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TARIFF REDUCTION SCHEDULES

A GLOBAL DATABASE OFFERING
ALL EPAS IN FORCE [2014-2050]

Tariff reduction schedules:

A global database offering all EPAs in force [2014-2050]

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Abstract

The paper documents the first global database of tariff reduction schedules in all free trade agreements, economic partnership agreements (EPAs) and other preferential programs in force. The database is available in GTAP 10 format at the aggregated level compatible with the GTAP model and at HS6 level through the Data Download module of Market Access Map. The database is a result of a six-year statistical collaboration between GRIPS and the International Trade Centre (ITC) – official provider of tariff protection data for the GTAP Data Base.

The database captures preferential tariff rates at the bilateral country level under each EPA as well as their dismantling category applied for the period of 2014 to 2050 in a clear “phase-down” year-by-year manner. The database constitutes a major advancement in transparency of forward-looking tariff protection, and is a result of immense legal, IT and statistical team work based on data processing and conversion of official legal texts and voluminous annexes of trade agreements. The forward-looking tariff-dismantling database is built upon Market Access Map (MacMap) database of global tariffs serving as a backbone.

The paper documents the methodology of construction of the database, the key assumptions and statistical insights. Seminal stylized facts on tariff protection landscape that will be in 2050, as encapsulated in existing EPAs, are presented. In 2050, we find that a few significant pockets of tariff protection still remain.

Keywords: Preferential trade agremeents, forward-looking tariffs, future tariffs

The International Trade Centre (ITC) is the joint agency of the World Trade Organization and the United Nations. ITC, Palais des Nations, 1211 Geneva 10, Switzerland (www.intracen.org)

Contents

Abbreviations

Unless otherwise specified, all references to dollars ($) are to United States dollars, and all references to tons are to metric tons.

The following abbreviations are used:

AfCFTA	African Continental Free Trade Agreement
AFTA	Association of Southeast Asian Nations Free Trade Area
AGOA	African Growth and Opportunity Act
ALADI	Latin-American Integration Association
CARICOM	Caribbean Community
CC	Change in Chapter
CEPA	Closer / Comprehensive Economic Partnership Arrangement
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
CTC	Change in Tariff Classification
CTH	Change in Tariff Heading
CTSH	Change in Tariff Sub-heading
CTI	Change in Tariff Item
DFQF	Duty-Free, Quota-Free
EAC	East African Community
ECOWAS	Economic Community of West African States
EEU	Eurasian Economic Union
EFTA	European Free Trade Association
EPA	Economic Partnership Agreement
EU	European Union
FTA	Free trade agreement
GATT	General Agreement on Tariffs and Trade
GSP	Generalized System of Preferences
GVC	Global Value Chain
HS	Harmonized System
ITC	International Trade Centre
LDC	Least Developed Country
MERCOSUR	Southern Common Market
MFN	Most-Favoured Nation
MSME	Micro, Small and Medium Enterprise
NAFTA	North American Free Trade Agreement
NC	No Change
PSR	Product-Specific Rules
PTA	Preferential trade agreement

RI	Restrictiveness Index
RKC	Revised Kyoto Convention
RoO	Rules of origin
RVC	Regional Value Content
SACU	Southern African Customs Union
SADC	Southern African Development Community
SICE	Foreign Trade Information System
SP	Specified Processing
TFI	Trade Facilitation Index
TFTA	Tripartite Free Trade Area
UNCTAD	United Nations Conference on Trade and Development
USD	United States Dollar
WCO	World Customs Organization
WO	Wholly Obtained
WTO	World Trade Organization

Introduction

New MAcMap database of forward-looking preferential tariffs now covers all trade agreements of more than 200 countries. Since 2015, Market Access Map has been conducting a forward-looking tariff extraction and processing of all existing preferential trade agreements (PTA) in the world, including non-reciprocal arrangements such as GSP, with the financial support of Japan's National Graduate Institute for Policy Studies (GRIPS) and the United States International Trade Commission (USITC).

The database includes the evolution of preferential tariffs from 2014 to 2050 as projected by the tariff reduction schedules committed in the founding texts of each PTA. The new database contains projected customs duties at the country's national tariff line level and includes tariff rate quotas (TRQ) and ad valorem equivalent rates of non-ad valorem tariffs. This level of detail is essential for MSMEs, policymakers, negotiators, and GTAP researchers. For instance, businesses could use the database to identify the "best" trade agreement that offers the lowest tariff rates for the products they export in a given market and to analyse how the market conditions are scheduled to change in the future. According to Market Access Map database there are more than 450 active trade agreements in the world. The database currently includes all PTAs that entered into force until the first semester of May 2019 such as, but not limited to, the EU-Japan FTA and the CPTPP.

This paper documents the methodology of constructing this database as well as provides first statistical insights. Section 1 decribes the five-year project on run by ITC ang GRIPS. Section 2 lays out methodology of the new ITC database and the GTAP 10 version of the database. Section 3 presents statistical insights as well as new findings based on the database.

Section 1 The five-year project to build the most comprehensive database of EPAs' forward-looking tariffs.

1. New database of forward-looking tariff commitments

Between 2015 and 2020, ITC has conducted comprehensive analyses of all preferential trading arrangements (EPA)[1] that are in force worldwide, with the support of the National Graduate Institute for Policy Studies of Japan (GRIPS). The study consisted in the collection of official texts of EPAs, particularly the annexes related to the tariffs liberalization programmes such as the schedules of tariff concessions, the associated general notes and relaxation of tariff rate quotas (TRQ), as well as any documents useful to the interpretation of the depth of liberalization. ITC's analysts studied each of the collected EPA texts and annexes, scraped its contents, and constructed the tariff dismantling schedules of each party towards every partners for the period 2014-2050.

Starting in 2015, ITC constructed a database of the evolution of tariffs as projected by all FTAs in force between the 12 original signatories of the Trans-Pacific Partnership Agreement (TPP), now CPTPP (Comprehensive and Progressive Trans-Pacific Partnership). The projections went from 2011 to 2050 and additionally included the dismantling schedules of the newly signed TPP.

In 2017, ITC has extended the exercise to include FTAs among members of the future Regional Comprehensive Economic Partnership (RCEP), the Asia-Pacific Economic Cooperation (APEC) agreements, and the European Union (EU). The related comprehensive database covers the period of 2014 to 2050.

In 2018 begins the third phase during which ITC processed the schedules from the partners' side under the agreements analysed in the previous phase.

The fourth phase of the project aims at building an EPA-based tariff database that will cover all the EPAs currently in force in the "rest of the world". The expression 'rest of the world' (ROW) designates any countries that are not part of the European Union, the Regional Comprehensive Economic Partnership free trade agreement (RCEP countries) , and the Asia-Pacific Economic Cooperation (APEC countries) .

The final phase of the project aims at building an EPA-based tariff database that will cover all the EPAs that entered into force between May 2019 and May 2020 for all countries taking part into them. It is a maintenance work to keep the database that has been constructed between 2014-2019 up to date with the latest information.

The database provides policymakers, researchers and businesses information on current tariffs and any further reductions that are already scheduled in existing agreements. Such information will create a benchmark for assessing the depth of the liberalization that parties grant in new EPAs.

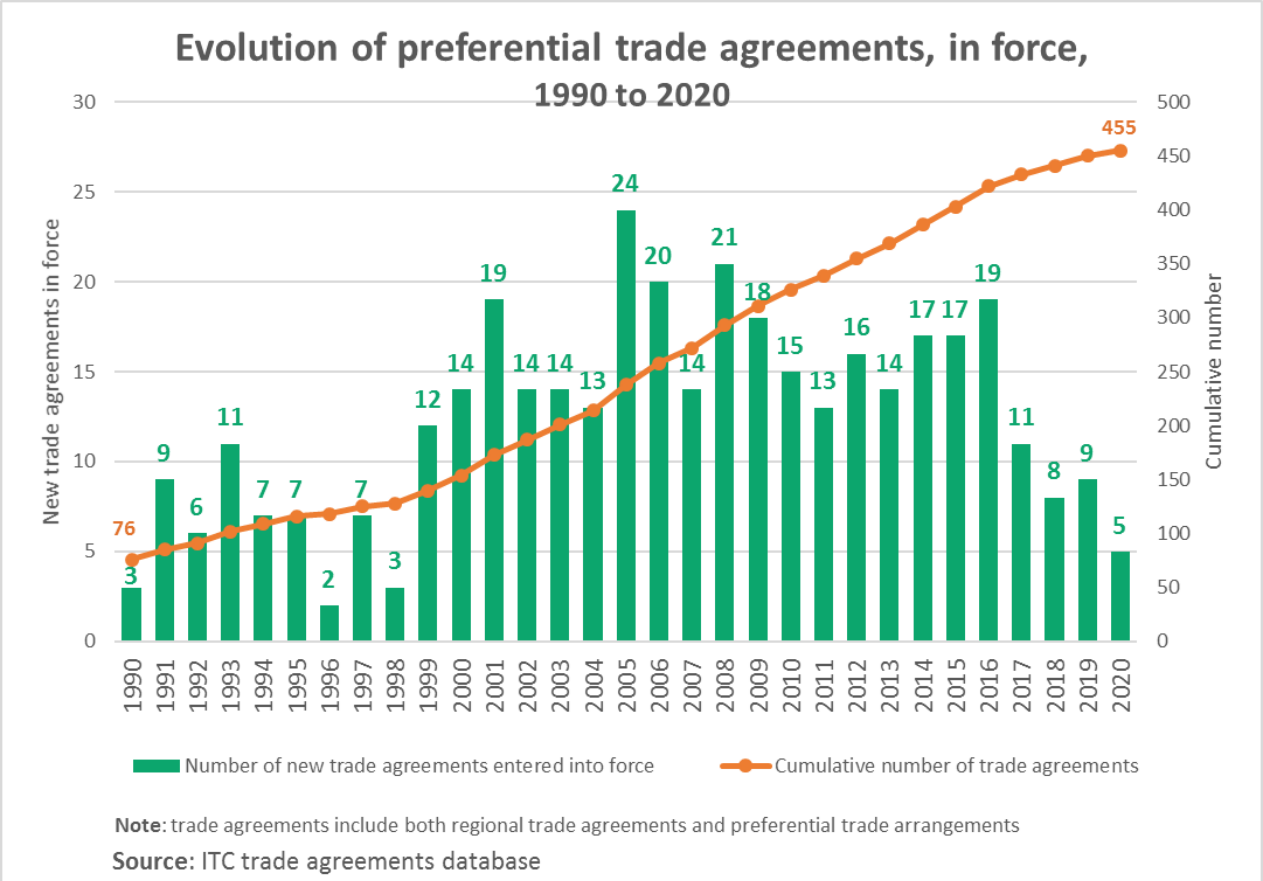
[1] Throughout this study EPA encompasses Customs Union, Free Trade Agreements, Economic Preferential Agreements, Partial Scope Agreements, Unilateral Arrangements and any forms of trading arrangements that reduce the statutory customs tariffs.

Section 2 Methodology

2. Data Sources

Texts of EPAs used in the construction of the EPA Tariff database come from various official sources but mainly ITC Market Access Map[2]. Firstly, ITC has been maintaining its own database of trade agreements, which is accessible through Market Access Map (www.macmap.org) and fed by information that ITC receives from its network of national data providers[3] for many years. To date, it is the most comprehensive and granular database of its kind with details such as timelines, parties, and texts of 450+ trade agreements that are in force up to June 2020 (Figure 1). Finally, the effective applicability of each trade agreement was verified based on each country's repositories of data related to trade agreements such as websites of the competent authorities (customs offices, ministry of trade, ministry of foreign affairs and international relations, and secretariat of regional economic communities (RECs)), official journals or executive orders.

Figure 1: The rapid increase in the number of EPAs is changing the global tariff landscape



3. Data Extraction

All products[4] in the concession (exclusion) lists alongside with the dismantling categories are extracted using Optical Character Recognition (OCR) technologies for text recognition. The machine encoding of information

[2] Also known as MAcMap accessible through www.macmap.org

[3] More on the source of data used in Market Access Map: please consult https://www.macmap.org/en/about/methodology

[4] Defined at the National Tariff Line Code (NTLC) level of the reporting country.

eases its interpretation by analysts and allows to align forward-looking preferential tariff values for each product at every stage of the tariff elimination schedules using statistical algorithms developed by ITC.

From the tariff reduction schedules we typically capture the following variables:

- Product codes and the accompanying description;
- Dismantling categories;
- Staging processes;
    - Base Rate
    - Staging Start Date
    - Staging Milestones
    - Provision on Delayed EIF
    - Target duty
    - Rounding method
- Elements of Tariff Rate Quotas (TRQ).

Table 2: Examples of preferential tariff reduction parameters

Element	Remarks	Example
Base rate	*In most cases, it is MFN rate at the start of EPA talks*	55%
Dismantling category	*Describes how tariff is dismantled*	"R9" *
• Start date	*Date when first cut takes place (often EIF)*	2021
• Number of annual cuts	*The tariff cuts can be implemented linearly or non-linearly (front-loading or back-loading)*	9
• End tariff	*For some products, tariff is dismantled partially*	10%
• Rounding method	*If a cut tariff is not a whole number, it should be rounded, rounded up or rounded down.*	Round down to the nearest 0.1%

* Note: R9 is the category designated by parties and could mean in this example a partial reduction of MFN tariff in 9 equal annual stages starting from 2021 until it reaches 10%.

We analysed all these elements in order to generate the staged preferential rates at each year for each NTLC product in the party's nomenclature as of 2014 using ITC-developed algorithms, namely "algorithm-staged" duties. Sometimes the annexes with the dismantling schedules already provide the staged values of preferential tariffs, hereafter "pre-staged" duties (Table 2). In such a case, we compare the "algorithm-staged" and the "pre-staged" tariffs to insure that they match.

Table 2: Example of both a dismantling category and pre-staged duties in the tariff elimination schedule (EU-Japan EPA, 2019)

CN 2017	Description	Base rate	Category	Note	1st year	2nd year	3rd year	4th year	5th year	6th year	7th year	8th year	9th year	10th year	
8704 31 10	--- Specially designed for the transport of highly radioactive materials (*Euratom*)	3.5 %	B7		3.1 %	2.6 %	2.2 %	1.8 %	1.3 %	0.9 %	0.4 %	0.0 %	0.0 %	0.0 %	0
	--- Other														
	---- With engines of a cylinder capacity exceeding 2,800 cm³														
8704 31 31	----- New	22.0 %	B7		19.3 %	16.5 %	13.8 %	11.0 %	8.3 %	5.5 %	2.8 %	0.0 %	0.0 %	0.0 %	0
8704 31 39	----- Used	22.0 %	B7		19.3 %	16.5 %	13.8 %	11.0 %	8.3 %	5.5 %	2.8 %	0.0 %	0.0 %	0.0 %	0
	---- With engines of a cylinder capacity not exceeding 2,800 cm³														
8704 31 91	----- New	10.0 %	B7		8.8 %	7.5 %	6.3 %	5.0 %	3.8 %	2.5 %	1.3 %	0.0 %	0.0 %	0.0 %	0
8704 31 99	----- Used	10.0 %	B7		8.8 %	7.5 %	6.3 %	5.0 %	3.8 %	2.5 %	1.3 %	0.0 %	0.0 %	0.0 %	0
8704 32	-- Of a gross vehicle weight exceeding 5 tonnes														
8704 32 10	--- Specially designed for the transport of highly radioactive materials (*Euratom*)	3.5 %	B7		3.1 %	2.6 %	2.2 %	1.8 %	1.3 %	0.9 %	0.4 %	0.0 %	0.0 %	0.0 %	0

Source: Legal text of the EU-Japan EPA (2019)

Product codes and the accompanying descriptions

Each Party's schedule of tariff commitments set out a list of products for which it will reduce or eliminate customs duties upon entry into force of the agreement. The list of products is defined at the country's NTLC in the revision and nomenclature it applies for imports of goods in its territory at the time the agreement was negotiated, concluded or at a prior date agreed by the parties.

The depth of a party's commitment depends on whether the concession list includes all products of chapters 1 to 97 of the Harmonized System or only a subset of it. Free trade agreements tend to include most of the products while partial scope agreements cover only specific sectors such as some agricultural products (rice, maize, sugar, etc), cars, electronics, or textiles and clothing.

Table 3: Examples of nomenclature used in some EPAs

Agreement Name (Party)	Date of Entry into Force (EIF)	Nomenclature serving as basis in the tariff commitments	HS revision in the tariff commitments
FTA, Japan – EU (Schedule of the EU)	1 February 2019	EU Combined Nomenclature as of 1 January 2017	HS 2017
FTA, Japan – EU (Schedule of Japan)	1 February 2019	Japan's Statistical Code Lists for Imports as of 1 April 2017	HS 2017
FTA, EFTA – Phillipines (Schedule of the Philippines)	1 June 2016	National tariff lines of the Philippines as of 1 January 2015 in accordance with the ASEAN Harmonized Tariff Nomenclature (AHTN) 2012	HS 2012

FTA, China – South Korea (Schedule of China)	20 December 2015	National tariff lines of China as of 1 January 2012.	HS 2012
FTA, Canada – Colombia (Schedule of Canada)	15 August 2011	National tariff lines of Canada as of 1 January 2007.	HS 2007
FTA, USA – Morocco (Schedule of USA)	1 January 2006	Harmonized Tariff Schdeule of the United States (HTSUS) as of 10 January 2003.	HS 2002

Dismantling categories

In a schedule of tariff commitments, each NTLC is associated with a staging category that indicates the concession a party gives to each of its partners individually or as a group. Agreements code staging categories in various way: numeric, alphanumeric codes or a combination of the two. The complexity and the number of dismantling categories depend on the needs of the parties involved (See also examples in Table 4 and Table 5). Despites such varieties, what is essential in the analysis and interpretation of these staging categories are their definitions and meaning, which are often provided in the General Notes associated with the Schedules.

Table 4: Dismantling categories in the Schedule of Canada under Canada-Colombia FTA

Dismantling category code	General note
A	Duties on originating goods provided for in the items in **A** shall be eliminated entirely and such goods shall be **duty-free on the date this Agreement enters into force**.
B	Duties on originating goods provided for in the items in category **B** shall be **removed in three equal stages** beginning on the date this Agreement enters into force, and such goods shall be **duty-free, effective 1 January of year three**.
C	Duties on originating goods provided for in the items in category **C** shall be **removed in seven equal stages** beginning on the date this Agreement enters into force, and such goods shall be **duty-free, effective 1 January of year seven**.
D17	Duties on originating goods provided for in the items in category **D17** shall be **removed in 17 equal stages** beginning on the date this Agreement enters into force, and such goods shall be **duty-free, effective 1 January of year 17**.
E	Duties on originating goods provided for in the items in category **E** are **exempt from tariff elimination**.

Table 5: Sample dismantling categories[5] in the Schedule of Japan under the EU-Japan FTA

Dismantling category code	General Note (summarized)
A	Eliminated on the date the agreement enters into force.

[5] Full list of the categories available in the annex.

B5	Elimination of duties on originating goods in 6 equal stages, duty free from 1 April of year 6
B5*	Reduced by 20% at EIF, elimination in 5 equal stages starting from year 2 based on the reduced rate, duty free from 1 April of year 6
B10**	Reduced by 25% on EIF, elimination in 10 stages of the reduced rate starting from year 2, duty-free as from 1 April.
B12	Elimination in 13 equal stage starting from EIF, duty-free from year 13.
B12*	Reduced by 50% of the base rate on EIF, elimination in 12 stages starting from year 2, duty-free from year 13
B12**	Reduced by 20% on EIF, remain at the reduced rate until 31 March of year 6, elimination in 7 equal stages from yaer 7, duty-free from year 13.
B15	Elimination in 16 equal stages, duty free from year 16
B20*	Reduced by 80% on EIF in 11 equal stages from the base rate, eliminated in 10 equal stages starting from year 12, duty free from year 21.
R5	Reduced by 50% from the base rate in 11 equal stages starting from EIF, remain at this level staring from year 11
R6	Reduced by 50% in 6 stages starting from EIF
R7	Reduced by 5% on EIF, remain at that level thereafter
R14	Reduced by 25% on EIF, remain at that level thereafter
R15	Reduced by 15% in 6 equal stages starting from eif, remain at that level thereafter
TRQ	Section b of the general note
Xb	Excluded and remain at base rate
Xq1	Excluded -- goods subject to the wto quota
X	Excluded

Staging processes

The General Notes associated with the Schedules describe in detail how the customs duty on a product[6] will be reduced or eliminated. This includes:

- ***Base Rate*** for determining the interim staged rate of customs duty, which had to be agreed among the parties at the time when negotiation had begun. This Base Rate could be the Most-Favoured Nation (MFN) tariff at that date or deviate from it. For instance, the European Union and Canada have chosen the MFN customs duty applied on 9 June 2009 as a basis for staging under the EU-Canada Comprehensive Economic and Trade Agreement (CETA), which entered into forced on 21 September 2017. An immediate consequence of the choice of Base Rate is that the staged duty can be higher than the current MFN duty if the country decides to reduce its MFN tariff later on and if the staged duty is not expressed in terms of preferential margin.
- ***Staging Start Date*** marks the beginning of the reduction of tariffs on products in a given category. Tariffs on a category of products may be cut for the first time on the date the agreement enters into force (year 1[7]), later (after year 1), or never for tariffs on products that remain at the Base Rate or exempt from tariff elimination or will be subject to future renegotiation.

[6] At the NTLC, HS6, HS4 or HS2 levels, depending on the schedules.

[7] The year of entry into force is also noted as year 0 in some agreements (eg. FTA, Korea – Chile). In that case, the subsequent year is noted year1. For clarity, we use year EIF = Year 1 in the remainder of this paper.

- ***Staging Milestones***. The subsequent annual reductions take place on the first day of each following year, which may correspond to the calendar year or the twelve-month period after the entry into force date (EIF) or the fiscal new year of the reporting country. From the EU's perspective under the Japan-EU EPA[8] for instance, the first year corresponds to the twelve-month period from EIF, i.e. 1 February 2019 – 31 January 2020, and the subsequent year (year 2) is 1 February 2020 – 31 January 2021. From Japan's side under the same agreement, the first year refers to EIF until the following 31 March, i.e. 1 February 2019 – 31 March 2019, and the subsequent year (year 2) starts on 1 April that year and lasts 12 months, i.e. 1 April 2019 – 31 March 2020. The Japan-EU EPA illustrates the case where parties in the agreement have different staging milestones for tariff elimination. In most cases however, parties cut their tariffs at the same period of the year. For example, such is the case under the EPA between China and South Korea: first year refers to the year of EIF (1 October 2006) and subsequent years start on 1 January for both parties.
- EPAs may also include ***Provision on Delayed EIF***. For a Party for which the agreement enters into force at a later date than what was announced, the applied rate shall be at the level specified in that Party's schedule of tariff commitment as if there was no delay in the EIF. When such a provision is missing, we follow the schedule as it is and consider that the first year is the year of effective EIF even though it is delayed.
- ***Target Duty*** is the value that the Base Rate should be reduced to at the end of the staging process. The ***Target Duty*** is zero when the tariff is to be eliminated and is equal to a specific value different from zero when the concession consists solely into a reduction of tariffs to a percentage of the Base Rate (eg. 50% of the Base Rate), by a certain margin (20% from the Base Rate), or to specific duty (eg. 2.2% ad valorem). In any case, both ad valorem and non-ad valorem duties are staged based on their categories.
- The ***Rounding Method*** of ad valorem duties and of duties expressed in monetary units. As several options exist for rounding staged tariffs (Table 6), the agreement generally states clearly the chosen method, which has sometimes a non-negligible incidence on the interim staged rates. Per nature, staged values of ad valorem and non-ad valorem duties have different systems of rounding. For instance, the China-Korea FTA states that interim staged rates shall be rounded down, at least to the nearest tenth of percentage point or, if the rate of duty is expressed in monetary units, at least to the nearest tenth of one Chinese Yuan in the case of China and the nearest Korean Won in the case of Korea.

Table 6: Rounding options of year 1 rate staged in six equal installement from a base rate of 20% (20%* (1-1/6) = 16.66666%)

Rounding method	Precision	→ Outcome
Rounding	Whole p.p.	17%
Rounding down	Whole p.p.	16%
Rounding up	Whole p.p.	17%
Rounding	Tenth of p.p.	16.7%
Rounding down	Tenth of p.p.	16.6%
Rounding up	Tenth of p.p.	16.7%
Rounding	Hundredth of p.p.	16.67%
Rounding down	Hundredth of p.p.	16.66%

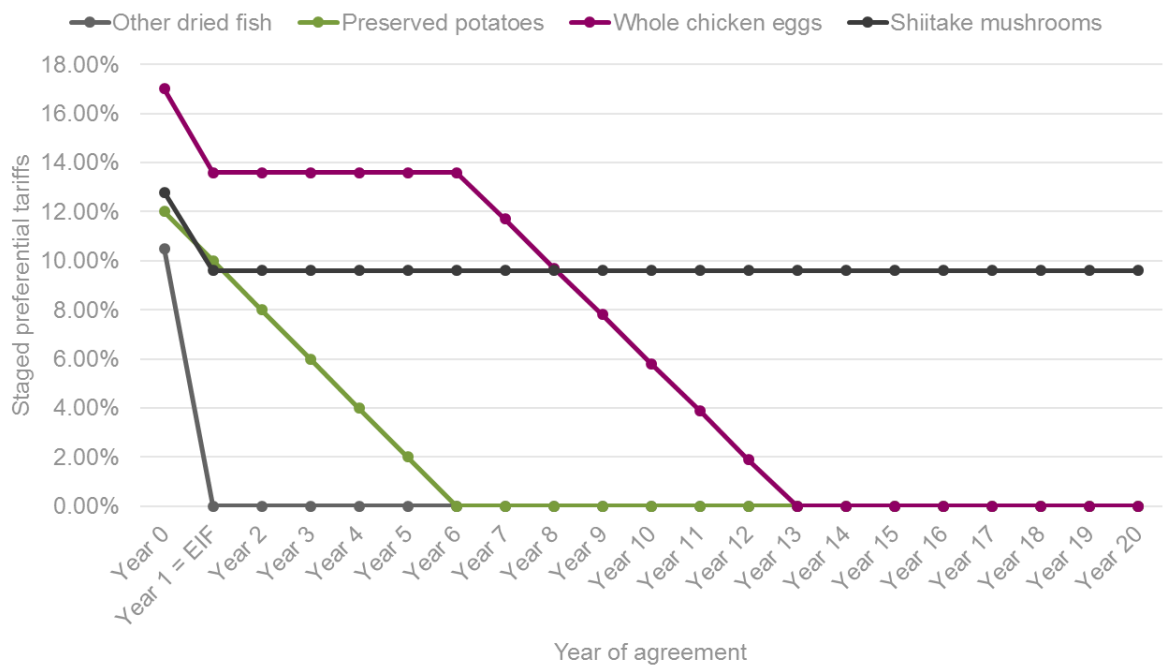
[8] The Japan-EU EPA entered into force on 1 February 2019.

Rounding up	Hundredth of p.p.	16.67%

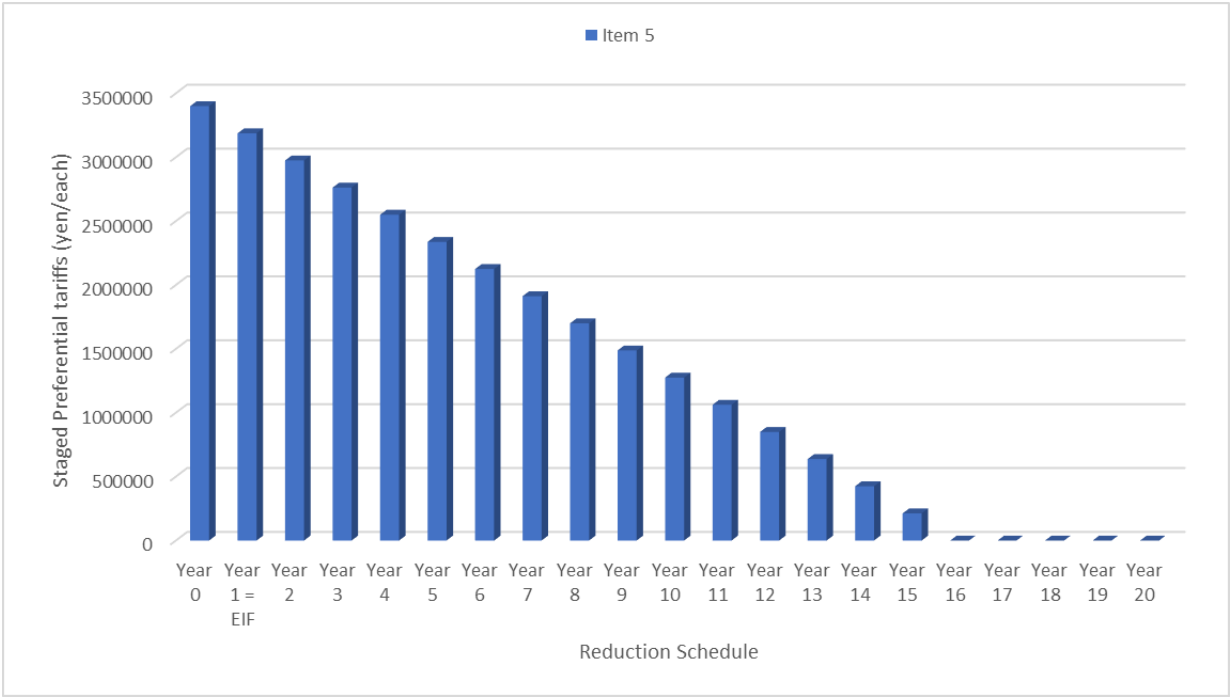
Box 1: Sample of Staging processes from the Schedule of Japan under the EU-Japan EPA

NTLC	Description	Staging Category	Base Rate	Example ID
030559090	Fish, dried, even salted but not smoked, n.e.s. (excl. fillets and offal): Other: Other: Other	A	10.5%	Item 1
200520210	Other vegetables prepared or preserved otherwise than by vinegar or acetic acid, not frozen, other than products of heading 20.06: Potatoes: Other: In airtight containers not more than 10kg each including container	B5	12.00%	Item 2
040721000	Birds' eggs, in shell, fresh, preserved or cooked: Other fresh eggs: Of fowls of the species Gallus domesticus	B12**	17%	Item 3
071239010	Dried vegetables, whole, cut, sliced, broken or in powder, but not further prepared: Mushrooms, wood ears (Auricularia spp.), jelly fungi (Tremella spp.) and truffles: Other: Shiitake mushrooms	R14	12.80%	Item 4
010129290	Live horses, asses, mules and hinnies: Horses: Other: Other: Other	B15	3,400,000 yen/each	Item 5
170220200	Other sugars, including chemically pure lactose, maltose, glucose and fructose, in solid form; sugar syrups not containing added flavouring or colouring matter; artificial honey, whether or not mixed with natural honey; caramel: Maple sugar and maple syrup: Maple syrup	R16	17.5% or 13.50 yen/kg, whichever is the greater	Item 6

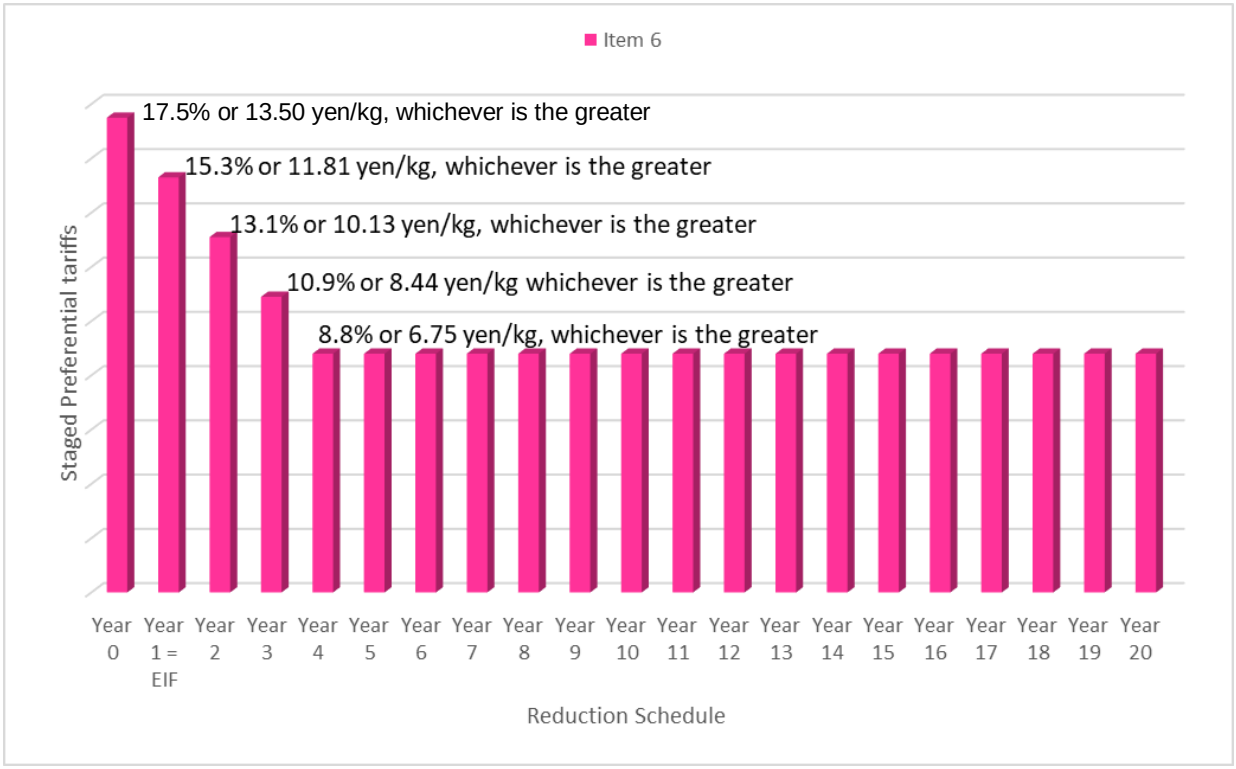
Example 1: Staging of ad valorem tariffs (Item 1,2,3, and 4)



Example 2: Staging of non-ad valorem tariffs (Other live horses - Item 5)



Example 3: Staging of non-ad valorem tariffs (Maple syrup - Item 6)



Elements of the Tariff Rate Quotas (TRQ): inside-quota tariff rate (IR), outside-quota tariff rate (OR), contingent or quantity limit (Q), and quota administration method (MA).

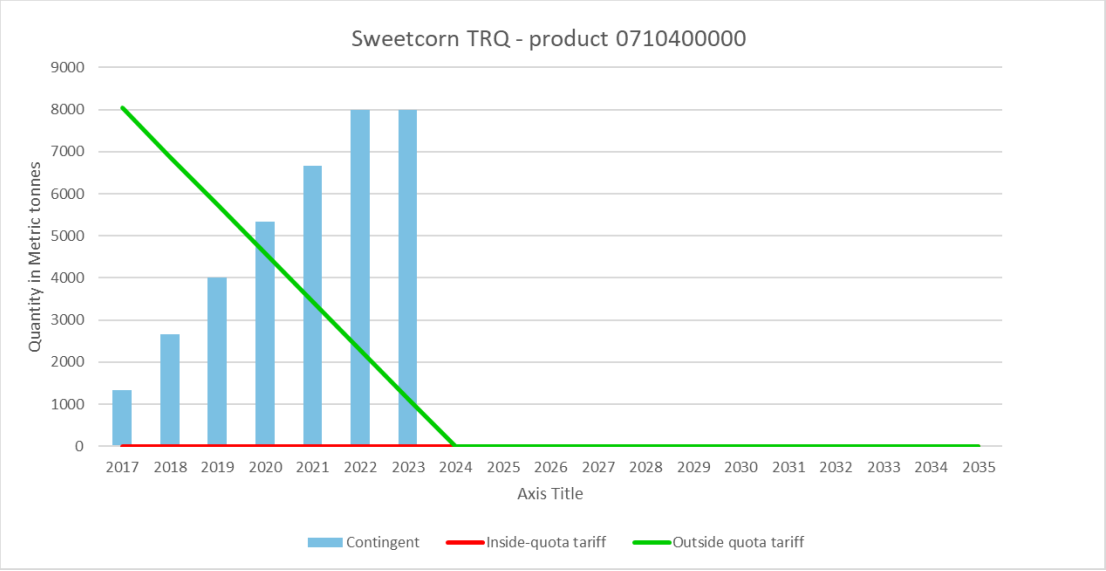
In EPAs, tariff liberalization may also take effects in the form of concessions through TRQ where a Party sets quantity limits (Q) under which the originating sensitive products can enter its market at lower duties (inside-quota tariff rates or IR) and above which the outside-quota tariff rates (OR) apply. Throughout our analysis, we surveyed that:

- A Party may grant a gradual increase of quantity limit (Q) of originating products allowed to enter its market duty-free, i.e. IR is zero. Beyond Q, MFN tariffs apply.
- He may also set a unique quantity limit Q for duty-free access without increasing it over the dismantling period.
- Both the IR and the OR can be reduced gradually.

Box 2: Examples of phasing-out of TRQ in the Schedule of the European Union under CETA

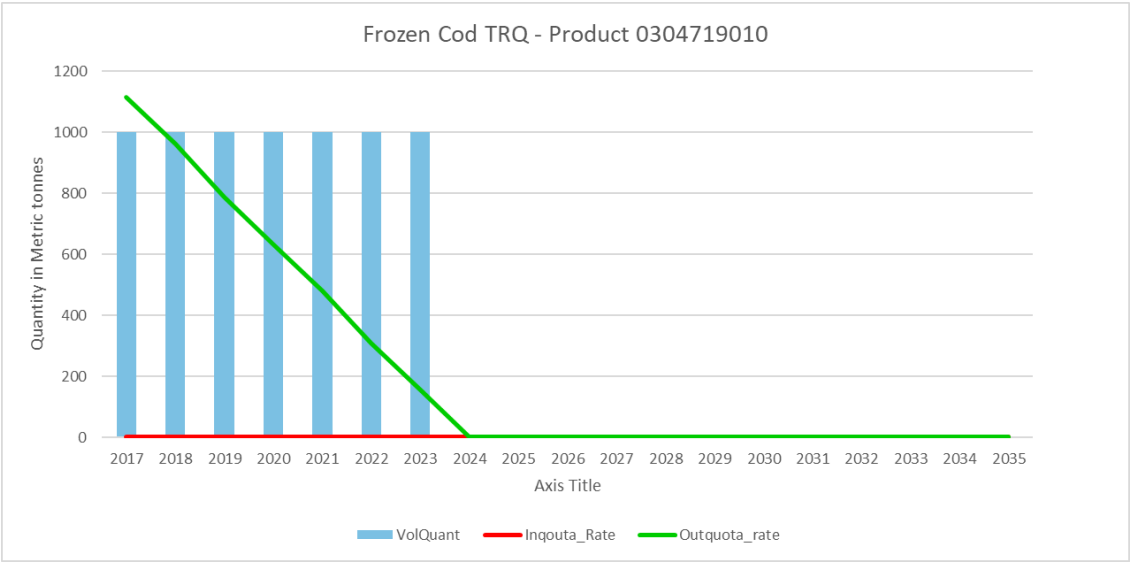
Example 4: Sweetcorn TRQ

Period	2017	2018	2019	2020	2021	2022	2023	2024 onwards
Inside-quota tariff	0	0	0	0	0	0	0	0
Outside quota tariff	4.462% + 8.22 EUR/100 kg/net eda	3.825% + 7.05 EUR/100 kg/net eda	3.187% + 5.87 EUR/100 kg/net eda	2.55% + 4.7 EUR/100 kg/net eda	1.912% + 3.52 EUR/100 kg/net eda	1.275% + 2.35 EUR/100 kg/net eda	0.637% + 1.17 EUR/100 kg/net eda	0



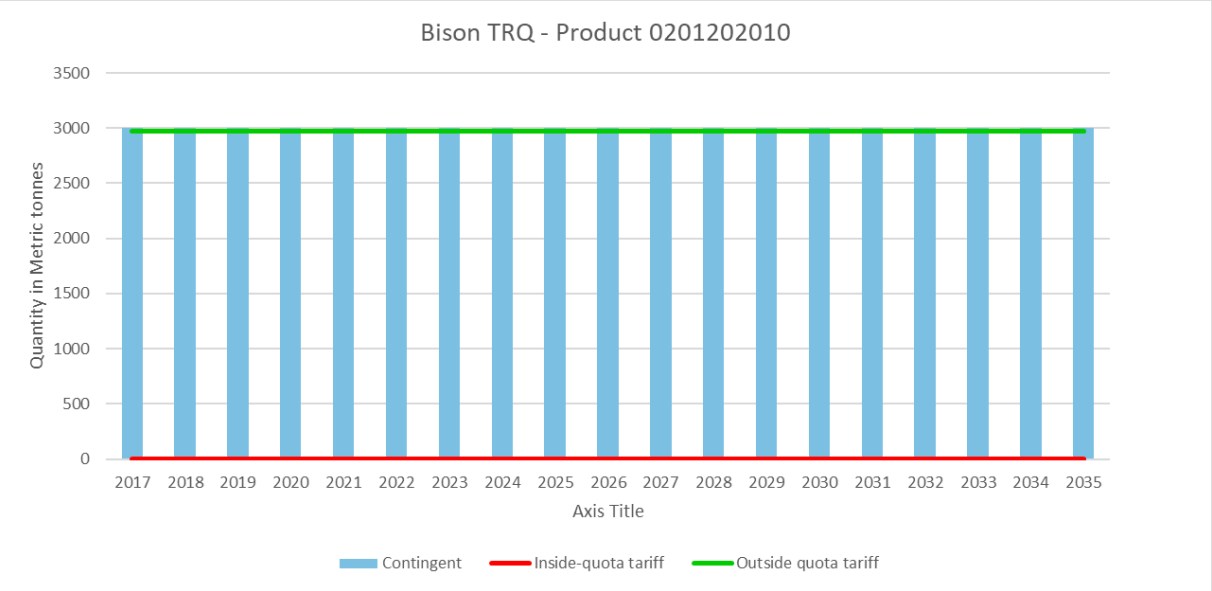
Example 5: Frozen Cod TRQ

Period	2017	2018	2019	2020	2021	2022	2023	2024 onwards
Inside-quota tariff	0	0	0	0	0	0	0	0
Outside quota tariff	6.5%	5.6%	4.6%	3.7%	2.8%	1.8%	0.9%	0.0%



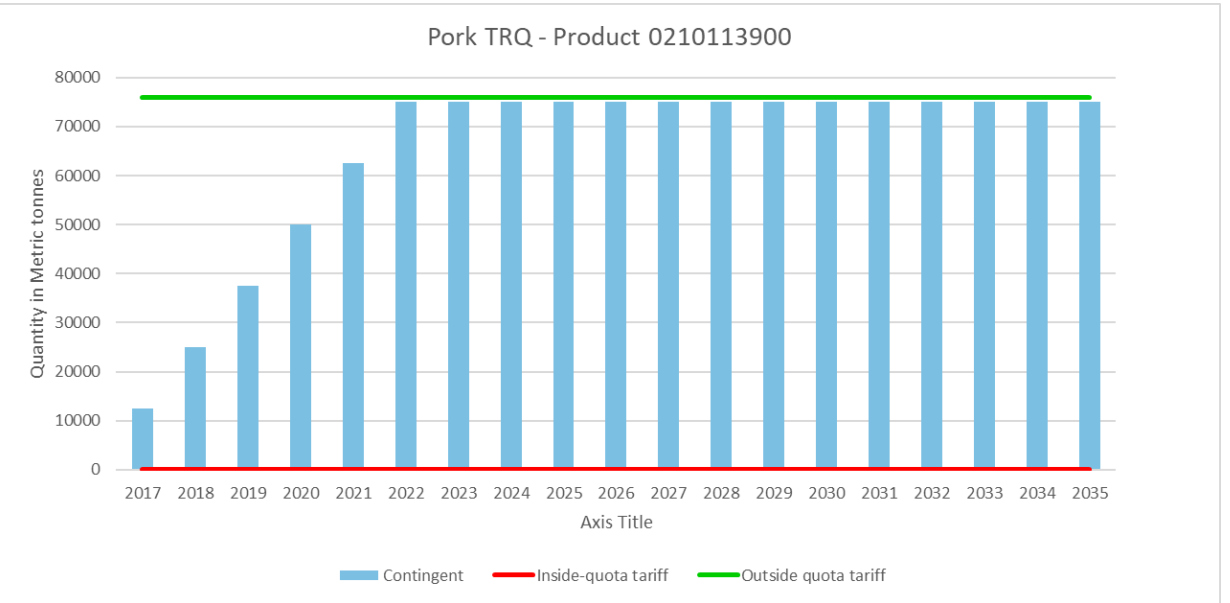
Example 6: Bison TRQ

Period	2017	2018	2019	2020	2021	2022	2023	2024 onwards
Inside-quota tariff	0	0	0	0	0	0	0	0
Outside quota tariff	12.8% + 176.8 EUR/100 kg	12.8% + 176.8 EUR/100 kg	12.8% + 176.8 EUR/100 kg	12.8% + 176.8 EUR/100 kg	12.8% + 176.8 EUR/100 kg	12.8% + 176.8 EUR/100 kg	12.8% + 176.8 EUR/100 kg	12.8% + 176.8 EUR/100 kg



Example 7: Pork TRQ

Period	2017	2018	2019	2020	2021	2022	2023	2024 onwards
Inside-quota tariff	0	0	0	0	0	0	0	0
Outside quota tariff	119 EUR/100 kg	119 EUR/100 kg	119 EUR/100 kg	119 EUR/100 kg	119 EUR/100 kg	119 EUR/100 kg	119 EUR/100 kg	119 EUR/100 kg



4. Data Compilation and Aggregation

Using the elements and variables extracted in previous section, we constructed and aligned parties' schedules of tariff reductions by each EPA partner or each group of partners involved in EPA, if the tariff concession are not partner-differentiated. Then we compiled the schedules into a single dataset, and finally aggregated it to the HS6 and GTAP sectoral level using GTAP methodology.

Each schedule, regardless of the version of the HS nomenclature in which it was produced in the EPA text, was converted[9] to match the party's Product Nomenclature in 2014, which is the reference year of the database. The party's product nomenclature as of 2014 is designated as ***Base Table*** and is sourced from ITC Market Access Map database[10]. This mapping allows us to do comparison between the staged preferential tariffs and the MFN tariffs of the reference year at the NTLC level so that we see if the EPA effectively grants a preferential access on the product and how much preferential margin. When the preferential margin[11] is positive then we consider that the EPA effectively give preferential access to a product (defined at the NTLC).

Comparing the staged forward-looking values of tariffs and the MFN in 2014 poses many challenges. Firstly, the NTLC in the dismantling schedule and the ***Base Table*** must be of the same revision and perfectly match. We solved this issue using ITC-developed conversion algorithm. Secondly, the comparison of ad valorem and non-ad valorem duties or of normal tariffs and TRQ is not straightforward. A prior computation of Ad Valorem Equivalent (AVE) of non-ad valorem duties and TRQ is also necessary: we use the same methodology as in Market Access Map for that matter. Moreover in some rare cases, taking MFN 2014 as a Base Table can generate discrepancy between the preferential duty reported by the country in Market Access Map in year T and the staged preferential rates in the same period when:

- The concession is expressed in terms of a preferential margin from the current MFN but the MFN applied in 2014 is different from the MFN in year T;
- The concession is based on some entry price system or includes current domestic and world prices in its computation, which continuously fluctuate.

Finally, differences can also occur when the schedule sets out different staging categories on sub-products that are not assigned to any NTLC in the 2014 nomenclature. Our methodology consisted of keeping the category that gives the best concession, i.e. the quickest way to reduce the Base Rate was preferred.

Following the mapping with the Base Table of each schedule and aggregation into a single dataset per each reporting country, we aggregated the tariffs from the NTLC to more aggregated product levels: HS6 and, finally, GTAP sectors. The aggregation technique used to obtain tariffs at the HS6 level is a simple average of all NTLC tariffs comprised in the HS6 code. Aggregation to the GTAP sectors uses three-year averages of bilateral trade weights[12]. Economists can easily use the resulting datasets as protection data in computable economic models such as CGE (Computable General Equilibrium).

Box 3: Ad Valorem Equivalent (AVE) calculation in Market Access Map

ITC Market Access Map database includes customs duties at the national tariff line code (NTLC) level for 201 reporters and 239 partners under MFN, non-MFN and preferential regimes and tariff rate quotas. The database is continuously updated with tariff data that ITC collects directly from national authorities such as customs offices, ministries and other governmental institutions.
The database contains pre-calculated ad valorem equivalents (AVE) for non-ad valorem duties

[9] In 2014, most countries used HS2012 to build their products nomenclature (NTLC), while the nomenclature used in the EPA texts can be of HS2017, HS2007 or earlier and varies based on when the EPA was negotiated. We have developed a conversion algorithm to map the different revisions of the national products nomenclature based on correlation tables provided by the country or the HS correlation table of the WCO.

[10] www.macmap.org

[11] Preferential margin is defined as the difference between the MFN duty in 2014 and the staged tariff in year T.

[12] GTAP aggregation methodology

and tariff rate quotas (TRQ). AVE rates are computed for specific, compound and mixed tariffs, and to allow tariff comparison across countries AVE are aggregated from the NTLC to HS6 level.

AVEs express non-ad valorem tariffs in percentage:

$$AVE = \left(\frac{SP}{UV} * XR\right) * 100$$

where:

- *AVE: ad valorem equivalent (per cent)*
- *SP: monetary value of duty per unit of imports*
- *UV: import unit value*
  - *Such as $UV = V/Q$*
  - *V= value of imports*
  - *Q = quantity of imports*
- *XR: currency exchange rate when appropriate.*

Hence, the accuracy of the AVEs depends on the UV estimates, which are sensitive to variations in the data. ITC's strategy to select the most accurate UV estimates is schematized in **Figure 2,** and the entire calculation process is detailed in the World Tariff Profiles 2006[13].

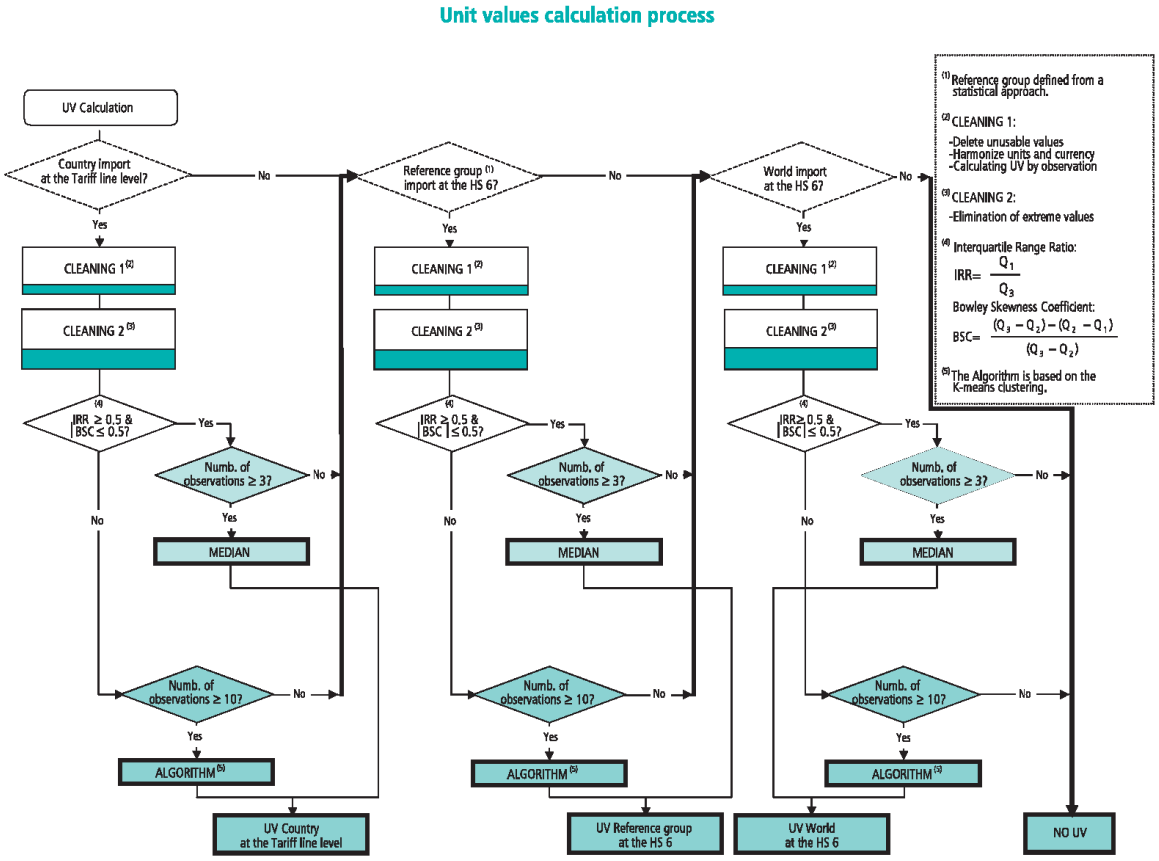
However, not all non-ad valorem tariffs can be converted into an ad valorem equivalent rate. This is the case for technical duties imposed on some products. Nonetheless, such duties represent only 1.7 percent of the country-pair-product observations of the database.

Importing country	National Product Code	Product Description	Customs duty as reported
Yemen	22043000	Wine of fresh grapes, including fortified wines; grape must other than that of heading 20.09 : Other grape must	**Prohibited**
Russian Federation	8703329093	Motor cars and other motor vehicles principally designed for the transport of persons (other than those of heading 8702), including station wagons and racing cars: Other vehicles, with compression-ignite	**2.2 euro per cm³ of engine volume**
New Zealand	95081000	Roundabouts, swings, shooting galleries and other fairground amusements; travelling circuses and travelling menageries; travelling theatres: Travelling circuses and travelling menageries	**The rates applicable to the separate components**
United States	91091010	Alarm clock movements, complete and assembled, electrically operated, with opto-electronic display only	**3.9% on the movement + 5.3% on the battery**

Source: Market Access Map, www.macmap.org

Figure 2

[13] See World Tariff Profiles 2006 , pages 186 -197.



Source: World Tariff Profile 2006

Section 3 Access to the database

5. Variables in data files

The tariff dismantling data is presented by each reporting country in two tab-delimited data files (TXT format): HS6 level (large file) and GTAP level (smaller file) of product disaggregation. The variables included into the files are presented in Table 7.

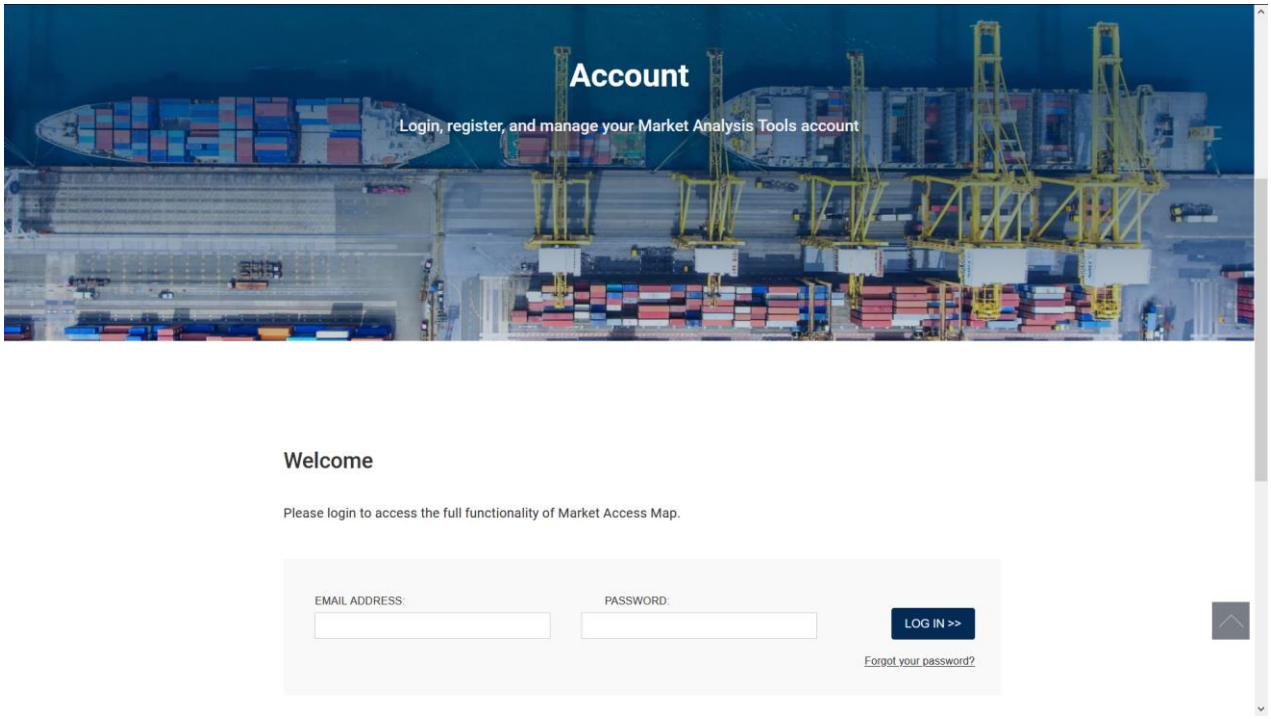
Table 7: Variables in output database files with forward-looking tariff dismantling (2014-2050)

Variable	Description
gtap_rep	GTAP region (reporter)
reporter	ISO country code (reporter)
gtap	GTAP product sector
gtap_par	GTAP region (partner)
partner	ISO country code (partner)
year	Year
ave	Tariff rate (AVE)
import	Imports
source	Market Access Map
rev *(for HS6 file)*	HS revision (HS2012)
hs6 *(for HS6 file)*	6-digit HS code

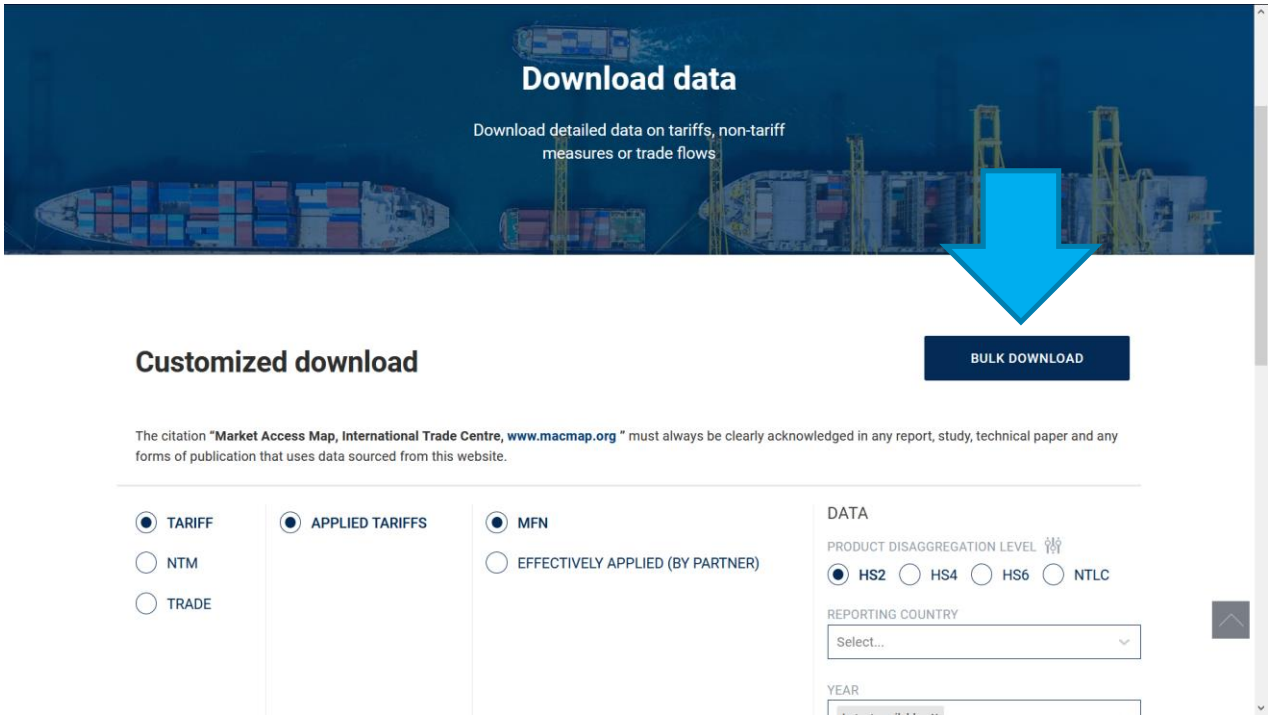
6. Steps to download the database

Below we provide a step-by-step procedure on how to download the database in six easy steps.

Step 1. User should enter website www.macmap.org and create a personal account (click on “Account” in top right corner of the screen). Creation of personal account is free of charge and the data provided for download is free.

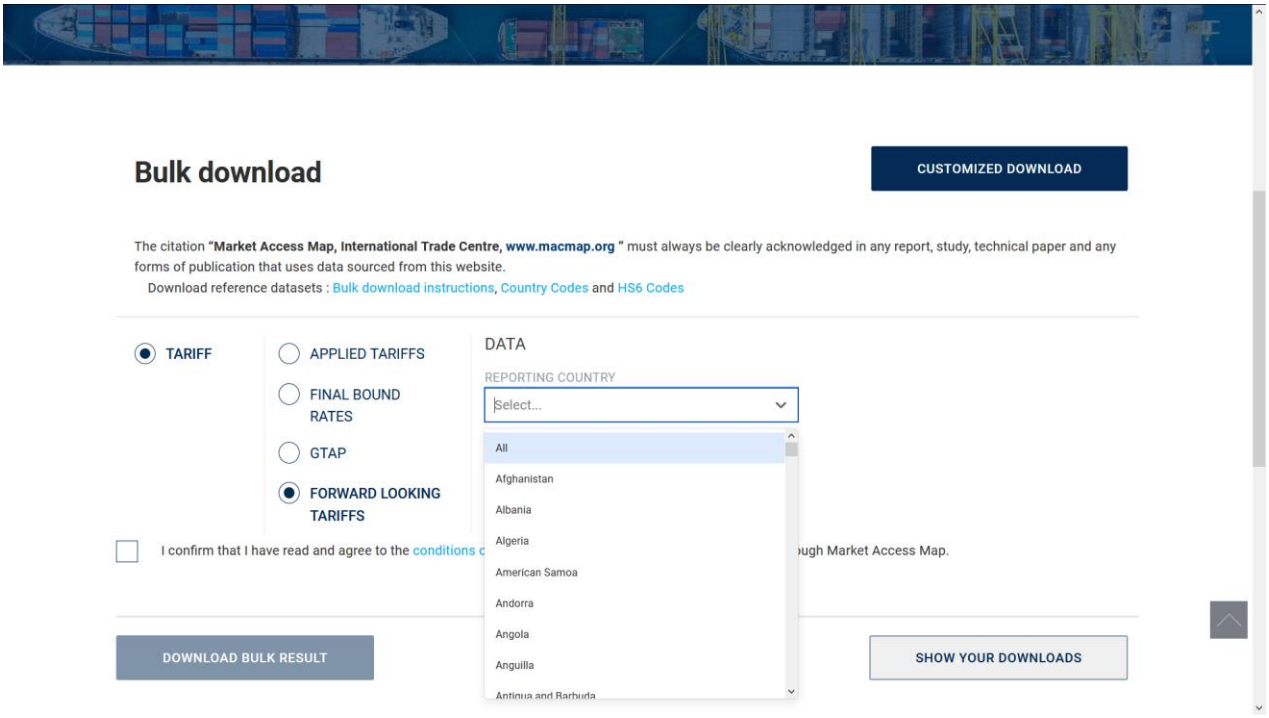


Step 2. Once the new account is confirmed through activation email, user should proceed to the "Download" module (outermost right tab on the top menu ribbon). Once inside the Download module, user should immediately click on button "Bulk download". Download module can also be accessed directly by clicking on the following link: https://www.macmap.org/en/download.

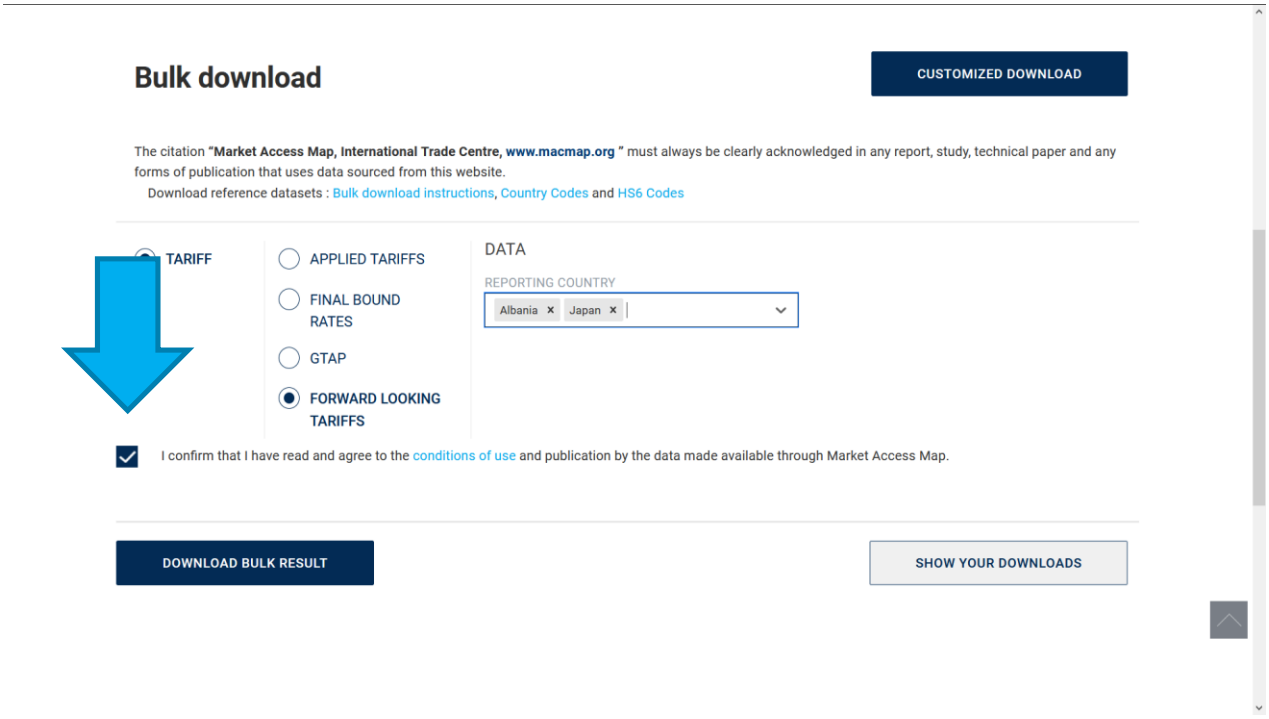


Step 3. In the resulting menu within "Bulk Download", user should select the fourth option "Forward Looking Tariffs", which is the name designation of this database. In the dropdown interactive selection box, user should either select one reporting country of interest (for example, Japan) or select "All" reporting country. Please note that selecting "All" countries produces a large zipped file consisting of a 300+ MB GTAP-

aggregated data file and a 40+ GB HS6 data file. Therefore, downloading “All” reporting countries at once is not advised for users with a slow internet connection or insufficient disk space.

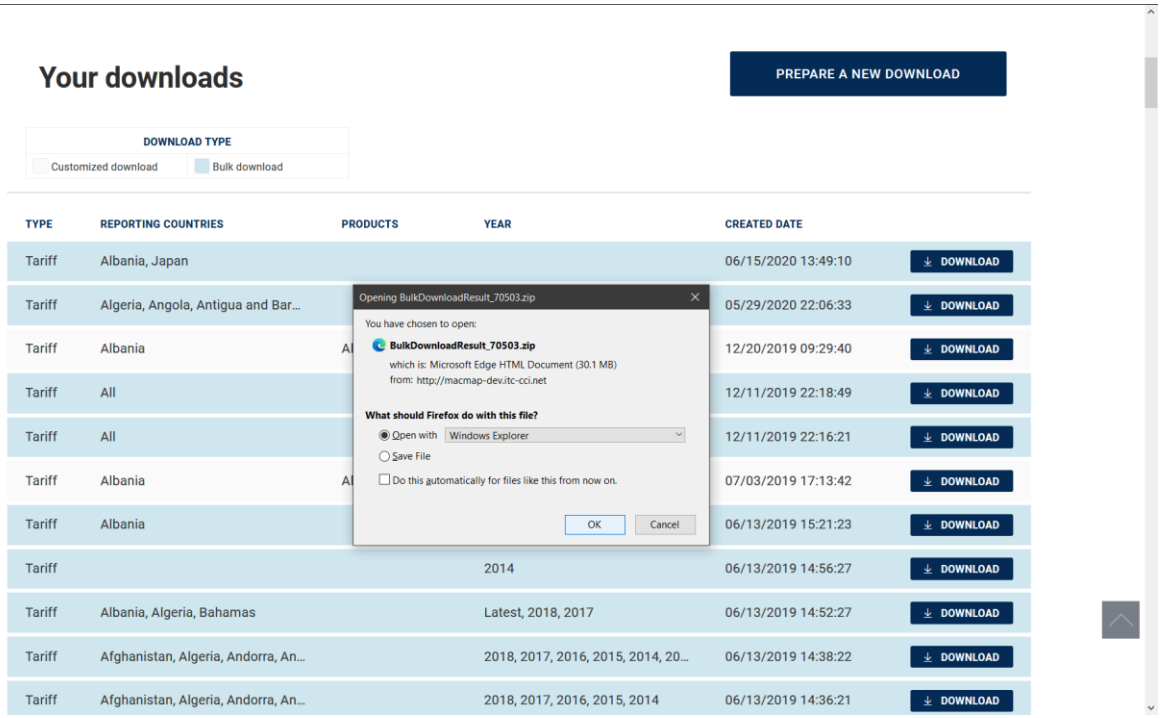


Step 4. Before proceeding to download the data file, user has to acknowledge Terms and conditions of Market Access Map, which specifically prohibit redistribution or reselling of the data. Also in any research work, citation of the original source as follows is obligatory: “**Market Access Map, International Trade Centre, www.macmap.org**”.



Step 5. In the resulting Download results window, user can locate the top line entry and click on the button “Download”. This will offer a zipped file with the resulting data. The process should take no more than several

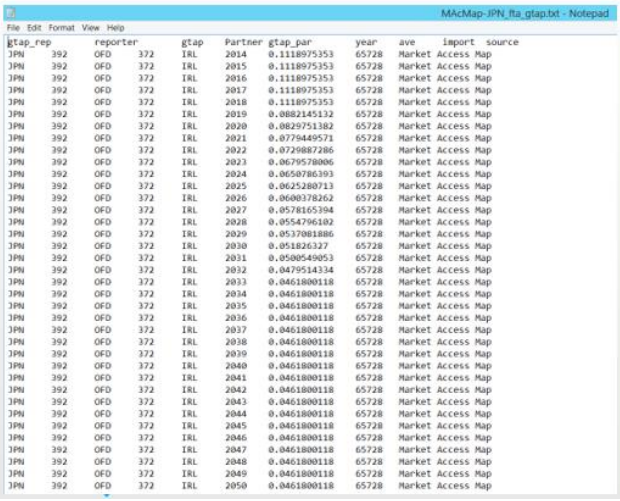
seconds, with the exception when “All” reporting countries have been selected (in this case it can take several minutes due to limitations of the browser).



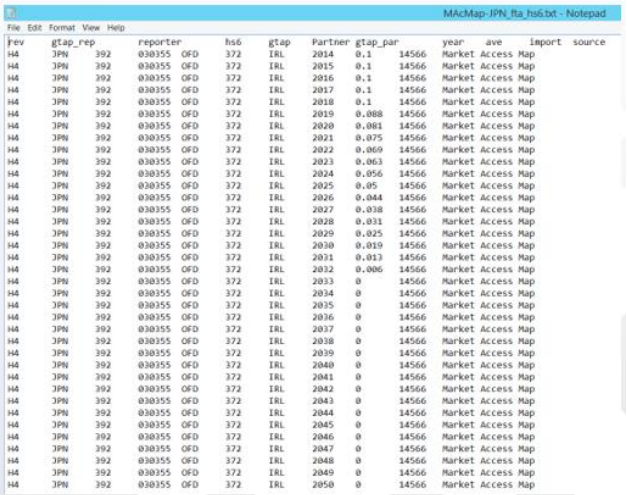
Step 6. In the resulting zipped file, there are two TXT data files. One file stands for GTAP-sector aggregated dataset for Japan (or another selected reporting country) and the other file stands for HS6-disaggregated dataset for Japan (or another selected reporting country). These two files are ready for importation into most statistical software systems (such as STATA, Matlab, SAS, etc.). The variables in each file follow the structure outlined in Table 7.

Example: File 1 “*MAcMap-JPN_fta_gtap.txt*” and File 2 “*MAcMap-JPN_fta_hs6.txt*”

File 1 (GTAP sectors)



File 2 (HS6)



Section 4 Conclusion

We have documented a novel database of forward-looking tariff dismantling schedules for all existing trade agreements (prior to May 2019) covering the period of 2014 to 2050. The database was collected and converted into GTAP-comparible format thanks to the financial support from GRIPS Japan and USITC.

The database will improve the precision of trade modelling exercises. Importantly, this database provides a forward-looking property to CGE modelling exercises, as it incorporates legal tariff concession commitments staged over, sometimes, long periods of times. Researchers will no longer have to resort to quick fixes, such as simulating an assumption-based broad tariff cut on a sector in order to save time. The official tariff cuts in all EPAs are now available at both HS6 and GTAP-sector level with a forward-guidance window until 2050.

Immense amount of work spread across five years went into construction of the database. Lengthy tariff dismantling schedules (reachin 3,000 pages for some EPAs, such as CPTPP) were scraped and transformed into well-structured databases at the national tariff line code level. Then these databases were mapped and aligned with the tariff of Market Access Map for the year 2014. The necessary computation of ad valorem equivalents (AVEs), including for TRQs, was performed in order to completely align the database with MacMap and GTAP 10 methodologies.

The database will be undergoing regular maintenance and updates. In 2020, all new EPAs that entered into force between May 2019 and May 2020 will be added. These include US-Japan, Korea-Central America, EAEU-Iran and EU-Singapore. All new EPAs that will enter into force in second half of 2020 or later will also be added into the database. These forthcoming EPAs include USMCA, RCEP, AfCFTA, EU-Mercosur, EU-Vietnam, EFTA-Mercosur and UK rolled-over EPAs.

In the future, the work of extracting forward-looking liberalization commitments could be extended to other types of market access conditions, such as taxes and rules of origin. For example, Vietnam liberalizes its export tax in a series of annual cuts under CPTPP. Rules of origin on autos are staged across several years in some recent trade agreements, such as EU-Japan and USMCA.

Annexes

Annex A.1.: Dismantling categories in the Schedule of Japan under the EU-Japan FTA

Dismantling category code	General Note (summarized)
A	Eliminated on the date the agreement enters into force.
B3	Elimination of duties on originating goods in 4 equal stages, duty free from 1 April of year 4
B5	Elimination of duties on originating goods in 6 equal stages, duty free from 1 April of year 6
B5*	Reduced by 20% at EIF, elimination in 5 equal stages starting from year 2 based on the reduced rate, duty free from 1 April of year 6
B5**	Reduced by 50% at EIF, elimination in 5 equal stages starting from year 2 based on the reduced rate, duty free from 1 April of year 6
B5***	Remain at base rates until 31 March of year 5, duty free from 1 April of year 6
B5****	Reduced to "25% + 40 yen/kg", elimination in 5 equal stages starting from year 2 based on the reduced rate, duty free from 1 April of year 6
B5*****	Reduced to "55% + 40 yen/kg", elimination in 5 equal stages starting from year 2 based on the reduced rate, duty free from 1 April of year 6
B7	Elimination in 8 equal stages, duty free from 1 April of year 8
B7*	Reduced by 50% at EIF, elimination in 7 equal stages starting from year 2 based on the reduced rate, duty free from 1 April of year
B7**	Reduced by 20% at EIF, kept at the reduced rate until 31 March of year 3, elimination in 5 equal stages starting from year 4 based on the reduced rate, duty free from 1 April of year 8
B8	Elimination in 9 equal stages, duty free from 1 April of year 9
B9*	2.2% at EIF, elimination in 9 equal stages starting from year 2 based on the reduced, duty free from 1 April 2019
B10	Elimination in 10 equal stages, duty free from 1 April of year 11
B10*	Reduced by 50% from the base rate at EIF, elimination in 10 equal stages starting from year 2 based on the reduced rate, duty free from 1 April of year 11
B10**	--- From EIF to year 10: see general notes. --- Zero as from 1 April of year 11
B10***	4.3% at EIF, reduced to 2.2% from the reduced rate in 4 stages starting from year 2, reduced to 0% from 2.2% in 6 stages, duty free at year 11.
B10*****	Reduced by 25% on EIF, elimination in 10 stages of the reduced rate starting from year 2, duty-free as from 1 April.
B12	Elimination in 13 equal stage starting from EIF, duty-free from year 13.
B12*	Reduced by 50% of the base rate on EIF, elimination in 12 stages starting from year 2, duty-free from year 13
B12**	Reduced by 20% on EIF, remain at the reduced rate until 31 March of year 6, elimination in 7 equal stages from yaer 7, duty-free from year 13.

B12* **	Reduced by 50% on EIF, remain at the reduced rate until 31 March of year 6, reduced by an additional 25% in year 7, remain at the reduced rate until year 13, duty-free from year 13.
B13	Elimination in 14 equal stages, duty-free in year 14
B15	Elimination in 16 equal stages, duty free from year 16
B15*	--- From EIF to year 15: see general notes. --- Zero as from 1 April of year 16
B20*	Reduced by 80% on EIF in 11 equal stages from the base rate, eliminated in 10 equal stages starting from year 12, duty free from year 21.
R1	Reduced to 27.5% on EIF, reduced to 20% beginning in 9 stages from year 2, reduced to 9% in six stage from year 11
R2	See general note
R3	See general note
R4	Reduced to 39% on EIF, reduced to 20% in 9 equal stages starting from year 2, reduced to 9% in 6 equal stages staring from year 11, remain at 9% from year 16.
R5	Reduced by 50% from the base rate in 11 equal stages starting from EIF, remain at this level staring from year 11
R6	Reduced by 50% in 6 stages starting from EIF
R7	Reduced by 5% on EIF, remain at that level thereafter
R8	Reduced by 25% in 6 equal stages starting from EIF, remain at that level thereafter
R9	See general note
R10	See general note
R11	Reduced to "35% + 40 yer per kg" on EIF, reduced by 70% in 10 stages from year 2, remain at the reduced level from year 11
R12	Reduced by 15% on EIF, remain at that level thereafter
R13	Reduced by 15% on EIF, remain at that level thereafter
R14	Reduced by 25% on EIF, remain at that level thereafter
R15	Reduced by 15% in 6 equal stages starting from eif, remain at that level thereafter
R16	Reduced by 50% in 4 equal stages starting from eif, remain at that level thereafter
R17	Reduced by 75% in 11 equal stages starting from eif, remain at that level thereafter
R18	Reduced by 10% in 6 equal stages starting from eif, remain at that level thereafter
R19	Reduced by 75% in 6 equal stages starting from eif, remain at that level thereafter
R20	Reduced by 60% in 6 equal stages starting from eif, remain at that level thereafter
R21	Reduced by 63% in 6 equal stages starting from eif, remain at that level thereafter
R22	Reduced by 66.6% in 6 equal stages starting from eif, remain at that level thereafter
R23	Reduced by 67% in 4 equal stages starting from eif, remain at that level thereafter
TRQ	Section b of the general note

Xb	Excluded and remain at base rate
Xq1	Excluded -- goods subject to the wto quota
Xq2	Excluded --> good subject to trq under cabinet order
X	Excluded
SG-n	Section c (safeguard measure): japan may, as a safeguard measure, increase the rate of customs duty on such an originating agricultural good to a lelevel not exceeding the lesser of (mfn at the date of the safeguard, mfn on the eif, rate set out in the section c).
S	Subject to later review