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## **Economic Commission for Europe**

### **Executive Committee**

### **Centre for Trade Facilitation and Electronic Business**

#### **UN/LOCODE Advisory Group**

#### **Fourth annual meeting**

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Item 5 of the provisional agenda

#### **UN/LOCODE maintenance**

## **Study report on UN/LOCODE**

### *Summary*

At the third annual meeting of the UN/LOCODE Advisory Group in 2019, the UN/LOCODE Advisory Group agreed to receive a study paper to provide guidance for the UN/LOCODE maintenance and present it at the fourth annual meeting of the UN/LOCODE Advisory Group.

This study aims to analyse the problems that have arisen in the UN/LOCODE maintenance and propose a possible solution to guide the Maintenance Team to improve the UN/LOCODE data quality.

NOTE: This study represents the author's observations, understandings and ideas, which have not yet been exercised to reach the consensus of the UN/LOCODE Maintenance Team.

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## I. Background

1. At the third annual meeting of the UN/LOCODE Advisory Group in 2019, the UN/LOCODE Advisory Group agreed to receive a study paper to provide guidance for the UN/LOCODE maintenance decisions:

*“one of the Co-conveners of the Maintenance Team gave a presentation on issues observed in the maintenance meetings and proposed the creation a study paper to provide guidance for UN/LOCODE maintenance decisions. This proposal was supported by the Group and should be created, as decided under item 6 on the agenda. Progress on this paper should be presented at the next annual meeting of the Advisory Group. (Decision 10)*

([http://www.unece.org/fileadmin/DAM/cefact/cf\\_plenary/2020\\_Plenary/11\\_ECE\\_TRADE\\_C\\_CEFAC\\_T\\_2020\\_21E\\_UNLOCODE\\_AG\\_3rd\\_Report.pdf](http://www.unece.org/fileadmin/DAM/cefact/cf_plenary/2020_Plenary/11_ECE_TRADE_C_CEFAC_T_2020_21E_UNLOCODE_AG_3rd_Report.pdf))

2. This study is based on the above mandate and aims to analyse the problems that have arisen in the UN/LOCODE maintenance and propose a possible solution to guide the UN/LOCODE Maintenance Team to improve the UN/LOCODE data quality.

NOTE: This study represents the author’s observations, understandings and ideas, which have not yet been exercised to reach the consensus of the UN/LOCODE Maintenance Team.

## II. Concept of a Location in UN/LOCODE

### A. Definition of “Location” in the revised UNECE Recommendation 16

3. The questions, related to the concept of whether a UN/LOCODE identifies an area or a point, had been discussed many times in past UN/LOCODE meetings and are probably as old as the UN/LOCODE directory itself. In the revised Recommendation 16, a UN/LOCODE is specified to identify an area.

4. However, during the 2020 UN/LOCODE Data Maintenance Requests (DMRs) validation, the UN/LOCODE Maintenance Team exchanged different views of the application of the concept. For example, authorities and National Focal Points submitted DMRs to identify different ports in the same city because these ports are

- in distinct areas
- independently managed and administered
- perceived by the users as distinct ports

5. The revised UNECE Recommendation 16 defines a location as follows:

*“UN/LOCODE identifies an administrative or economic area, relevant to international trade and transport, as defined by the competent national authority in each country. These areas are understood in the sense of a city, a town, etc. Exceptions to this rule are handled by the competent national authority and/or the UNECE secretariat supported by UN/CEFACT experts.”*

*“A location with several functions should only have one UN/LOCODE code assigned. Any subset of a location such as airports, rail stations or container terminals should be identified with the appropriate function; a separate UN/LOCODE should not be assigned.”*

## B. UN/LOCODE: a virtual area or a specific location?

6. Originally, UN/LOCODE stood for the United Nations Code for Ports and Other Locations. Therefore, we know that UN/LOCODEs were mainly assigned to ports. Later, the UN/LOCODE assignment was extended to airports, rail stations, etc. At the time, international trade needed a “virtual” location where goods were to be delivered. No matter ports or airports, they are a kind of trade facility, which is a concept of a point. That is why most of the existing UN/LOCODE codes are assigned to “point” locations.

7. In the meanwhile, some UN/LOCODE codes are assigned to “area” locations, which have multiple functions. We could take an example in the airline industry to explain it. When we want to buy the cheapest air ticket to New York, where three airports are available, and we do not care to go to which airport in the New York area, we need to identify the destination city, instead of the destination airport, to search all options in the air ticket sale system.

8. In international trade, we have a similar use case. The seller needs to send the cargo to a specific town. Moreover, it is not bound by the contract to be shipped to a designated port. Hence, UN/LOCODE must support an area concept. However, when the consignment has arrived at the destination, the on-carriage contract must specify the specific location from where the cargo must be picked up. Therefore, we need that UN/LOCODE supports both a point concept and an area concept.

9. Which concept of “Location” should be supported by UN/LOCODE: a point or an area? It had already been discussed at the first annual meeting of the UN/LOCODE Advisory Group in 2017 and quite different views were expressed:

- *“Currently many container terminals get their own UN/LOCODE assigned. Same time, the Metropolitan Area in which they are located carries its own, mostly well-known UN/LOCODE;” “It was reiterated that UN/LOCODE should only be assigned for a metropolitan area instead of a terminal within that area” - from Hapag-Lloyd and SMDG*
- *“Points are easy to handle”, “How to define the area”, - presentation by Geonames.org*
- *“If the location equals an admin unit -> Area” “Otherwise Point” presentation by COSCO*
- *“An area with one or more airports may be identified using a different code, or the same code as one of the airports within it” -presentation by IATA*

10. During the 2020 UN/LOCODE maintenance, the UN/LOCODE Maintenance Team received several DMRs triggered by the establishment of the new trade facility in a town, such as a port, an airport or a dry port, which is managed or administered independently from other point locations in the same town.

11. Users and national authorities outlined the importance of assigning a specific UN/LOCODE to these locations to enable them to distinguish between the two locations and to facilitate trade and transport.

12. The 2020 UN/LOCODE maintenance showed that the distinction between the area and the point concept continues to be problematic and that practical solutions may be needed on a case-by-case basis.

## C. Other problems related to the concept of “Location”

13. The following relevant problems are also observed:

- A Location with the name of a “city” may not be a city.

Most locations with the name of a “city” are areas that contain many lower-level cities, towns, villages, connected districts, etc.

- The trade facility is in a remote place within an area.

Ports of many cities are near the sea, but not in the urban area. They are associated with a major city rather than a city closest to the port or the other transport facility.

Example: The closest city to Munich airport is the town of “Erding”.

- One UN/LOCODE is not enough to be assigned to a metropolitan area.

For example, Beijing is a metropolitan city, as big as a province of some countries or even as a country. Many trade and transport facilities are in Beijing. Therefore, only one UN/LOCODE is not enough to identify various locations within an area such as Beijing.

### III. Administrative subdivisions

14. The subdivision is one of the data elements in the UN/LCOODE directory, based on ISO 3166-2. If two locations with the same name are in different subdivisions, it is necessary to distinguish them through the subdivision.

15. After reviewing the ISO 3166-2, we found that the administrative subdivision is managed hierarchically with several levels for some countries. A higher-level administrative division may comprise multiple lower-level administrative subdivisions. For example (data source: Wikipedia):

- In China, there are five levels of administrative subdivisions.
  - 23 provinces (shěng), 5 autonomous regions (zìzhìqū), 4 municipalities (zhíxíáshì)
  - 280+ prefecture-level cities (dìjīshī), 17 prefectures (dìqū), 30 autonomous prefectures (zìzhìhōu)
  - 1400+ counties (xiàn), 110+ autonomous counties (zìzhìxiàn), 850+ county-level districts (shìxiáqū), 1 special district (tèqū), 370+ county-level cities (xiànjīshì), 1 forestry district (línqū)
  - 19500+ towns (zhèn), 14600+ townships (xiāng), 1000+ ethnic townships (mínzúxiāng), 6100+ subdistricts (jiēbàn or jiēdàobànshìchù), 11 district public offices (qūgōngsuǒ)
  - Urban areas: communities (shèqū) or neighbourhoods (jūmínqū); Rural areas: villages (cūnjí), village areas or village groups
- In Singapore, there are two levels of administrative subdivisions
  - 5 districts
  - 29 constituencies
- In the United States, there are three levels of administrative divisions.
  - 50 states, 1 federal district, 1 incorporated territory: Palmyra Atoll (United States US Minor Outlying Islands)
  - 3,142 counties and county-equivalents (including 41 independent cities)

- Municipalities and minor civil divisions (including cities, plantations, towns, townships, villages, etc.): 35,930 municipal bodies
- In Switzerland, there are three levels of administrative divisions.
  - 26 cantons
  - 137 districts
  - 2,324 communes
- In France, there are six levels of administrative divisions.
  - 18 regions (régions)
  - 101 departments (départements)+ the Metropolis of Lyon
  - 332 arrondissements
  - 4,032 cantons
  - 12,159 intercommunalities
  - 35,357 communes
- In Brazil, there are four levels of administrative divisions.
  - 26 states (estados), 1 federal district (distrito federal)
  - 5,568 municipalities (municípios)
  - 1 state district (distrito estadual)
  - 10,607 districts (distritos municipais)
  - 10,424 subdistricts (subdistritos), 33 administrative regions (regiões administrativas)

16. UN/LOCODE adopts the subdivisions specified in ISO 3166-2, which is maintained by the ISO 3166 Maintenance Agency. National authorities decide how to manage their administrative subdivisions and submit their requests to the ISO 3166 Maintenance Agency for approval to publish them as ISO 3166-2.

17. The challenge in the UN/LOCODE maintenance is that only one level, mostly the highest level, of administrative subdivisions should be used for a country. When submitting a DMR, only subdivisions at one level are available in the drill-down list of the field Subdivision in the current online UN/LOCODE DMR system. In this way, the DMR submitter is not confused when selecting a subdivision for the requested location.

18. This good practice should be continued in the new UN/LOCODE system. If subdivisions exist in a country, it will be mandatory to input the subdivision in a DMR. If necessary, the UN/LOCODE National Focal Points may review this available subdivision list for their countries to check if the selected level is appropriate.

19. Somehow, the Maintenance Team received DMRs to assign a UN/LOCODE to an administrative subdivision specified in ISO 3166-2, for example, a request for assigning a UN/LOCODE to a province in China. This kind of DMRs should be rejected because an administrative subdivision is not a location in terms of UN/LOCODE.

## IV. Geographical coordinates

20. Geographical coordinates are used to locate a point location but defining an area location needs a set of coordinates.

21. Geographic coordinates of a point location, including latitude and longitude with the accuracy of minute, are one of the data elements in the UN/LOCODE directory. Which point we select in an area depends on the point of interest. It might be an administrative centre, a commercial centre or a tourism centre. The selection criteria vary in countries.

22. The Maintenance Team received DMRs with the coordinates of the trade facility used by the requester, which were not consistent with the official representative coordinates for a location. As expressed by the requesters, they need to provide GPS information on their cargos' delivery destination. Therefore, they prefer this specific point to the official "centre" of the location. We understand the necessity of locating a facility for transportation and delivery. Moreover, it is not for routine use, but as a client-specific representation. It should not be addressed by UN/LOCODE, but by recording the necessary designated coordinates in the stakeholder's business system. Therefore, we suggest using the coordinates of an official point in a location instead of the coordinates of the requester's specific facility.

23. This study proposes the following clarification to select coordinates of a point for a location:

- Preference should be given to the representative coordinates for the area with multiple functions as proposed by an international gazetteer. It may vary in different gazetteers, such as Google Satellite Map (Maplandia.com) and ESRI Satellite Map. It is necessary to provide a web link in a DMR to specify the information source of the gazetteer.
- If such coordinates are not available, use the coordinates of a facility within the area with a single function (except Function 3).

## V. Unbalanced assignment of UN/LOCODEs among countries

24. If we compare the UN/LOCODE entries registered per country, we will note that the number of assigned UN/LOCODEs is not directly proportional to the size of a country or its key economic index. In practice, the assignment of UN/LOCODE varies from country to country even though the same recommendation (No. 16) is put in place as a base to validate DMRs.

25. According to the statistics shown in Table 1, we see that some countries are assigned with much more UN/LOCODEs.

No.	Country or Territory	Country Code	GDP <sup>1</sup>	Population	Merchandise imports and exports Total <sup>2</sup>	Area (sqkm)	Number of UN/LOCODEs
1	The United States	US	21.34	329,064,917	4278.42	937	20840
2	China	CN	14.22	1,433,783,686	4622.96	960	1668
3	Japan	JP	5.18	126,860,301	1487.138	38	2128
4	Germany	DE	3.96	83,517,045	2846.46	36	9890
5	India	IN	2.97	1,366,417,754	836.227	298	1321
6	United Kingdom	GB	2.83	67,530,172	1159.26	24	5870
7	France	FR	2.76	65,129,728	1254.409	64	14334
8	Italy	IT	2.03	60,550,075	1047.438	30	5637

<sup>1</sup> Thousand trillion US dollars, from the International Monetary Fund (IMF) in 2019.

<sup>2</sup> Billion US dollars, from the World Trade Organization (WTO) in 2019.

No.	Country or Territory	Country Code	GDP <sup>1</sup>	Population	Merchandise imports and exports Total <sup>2</sup>	Area (sqkm)	Number of UN/LOCODEs
9	Brazil	BR	1.96	211,049,527	428.399	852	2176
10	Canada	CA	1.74	37,411,047	918.845	998	3200
11	Korea, Republic of	KR	1.66	51,225,308	1140.062	10	279
12	Russian Federation	RU	1.61	145,872,256	693.063	1710	861
13	Spain	ES	1.43	46,736,776	733.21	51	4643
14	Australia	AU	1.42	25,203,198	492.571	769	2577
15	Mexico	MX	1.24	127,575,529	927.141	196	968
16	Indonesia	ID	1.1	270,625,568	368.927	191	739
17	Netherlands	NL	0.914	17,097,130	1368.697	4	1859
18	Saudi Arabia	SA	0.7622	34,268,528	434.116	215	89
19	Switzerland	CH	0.7075	8,591,365	590.097	4	1560
20	Turkey	TR	0.7062	83,429,615	391.013	78	748

**Table 1: Number of UNLOCODEs in some countries (data source: UN/LOCODE release 2020-1)**

26. From these statistics, we see that

- In the US, the number of UN/LOCODEs (20840) is close to the number of its municipal bodies (35,930, third-level administrative subdivision).
- In China, the number of UN/LOCODEs (1668) is close to the number of its counties (2700, third-level administrative subdivision)
- In Brazil, the number of UN/LOCODEs (2176) is close to the number of its municipalities (5568, second-level administrative subdivision)
- In France, the number of UN/LOCODEs (14334) is close to the number of its communes (35,357, sixth-level administrative subdivision)
- In Switzerland, the number of UN/LOCODEs (1560) is close to the number of its communes (2,324, third-level administrative subdivision)

27. One consequence is that for the countries where already many UN/LOCODEs are assigned, we have fewer and fewer codes available assigned for new requests. Thus, we have to assign numeric characters for such a new request.

28. According to the Secretariat Notes published together with each UN/LOCODE release, the 17,575 possible permutations of 3-character codes have been almost exhausted for the USA since UN/LOCODE release 2006-2, where the third position of 3-letter codes is represented by a numerical digit 2 to 9. As of today, even we have 3-number codes for the USA.

29. The challenge to the UN/LOCODE maintenance is to address it by checking the possibility of sharing the UN/LOCODE already assigned to the nearby area for the requested location.

30. However, some representatives of the shipping industry expressed their concerns that they would prefer a new code rather than sharing the code assigned to the surrounding area because of the different shipping rates.

## VI. Observation of Function Code 3

31. As defined in the revised Recommendation 16, the function classifier code identifies the existence of either a facility providing a connection with a specific

mode of transport or some other significant functions not related to any mode of transport at this location.

32. Function Code 3 identifies a location that is connected to other ones through roads. Specific terminals located inside a location shall not be considered individually as a location.

33. More than half of UN/LOCODEs are only with Function 3 identifying road terminal, and more than 80% of the UN/LOCODE entries have Function 3. The Maintenance Team processed most DMRs to request Function 3, and about half of the DMRs request only Function 3.

34. It seems that for a small location, Function 3 is the only option requested in a DMR because no other facilities are available. In this way, we could project that the UN/LOCODE directory will include more entries with only Function 3 in the future.

35. The reason for many requests with only Function 3 is that – with very few exceptions – any trade and transport locations have at least a road that connects it with another location.

36. The challenge to the UN/LOCODE maintenance is whether to assign a UN/LOCODE or to reject a DMR for a location with only Function 3, which is in a suburb of an area, like a city, already assigned with a UN/LOCODE.

37. As a standard practice, we recommend approving the DMR with multiple functions or with other functions than Function 3. Otherwise, the preference is to study the feasibility of sharing the UN/LOCODE already assigned to the nearby area. If there is a dispute in the team, it will be finalized by the UN/LOCODE National Focal Points.

## **VII. Other issues observed during the 2020 UN/LOCODE maintenance**

38. This study focuses on topics proposed at the third annual meeting of the UN/LOCODE Advisory Group in 2019. However, during the 2020 maintenance work, other issues were raised, some of which were agreed to be included in this study. Due to the limited resources, some issues cannot be completely addressed in this study.

### **A. Country code for offshore terminals**

39. In January 2020, an expert from the United Kingdom raised the issue of the country code for offshore terminals. Usually, a DMR for this kind of location is requested with Function 7. These terminals can be located, for example,

- within the Continental Shelf of a country
- within the Exclusive Economic Zone of a country
- in International Waters

40. As maritime areas are frequently disputed between nations, the UN/LOCODE Maintenance Team should develop operational rules for assigning country codes to these locations.

41. The challenge to the UN/LOCODE maintenance is to validate the DMRs in disputed areas and to identify whether an area is disputed. UN/LOCODE is not supposed to address the disputes on the territory. The Maintenance Team might continue the current practice of applying “First come first served”. If the requested

country code of the offshore terminal is questioned, the Team could assign an additional UN/LOCODE with another country code.

42. As a standard practice, it is suggested to

- remind users of the disclaimer in the revised Recommendation 16, “the designations employed and the presentation of the material in UN/LOCODE do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries. The presentation of location names in UN/LOCODE does not imply the expression of any opinion concerning the legal status of any spelling of such names. UN/LOCODE is provided purely as a service to its users in the framework of trade facilitation. In that context, the presentation of location names in UN/LOCODE should be regarded as the standard spelling of those names acceptable for purposes associated with trade and transport.”
- refer to the guidance provided to *the United Nations Convention on the Law of the Sea*.
- continue “First come first served” and assign an additional UN/LOCODE for the facility with another country code if requested.
- for facilities or terminals in open seas/international waters, code “XZ” shall be used as the country code based on ISO 3166-1.
- for facilities or terminals in an offshore area that is subject to a country’s sovereignty or jurisdiction, the country code specified in ISO 3166-1 for that country shall be used.

43. This paper suggests that the UN/LOCODE Advisory Group investigate this issue further by setting up a task force with volunteer experts, especially those who expertise on the United Nations Convention on the Law of the Sea. The task force aims to specify the code assignment rule for offshore facilities or terminals, which is not specified in Recommendation 16, and verify the existing codes in the UN/LOCODE directory to diminish the inconsistencies.

## **B. Scope of UN/LOCODE**

44. UN/LOCODE is used more widely beyond international trade and transport, such as maritime security and environmental protection. The UN/LOCODE Maintenance Team is aware of new use cases from the banking industry and other International Organizations, such as the Food and Agriculture Organization (FAO) and the World Food Programme (WFP). Especially, FAO is engaging in implementing the Agreement on Port State Measures (PSMA) to halt Illegal, Unreported and Unregulated (IUU) fishing. The UNECE and FAO secretariats have worked jointly on a proposal for the use of UN/LOCODE to identify PSMA Designated Ports.

## **VIII. Possible further study on UN/LOCODEs with Function 3**

### **A. Clarification for Function 3 and its validation**

45. Any place seems to have a road connection. But Function 3 assigned in the UN/LOCODE directory is applied inconsistently. As mentioned in this paper, many of the UN/LOCODE entries have only Function 3, which is assigned to a

kind of “mini” locations in the context of international trade. Many of the locations with multiple functions are not assigned with Function 3. However, a road connection does exist in those locations.

46. This raises the question: which type of locations should be identified with Function 3? We may produce two options as follows:

- Option 1: Distinguishing from dry ports by transport modes

A “Dry Port” is an inland location serving as a logistics centre connected to one or more modes of transport for the handling, storage and regulatory inspection of goods moving in international trade and the execution of applicable customs control and formalities”. (Article 1 of the Intergovernmental Agreement on Dry Ports). Yet, as pointed out by experts at the second annual meeting of the UN/LOCODE Advisory Group in 2018 in Hangzhou, China, “Very few dry ports have applied for a UN/LOCODE.” In the revised Recommendation 16, a Dry Port is identified with Function 6.

In this regard, it should not be confused with Function 3, with which the single road transport mode is available in the location. In this way, the transport mode is a clue to request function(s). We assign Function 3 for a location with only road transport and Function 6 for a location with multiple modes of transport.

- Option 2: Any place in an area with a road connection

Road terminals could be quite flexible, which do not need many fixed facilities and are subject to location change due to local city planning policies. It is reiterated that UN/LOCODE is not used for door-to-door delivery. The facilities with Function 3 should be for on-going use instead of one-time use. Goods can be delivered to any place in an area, that has an address (e.g., a street number). But we do not expect to use UN/LOCODE as a delivery address.

47. Option 2 makes UN/LOCODE much more useful in application, also invites many demands. When validating functions in a DMR, we need a kind of justification. For example, we will check if a corresponding facility exists in the location. But for Function 3, it seems that we do not need any justification because any location may be connected with a road. Do we need to specify what type of road UN/LOCODE should recognize? If yes, the justification should be requested for DMRs with Function 3.

## **B. Feasibility study of separating the code list into two**

48. Considering the unique feature of locations with Function 3, any locations may be eligible to be assigned with a UN/LOCODE because this function can be the default for any locations if no restriction is put in place to clarify understanding of a road connection. The locations with only Function 3 can be a building block of UN/LOCODE.

49. If it is agreed by the UN/LOCODE Advisory Group, we will go further by clarifying what kind of area should be a location in terms of UN/LOCODE. The UN/LOCODE code list could be separated into two code lists, as shown in Table 2. It also lists the data elements of each code list for further guide in the DMR validation.

	<b>Function 3 code list</b>	<b>Non-Function 3 code list</b>
Purpose	Identifying a location in terms of UN/LOCODE, with a certain scale around the globe, satisfying needs like real estate business, where the scope of application will be much larger than international trade and logistics	No further guide
Coordinates	Could be optional in the future	No further guide
Subdivision	No further guide	No further guide
Function	3 or A	1,2,4,5,6,7,8,0
Status	Could be simplified in the future	No further guide
Maintenance	Easier for the FPs	No further guide
Child code	Easier to be linked to any child code system	No further guide
Administrative level code	Be added in the future	N/A
Dry port exists or not	Be added in the future	N/A

**Table 2: Two code lists**