the material transfer orders were executed full and on time;
- $F32 \neq F33$ and $F34$ (where $F32$ is always $< F33$ and $F34$) when only a part of total material transfer orders were executed full and on time.

F35 > Inventory discrepancy (lines): number (n°) of all inspected lines with inventory discrepancies. Is the difference between the result of a physical count (at first level warehouse or at secondary level, contractor warehouse) and the result of SAP/R3 analysis.

F36 > Inventory discrepancy (value): value, expressed in local country currency, of all inventory with discrepancies detected. Is the difference between the result of a physical count (at first level warehouse or at secondary level, contractor warehouse) and the result of SAP/R3 analysis.

F38 > BIP material accounted (value): value expressed in local country currency, of the accounted material (Capex + Opex) in the rolling year according with the Q period reference; (e.g.: for the 2Q 2017 the material accounted value shall be considered the value from 01.07.2016 to 30.06.2017).

5. KPI FORMULA DESCRIPTION

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Starting from the collected data described in p.to 3 “Data input description” paragraph, **KPI** will be calculated by the following formulas:

5.1.KPI RELATED TO WORKING CAPITAL

As a general rule an optimal stock level have to be managed in platforms and second logistic level in order to avoid lack of material and, at the same time, Slow Material Inventory situation that can produce the necessity of obsolescence procedures. Working Capital KPI’s measured the stock optimization:

First level stock rotation (n): F11-ter Logistic outbound flow value (rolling year period) / F13 Average stock value (rolling year period)

MT/BT First level stock rotation (n): F11-bis Logistic outbound flow value (rolling year period) / F13-bis Average stock value (rolling year period)

Out of stock rate (%): “F17 Out of stock (material transfer order lines)” / “F7 Total order positions managed”

Fast moving inventory (%): F21 Fast moving inventory (value for the material code with Rot. Index > 5 in the rolling year period)” / “F13 Average stock value (rolling year period)

Slow moving inventory (%): F22 Slow moving inventory (value for the material code with Rot. Index < 0,5 in the rolling year period)” / “F13 Average stock value (rolling year period)”

5.2. KPI RELATED TO VOLUME

With the scope to measure the dimension of the logistic operations:

Stock at the end of period (value): is the same value of “F14 Stock value at the end of period”

Total Logistic flow (value): is the sum of: “F10 Logistic inbound flow value” + “F11 Logistic outbound flow value” + “F12 Reverse logistic flow value”

Average stock (value): is the same value of “F13 average stock value (rolling year period)”

Total Stock available (n. of month) is: “F14 Stock value at the end of period analyzed” / “F38 BPI Accounting Value (materials only) / 12)”

5.3.KPI RELATED TO THE QUALITY OF SERVICE

This indicator describes the logistic operator performance efficiency calculated considering jointly all the material deliveries performed “on time” and “full” (complete with all the material codes requested); Inventory and accuracy KPI represent the key performance indicators for to measure the Warehousing Reliability (WR).

Order fill rate (%): “F32 Order fill rate” / “F11 Logistic outbound flow value”

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Complete deliveries rate (%): "F33 Complete deliveries" / "F11 Logistic outbound flow value"

On-time deliveries rate (%): "F34 On-time deliveries" / "F11 Logistic outbound flow value"

Inventory accuracy rate (%): "F35 Inventory discrepancies (lines)" / "F15 Total number of inventory lines inspected"

Inventory accuracy impact (%): "F36 Inventory discrepancies (value)" / "F16 Total inventory lines inspected (value)"

5.4. KPI RELATED TO LOGISTIC COST

KPI with the aim of having under control costs of the Country logistic infrastructure, managed in accordance with this Guideline.

Unit cost of Logistics (% of total log. Cost): "F23 Total cost of Logistics" / ("F10 Logistic inbound flow value" + "F11 Logistic outbound flow value" + "F12 Reverse logistic flow value")

Unit Infrastructure cost (% of total log. Cost): "F24 Infrastructure cost" / "F23 Total cost of Logistics"

Unit Handling cost ((% of total log. Cost): "F25 Handling cost (within infrastructure)" / "F23 Total cost of Logistics"

Unit Transport cost (% of total log. Cost): "F28 Transport and delivery cost" / "F23 Total cost of Logistics"

Unit Cost of internal personnel employed (% of total log. Cost): "F29 Cost of internal personnel employed" / "F23 Total cost of Logistics"

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Service Function: -

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6. APPLICATION GRID
6.1. INPUT DATA APPLICATION GRID (lc = Local currency)

Code	Category	data input	UM	Application grid		
				Total	1st layer	2nd layer
F5	Volume	Logistic flow inbound (m3)	m3	Yes	Yes	No
F6	Volume	Logistic flow outbound (m3)	m3	Yes	Yes	No
F7	Volume	Total order positions managed	n°	Yes	Yes	No
F8	Volume	Total delivery orders managed	n°	Yes	Yes	No
F10	Volume	Logistic inbound flow (value)	lc	Yes	Yes	No
F11	Volume	Logistic outbound (flow value)	lc	Yes	Yes	No
F11-bis	Volume	Logistic MT/BT outbound flow value (roll. year period)	lc	Yes	Yes	No
F11-ter	Volume	Logistic outbound flow value (rolling year period)	lc	Yes	Yes	No
F12	Volume	Reverse logistic flow (value)	lc	Yes	Yes	No
F13	Volume	Average stock value (rolling year period)	lc	Yes	Yes	Yes
F13-bis	Volume	Average MT/BT stock value (rolling year period)	lc	Yes	Yes	Yes
F14	Volume	Stock value at the end of period	lc	Yes	Yes	Yes
F14-bis	Volume	MT/BT material	lc	Yes	Yes	Yes
F14-ter	Volume	Special Projects	lc	Yes	Yes	Yes
F14-quater	Volume	Funded Projects	lc	Yes	Yes	Yes
F14-quinquies	Volume	AT material	lc	Yes	Yes	Yes
F15	Volume	Total number of inventory lines inspected	n°	Yes	Yes	Yes
F16	Volume	Total value of inventory lines inspected	lc	Yes	Yes	Yes
F17	Stock	Out of stock (material transfer order lines)	n°	Yes	Yes	No
F18	Stock	Out of stock (value)	lc	Yes	Yes	No
F19	Stock	Stock devaluation (value)	lc	Yes	Yes	No
F20	Stock	Missing material (value)	lc	Yes	Yes	Yes
F21	Stock	Fast moving inventory (Rot. Index >5)	lc	Yes	Yes	Yes
F22	Stock	Slow moving inventory (Rot. Index < 0.5)	lc	Yes	Yes	Yes
F23	Cost	Total cost of Logistics (value)	lc	Yes	Yes	No
F24	Cost	Infrastructure cost (value)	lc	Yes	Yes	No
F25	Cost	Handling cost (value)	lc	Yes	Yes	No
F26	Cost	Cost of inbound operations (value)	lc	Yes	Yes	No
F27	Cost	Cost of outbound operations (value)	lc	Yes	Yes	No
F28	Cost	Transport cost (value)	lc	Yes	Yes	No
F29	Cost	Cost of internal personnel employed (value)	lc	Yes	Yes	No
F30	Cost	Other costs (value)	lc	Yes	Yes	No
F31	Cost	Penalties issued (value)	lc	Yes	Yes	No
F32	Quality	Order fill (value)	lc	Yes	Yes	No
F35	Quality	Inventory discrepancy (lines)	n°	Yes	Yes	Yes
F36	Quality	Inventory discrepancy (value)	lc	Yes	Yes	Yes
F38	Quality	BIP material accounted (value)	lc	Yes		

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6.2. KPI APPLICATION GRID (Ic = Local currency)

Category	KPI	UM	Application grid		
			Total	1st layer	2nd layer
Volume	Stock at the end of period (value)	Ic	Yes	Yes	Yes
Volume	Total logistic flow (value)	Ic	Yes	Yes	No
Volume	Average stock value (rolling year period)	Ic	Yes	Yes	Yes
Volume	Total stock available (n.of month)	n°	Yes	Yes	Yes
Working capital	First level Stock rotation	n°	Yes	Yes	No
Working capital	MT/BT First level Stock rotation	n°	Yes	Yes	No
Working capital	Out of stock rate	%	Yes	Yes	No
Working capital	Fast moving inventory	%	Yes	Yes	Yes
Working capital	Slow moving inventory	%	Yes	Yes	Yes
Logistic Cost	Unit cost of Logistics	%	Yes	Yes	No
Logistic Cost	Unit Infrastructure cost (% of logistic cost)	%	Yes	Yes	No
Logistic Cost	Unit Handling cost (% of total log. cost)	%	Yes	Yes	No
Logistic Cost	Unit Transport and delivery cost (% of total log. cost)	%	Yes	Yes	No
Logistic Cost	Unit Cost of internal personnel employed (% of total log. cost)	%	Yes	Yes	No
Logistic Cost	Unit Other costs (% of total log. cost)	%	Yes	Yes	No
Logistic Cost	Unit impact of Penalties issued	%	Yes	Yes	No
Quality	Order fill rate	%	Yes	Yes	No
Quality	Complete deliveries rate	%	Yes	Yes	No
Quality	On-time deliveries rate	%	Yes	Yes	No
Quality	Inventory discrepancy rate	%	Yes	Yes	Yes
Quality	Inventory discrepancy impact	%	Yes	Yes	Yes