River Treaty Database Codebook

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About this document

This document (*rtd_treaty-codebook.pdf*) defines all variables in the River Treaty Database file:

`/../RT/TFDD/TFDD Summer 2013/TFDD_Jul_2012_Revised_Karreth.csv`

That file is based on previous versions compiled by Jaroslav Tir and Doug Stinnett. Those versions were derived from the TFDD International Freshwater Treaties Database at http://www.transboundarywaters.orst.edu/database/interfreshtreatdata.html. The River Treaty Database is being revised in Summer 2013. Information from http://www.transboundarywaters.orst.edu/database/Treaty%20Database%20Design%20(with%20descriptions).doc was used to recover information on most variables.

This codebook defines variables at the treaty- and more finegrained levels of analysis. For data at the country and dyad year levels of analysis, see the document *rtd_cd-codebook.pdf*.

All data management commands to reproduce the files mentioned in this document are contained in the file *rtd_datamgmt.R*.

History of the River Treaty Database

- *TFDD_June_2011_Revised_Fisher.xlsx*: received in early 2012 (JK)
- Revisions leading to *TFDD_Jul_2012_Revised_Karreth.csv*:
  - Removed signatories not in basin (JK)
  - General cleanup (JK)
  - Recoded and encoded categorical variables using *TFDD Summer 2012/tfdd.recode.do* (JK)
  - Based on recodes, produced *TFDD Summer 2012/TFDD_April2012.dta*. All encoding choices of categorical string variables (mostly binary) are documented in *TFDD Summer 2012/tfdd.recode.do* (JK)
  - Documented changes and values of string variables in *TFDD Summer 2012/TFDD_Jul_2012_Revised_Karreth.xlsx*
  - Exported the main sheet (TFDD July 2012) from *TFDD Summer 2012/TFDD_Jul_2012_Revised_Karreth.xlsx* to *TFDD Summer 2013/TFDD_Jul_2012_Revised_Karreth.csv*. The latter is the working file for Summer 2013.

Variables, definitions, and coding rules

This section describes all existing variables in the file TFDD_Karreth.xlsx. Variables are ordered by appearance in the dataframe.

1. **BCCODE_TreatyID:** Basin-Treaty ID

- Type: String
- Coding: [bcode][ccode][treaty_metadata_docid]

2. **treaty_metadata_docid:** Unique ID for each treaty

   - Type: Numeric
   - Description: Used as main treaty identifier when creating datasets at different levels of analyses (see below).

3. **primarydocid:** Primary document ID

   - Type: Numeric
   - Description:
   - Coding: ?
   - Institutionalization Index candidate variable: yes/no

4. **tfddid:** Treaty ID from TFDD

   - Type: Numeric
   - Coding: http://www.transboundarywaters.orst.edu/database/Treaties_0809.xls has a variable named TFDD, but it does not correspond to this variable (tfddid). Instead, tfddid appears to correspond to PrimaryTFDDID in the TFDD treaty database.

5. **primarytfddid:** Primary ID from TFDD

   - Type: Numeric
   - Coding: Appears to correspond to PrimaryTFDDID in the TFDD treaty database.

6. **not_in_basin:** State not in basin

   - Type: Numeric-categorical
   - Description: Marker added by JK in 2012 to indicate countries that are treaty members, but not in the respective basin. Can be removed.
   - Coding:
     0. No
     1. Yes

7. **basin_recoded:** Basin ID was recoded

   - Type: Numeric-categorical
   - Description: Marker added by JK in 2012 to indicate that basin ID of this case was recoded. Can be removed for most purposes.
   - Coding:
     0. No
     1. Yes

8. **jk_comment:** Comments from JK data cleanup in 2012

   - Type: String
   - Description: Comments by JK indicating details for any changes in IDs

9. **country_name:** Country name

   - Type: String

10. **ccode:** Country code (ISO3, I believe)

- Type: String

11. **cowcode:** Correlates of War country code
    - Type: Numeric
12. **numbsign:** Number of signatories?
    - Type: Empty
    - Description: Count of signatories? If yes, needs to be created via collapsing the current dataframe.
13. **documentname:** Name of the document/treaty
    - Type: String
14. **datesigned:** Date on which the treaty was signed
    - Type: Date (mm/dd/yy)
15. **yearsigned:** Year in which the treaty was signed
    - Type: Date (yyyy)
16. **doctype:** Document type
    - Type: Numeric-categorical
    - Description: Type of treaty
    - Coding:
        1. Not a treaty: The document is not a treaty signed by the respective parties
        2. Semi-international treaty: The treaty has not been concluded between sovereign states, for example an agreement between one state and an international organization or an agreement between a provincial government and a state.
        3. Does not fit TFDD inclusion criteria: the treaty does not deal with water as a consumable resource
        4. Primary Agreement: The first water treaty signed between the parties about a particular issue area.
        5. Replacement of a Primary Agreement: Replaces a previously signed water agreement on the same issue area.
        6. Amendment to a Primary Agreement: Amends parts of a previously signed water agreement on the same issue area
        7. Protocol to a primary agreement: A treaty adding further aspects to an already signed water treaty and potentially modifying parts of the original treaty
        8. Financial agreement related to international waters: A treaty dealing exclusively with the financing of particular aspects related to water management, not with water itself (and thus not part of core TFDD collection)
        9. ?
        10. ?
        11. ?
        12. What is -1?
17. **format_text:** Format of the agreement
    - Type: String-categorical
    - Description: A (diffuse) coding of the format of the agreement, describing either language (Arabic, French, etc.) or format (Electronic, fulltext, etc.) of the agreement.
    - Coding:
        - Arabic

  - Electronic
  - French
  - Fulltext
  - German
  - Greek
  - Hungarian
  - Missing
  - Paper
  - PartialText
  - Partialtext
  - Partialtext-Annexismissing
  - Polish
  - Romanian
  - Russian
  - Spanish
  - Synopsis
  - Ukrainian

18. **source:** Source for the treaty text

    - Type: String
    - Description: Reference to treaty databases, such as the UN Treaty Collection

19. **notes:** Coding notes from original (TFDD?) coders

    - Type: String

20. **locationsigned:** Location where the treaty was signed

    - Type: String
    - Description: City names.

21. **region:** World region covered by the treaty

    - Type: String-categorical
    - Coding:
      - Africa
      - Asia
      - Europe
      - North America
      - South America

22. **treatybasin:** Name of the basin covered by the treaty

    - Type: String

23. **numberparties:** Number of parties to the treaty?

    - Type: Numeric-categorical
    - Coding:
      1. ?
      2. ?

24. **additionalcomments:** Comments from original coders

- Type: String

25. **treaty_data_single_docid:** ?

    - Type: Numeric
    - Description: Appears to be a simple numeric ID for each single treaty doc (?)
    - Coding:

26. **minoragreement_n:** Agreement with minor relevance for water issues

    - Type: Numeric-categorical
    - Description: An agreement with components related to water as a resource but whose water component is believed insignificant and with little relation to international water management issues (e.g. a clause allowing border guards to access drinking water on adjacent territory).
    - Coding:
        0. No
        1. Yes
    - Institutionalization Index candidate variable: MAY WANT TO EXCLUDE ALL TREATIES FROM THE INDEX WHERE = 1; BUT THOSE ARE ONLY 29 CASES (JK)

27. **geoscope:** Geographic scope

    - Type: Numeric-categorical
    - Description: Geographic scope of the agreement.
    - Coding:
        0. ?
        1. Global: an agreement potentially open to any country but without reference to specific basins (e.g. 1997 UN Convention) [not represented in the data]
        2. Regional: an agreement potentially open to any country in a defined region but without reference to specific basins (e.g. SADC Protocol) [not represented in the data]
        3. All waters of two or more countries: an agreement covering all waters shared between two or more contiguous states but generally without reference to specific basins (e.g.)
        4. entire named basin(s): an agreement covering the entire hydrologic area of one or more specifically named basins.
        5. Sub-basin(s) or other specified area(s): an agreement covering only a part of one or more specifically named or implied basins (e.g.), for example often only the boundary parts of basins, or an activity confined to only part of a specifically named or implied basin (e.g. some hydropower treaty).

28. **rbo_n:** River Basin Organization created

    - Type: Numeric-categorical
    - Description: Agreement establishes a River Basin Organization, i.e. a joint management institution with a broad, general mandate to manage water issues in the entire basin
    - Coding:
        0. No
        1. Yes
    - Institutionalization Index candidate variable: YES (JK)

29. **infrastructure_n:** Infrastructure created

    - Type: Numeric-categorical
    - Description: An agreement with the major purpose of constructing some form of infrastructure, i.e. barrages, canals, dykes, etc.

- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: FOR ISSUE COUNT? (JK)

30. **allocation_n** This variable was listed in http://www.transboundarywaters.orst.edu/database/Treaty%20Database%20Design%20(with%20descriptions).doc, but not in the original TFDD http://www.transboundarywaters.orst.edu/database/Treaties_0809.xls. Hence I (JK) created the variable.

    - Type: Numeric-categorical
    - Description: Does the treaty contain language about the allocation of water resources (water quantity, hydropower, or pollution)?
    - Coding:
      0. No
      1. Yes
    - Institutionalization Index candidate variable: YES (JK)

31. **alloc_article:** Treaty article discussing the allocation of water resources.

    - Type: String

32. **alloc_text:** Description of treaty terms on allocation of water resources

    - Type: String
    - Description: Only available for some treaties and mostly quite brief and vague.

33. **hydropower_n:** Hydropower mentioned

    - Type: Numeric-categorical
    - Description: An agreement which mentions hydropower
    - Coding:
      0. No
      1. Yes
    - Institutionalization Index candidate variable: FOR ISSUE COUNT? (JK)

34. **hydropower_text:** Hydropower details

    - Type: String
    - Description: Detailed information on hydropower management, if available

35. **irrigation_n:** Irrigation mentioned

    - Type: Numeric-categorical
    - Description: An agreement which mentions irrigation.
    - Coding:
      0. No
      1. Yes
    - Institutionalization Index candidate variable: FOR ISSUE COUNT? (JK)

36. **groundwater_n:** Groundwater mentioned

    - Type: Numeric-categorical
    - Description: An agreement which mentions groundwater. Does not include agreements which might implicitly cover groundwater

- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: FOR ISSUE COUNT? (JK)

37. **equity_sustainability_n:** General principles mentioned

- Type: Numeric-categorical
- Description: An agreement in which the parties refer to some general principle, such as equity, sustainability, rationale etc., which should overarch their cooperative endeavors
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: FOR NORMS VARIABLE? (JK)

38. **equity_sustainability_text:** General principles: examples

- Type: String
- Description: Sample text from the agreement referencing general principles

39. **localneeds_n:** Local needs of population mentioned

- Type: Numeric-categorical
- Description: An agreement which explicitly states that the needs of the local population living in border areas should be considered
- Coding:
  0. No
  1. Yes

40. **construct_right_n:** Construction rights mentioned

- Type: Numeric-categorical
- Description: An agreement giving one or a number of signatories the right to construct particular infrastructure, such as dams
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: FOR LEGAL VARIABLE? (JK)

41. **construct_ban_n:** Construction bans mentioned

- Type: Numeric-categorical
- Description: An agreement which bans the construction of particular infrastructure in certain areas or in general by one or more signatories.
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: FOR LEGAL VARIABLE? (JK)

42. **priornotif_n** This variable is listed in http://www.transboundarywaters.orst.edu/database/Treaty%20Database%20Design%20(with%20descriptions).doc, but not in the original TFDD http://www.transboundarywaters.orst.edu/database/Treaties_0809.xls. Hence I (JK) created the variable.

- Type: Numeric-categorical
- Description: An agreement requiring signatories to communicate with each other if they want to use additional water resources or construct infrastructure such as dams or diversion channels. The original (in the TFDD codebook) variable is listed as:
  2. prior notification: One riparian has to notify the other about any planned measures
  3. prior consultations: The riparians are required to consult with each other any planned measures
  4. prior consent: The other riparians have to agree to the plans before any action can be undertaken
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: INFORMATION (JK)

43. **priornotif_article:** Treaty article discussing wheter interaction is required before water development takes place

    - Type: String

44. **navigation_n:** Navigation mentioned

    - Type: Numeric-categorical
    - Description: The agreement mentions navigation as an issue
    - Coding:
      0. No
      1. Yes
    - Institutionalization Index candidate variable: FOR ISSUE COUNT? (JK)

45. **fishing_n:** Fishing mentioned

    - Type: Numeric-categorical
    - Description: The agreement mentions fishing as an issue
    - Coding:
      0. No
      1. Yes
    - Institutionalization Index candidate variable: FOR ISSUE COUNT? (JK)

46. **borderissues_n:** Border adjustment

    - Type: Numeric-categorical
    - Description: The agreement delineates, adjusts or reaffirms the border between two or more countries
    - Coding:
      0. No
      1. Yes
    - Institutionalization Index candidate variable: FOR TERRITORIAL VARIABLE? (JK)

47. **territorialissues_n:** Territorial rights

    - Type: Numeric-categorical
    - Description: The agreement (re)divides or affirms territorial sovereign rights.
    - Coding:
      0. No
      1. Yes
    - Institutionalization Index candidate variable: FOR TERRITORIAL VARIABLE? (JK)

48. **nonwaterlink_n** This variable is listed in http://www.transboundarywaters.orst.edu/database/Treaty%20Database%20Design%20(with%20descriptions).doc, but not in the original TFDD http://www.transboundarywaters.orst.edu/database/Treaties_0809.xls. Hence I (JK) created it.

    - Type: Numeric-categorical
    - Description: An agreement which requires at least one party to provide another with compensation (financial, gas, oil, timber, etc.) in exchange for water rights or access.
    - Coding:
        0. No
        1. Yes
    - Institutionalization Index candidate variable: YES, FOR LEGALIZATION? (JK)

49. **nonwaterlink_comments:** Non-water linkages: examples or specifics

    - Type: String
    - Description: An agreement which requires at least one party to provide another with compensation (financial, gas, oil, timber, etc.) in exchange for water rights or access.

50. **nonwater_embed_n:** Embedded in larger non-water Context

    - Type: Numeric-categorical
    - Description: An agreement in which water as a consumable resource is only one issue in a larger overall agreement, for example as related to peace, navigation or territorial delimitations.
    - Coding:
        0. No
        1. Yes
    - Institutionalization Index candidate variable: NO (JK)

51. **varmgmt:** Variability Management

    - Type: Numeric-categorical
    - Description: (Presumably the type of arrangements present to manage water variability?)
    - Coding:
        0. None?
        1. Flood Control
        2. Dry season control
        3. Both
        4. What is -1 ?
    - Institutionalization Index candidate variable: NO (JK)

52. **needsvariability_n:** Variability in Water/Hydro needs

    - Type: Numeric-categorical
    - Description: The variability of the parties' needs for water and/or hydropower is mentioned in the text and/or accounted for.
    - Coding:
        0. No
        1. Yes
    - Institutionalization Index candidate variable: FOR FLEXIBILITY VARIABLE? (JK)

53. **altscenarios_n:** Alternative Scenarios

    - Type: Numeric-categorical

- Description: The treaty mentions at least one situation in which a different development can occur and alternative modes of action are stipulated.
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: FOR FLEXIBILITY VARIABLE? (JK)

54. **predictionmodel_n:** Predictive modeling

- Type: Numeric-categorical
- Description: The treaty develops or mentions available mechanisms for predicting particular aspects about the future, such as for example the occurrence of floods.
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: FOR INFORMATION VARIABLE? (JK)

55. **jointmgmt_n:** Joint Management

- Type: Numeric-categorical
- Description: An agreement which institutes some form of joint management institution or Commission – a specialized institutional body for dealing with the issues stipulated in the treaty and whose scope of action and authority depends upon the treaty. The mandate may be more narrowly defined than a River Basin Organization
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: YES, but note that this is occurs more frequent than rbo_n (JK)

56. **commname:** Name of commission established via jointmgmt_n (?)

- Type: String

57. **techcoop_n:** Technical or Financial Cooperation or Assistance

- Type: Numeric-categorical
- Description: The parties agree to cooperate with each other or to assist each other in technical and/or financial matters
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: YES (JK)

58. **infoexchange_n:** Information Exchange

- Type: Numeric-categorical
- Description: The parties agree to exchange data about flows, etc.
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: FOR INFORMATION VARIABLE? (JK)

59. **monitoring_n:** Monitoring

- Type: Numeric-categorical
- Description: The parties create mechanisms to monitor treaty compliance, to supervise the construction of works, etc.
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: YES (JK)

60. **agreefinance_n:** Agreement Finance

- Type: Numeric-categorical
- Description: The treaty stipulates how the provisions made in the treaty will be financed.
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: NO (JK)

61. **stakeholderparticip_n:** Stakeholder Participation

- Type: Numeric-categorical
- Description: Is some form of stakeholder participation mentioned in the treaty?
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: FOR DOMESTIC PARTICIPATION VARIABLE? (JK)

62. **consultations_n:** Consultations

- Type: Numeric-categorical
- Description: Does the treaty provide for the parties' direct and regular consultations on water issues through diplomatic channels?
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: FOR INFORMATION VARIABLE? (JK)

63. **compensation_n:** Compensation

- Type: Numeric-categorical
- Description: Does the treaty provide for any form of compensation in case one of the parties is harmed?
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: FOR LEGALIZATION VARIABLE? (JK)

64. **national_prog_law_n:** National Programs or Laws

- Type: Numeric-categorical
- Description: Does the treaty oblige the parties to adopt national laws or develop national programs in order to meet treaty provisions?
- Coding:
  0. No

1. Yes

- Institutionalization Index candidate variable: FOR DOMESTIC PARTICIPATION VARIABLE? (JK)

65. **nonsig_riparians_n:** Interests of Non-Signatory Riparians

- Type: Numeric-categorical
- Description: Does the treaty mention that non-signatory riparians could have an interest in issues discussed in the agreement?
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: NO (JK)

66. **people_interests_n:** Interests of People Mentioned

- Type: Numeric-categorical
- Description: Is it mentioned that the treaty has been signed in the interest of the populations or that some measures were taken for that purpose?
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: FOR NORMS VARIABLE? (JK)

67. **amendmech_n:** Amendment Mechanism

- Type: Numeric-categorical
- Description: Is the possibility of an amendment of the treaty mentioned in the text?
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: FOR FLEXIBILITY VARIABLE? (JK)

68. **precedent_notest_n:** Does not establish precedent

- Type: Numeric-categorical
- Description: Does the treaty explicitly mention that the agreement reached in this concrete case does not represent a precedent for any other issues which might arise?
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: FOR FLEXIBILITY VARIABLE? (JK)

69. **precedent_est_n:** Establishes Precedent

- Type: Numeric-categorical
- Description: Does the treaty explicitly state that it establishes a precedent for other similar issues which could arise in the future?
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: YES (JK)

70. **enforcement_n:** Enforcement provision

- Type: Numeric-categorical
- Description: Does the treaty contain enforcement provisions?
- Coding:
  0. No
  1. Yes
- Institutionalization Index candidate variable: YES (JK)

71. **enforcemech:** Enforcement mechanism

    - Type: String
    - Description: Mechanism through which enforcement is provisioned

72. **enforcemech_n:** Enforcement mechanism

    - Type: Numeric-categorical
    - Description: Mechanism through which enforcement is provisioned
    - Coding:
      0. None
      1. Economic
      2. Council
      3. Force/Threat of Force
    - Institutionalization Index candidate variable: YES (JK)

73. **waterdiv_method:** Water division method

    - Type: String
    - Description: Method by which water resources are divided

74. **waterdiv_method_n:** Water division method

    - Type: Numeric-categorical
    - Description: A (diffuse) coding of the method by which water resources are divided
    - Coding: mixes references, methods, vague statements

75. **primary_country_continent:** Continent of the primary country in the treaty

    - Type: String-categorical
    - Coding:
      – Africa
      – Asia
      – Europe
      – North America
      – South America

76. **primary_country_continent_n:** Continent of the primary country in the treaty

    - Type: Numeric-categorical
    - Description:
    - Coding:
      1. Africa
      2. Asia
      3. Europe
      4. North America

5. South America

77. **primary_country_region:** Region of the primary country in the treaty

    - Type: String-categorical
    - Coding:
        - East Asia
        - Eastern Europe
        - Former Soviet Union
        - North Africa/Middle East
        - North America
        - South America
        - South Asia
        - Southeast Asia
        - Sub-Saharan Africa
        - Western Europe

78. **primary_country_region_n:** Region of the primary country in the treaty

    - Type: Numeric-categorical
    - Coding:
        1. East Asia
        2. Eastern Europe
        3. Former Soviet Union
        4. North Africa/Middle East
        5. North America
        6. South America
        7. South Asia
        8. Southeast Asia
        9. Sub-Saharan Africa
        10. Western Europe

79. **bcode:** Basin code

    - Type: String
    - Description: Four-letter code for basin_name

80. **basin_name:** Basin name

    - Type: String
    - Description: Full basin name

81. **basinid:** Basin ID

    - Type: Numeric-categorical
    - Coding: Corresponds to column "basincode" in the file *RiverBasins_Corrected_Holger.xlsx*. The codes and basin names are documented in basincodes.table.csv.

New variables

Indices

This section proposes seven indices to measure institutional concepts. All indices are additive indices that can be created by simply summing up the proposed series of binary indicators (with one exception). *Note: all these indices are created under the assumption that if information on any component is missing, the component counts as 0 (not present).*

1. **treatyinst.ind** The degree to which the treaty is institutionalized. This index mirrors the institutionalization variable in Karreth, Tir, and Stinnett's 2013 ISA paper and previous work by Tir and Stinnett. See these articles for a more thorough discussion of the concept and the index.

    - Type: Numeric-categorical
    - Coding: This variable is created as an additive index with the following elements:
        - monitoring_n
        - enforcement_n
        - jointmgmt_n
        - rbo_n

2. **treatyinst.ind2** The degree to which the treaty is institutionalized. This index mirrors the institutionalization variable in Karreth, Tir, and Stinnett's 2013 ISA paper and previous work by Tir and Stinnett. See these articles for a more thorough discussion of the concept and the index.

    - Type: Numeric-categorical
    - Coding: This variable is created as an additive index with the following elements:
        - monitoring_n
        - enforcement_n
        - enforcemech_n (JK suggestion; ordinal variable, hence addition makes sense)
        - jointmgmt_n
        - rbo_n
        - techcoop_n (JK suggestion; formalizes cooperation & assistance)
        - precedent_est_n (JK suggestion; formalizes rules of the treaty for future interactions)

3. **legalspec.ind** Specificity of legal components of the treaty.

    - Type: Numeric-categorical
    - Coding: This variable is created as an additive index with the following elements:
        - construct_right_n
        - construct_ban_n
        - compensation_n
        - priornotif_n
        - nonwaterlink_n
        - allocation_n

4. **issues.ind** Count of issues covered by the treaty. This index covers the concept of the breadth of the treaty: how many issues are covered; how encompassing is the treaty?

    - Type: Numeric-categorical
    - Coding: This variable is created as an additive index with the following elements:
        - infrastructure_n
        - hydropower_n
        - irrigation_n

  - groundwater_n
  - navigation_n
  - fishing_n

5. **flexibility.ind** Flexibility of the treaty provisions for future modification. This index covers the concept of treaty flexibility, central to the rational design literature; does the treaty provide a foundation and fixed rules for changing the treaty later?

   - Type: Numeric-categorical
   - Coding: This variable is created as an additive index with teh following elements:
     - needsvariability_n
     - altscenarios_n
     - amendmech_n
     - precedent_notest_n

6. **information.ind** Information provisions in the treaty. This index covers the concept of information provision: does the treaty establish mechanisms to collect, analyze, and disseminate information pertinent to freshwater resources?

   - Type: Numeric-categorical
   - Coding: This variable is created as an additive index with teh following elements:
     - predictionmodel_n
     - infoexchange_n
     - consultations_n

7. **domestic.ind** Integration of domestic factors in the treaty.

   - Type: Numeric-categorical
   - Coding: This index combines the concepts of transposition and domestic participation and adds two variables:
     - stakeholderparticip_n
     - national_prog_law_n (could also be part of the treaty institutionalization index)

8. **normative.ind** Normative foundation of the treaty. This index covers the degree to which the index is rooted in appeals to normative concepts.

   - Type: Numeric-categorical
   - Coding: This variable is created as an additive index with the following elements:
     - equity_sustainability_n
     - localneeds_n
     - prople_interests_n

9. **treatymembers.ind** Count of countries in the treaty

   - Type: Numeric-categorical
   - Coding: Summing up the count of c1 through c10 (see below)

10. **basinscovered.ind** Count of basins covered by the treaty. *Not verified. See the file multiples.xlsx for a list of all multiples and double-check.*

    - Type: Numeric-categorical
    - Coding: Summing up the count of basin1 through basin6 (see below)

Additional ID variables

1. **c1–c10** The first through the 10th country that is a member to the treaty

    - Type: Numeric-categorical
    - Coding: first, second, etc. country in treaty_metadata_docid *and* basinid

2. **basin1–basin6** The first through the 6th basin that is covered by the treaty

    - Type: Numeric-categorical
    - Description: See the file multiples.xlsx for a list of all multiples
    - Coding: first, second, etc. basin in treaty_metadata_docid *and* cowcode

3. **treaty_basin_country** New unique ID for each observation in *TFDD Summer 2013/TFDD_Karreth.csv*

    - Type: Numeric-categorical
    - Coding: treaty_metadata_docid * 1000000 + basinid * 1000 + cowcode

4. **treaty_country** New unique ID for treaty-country

    - Type: Numeric-categorical
    - Coding: treaty_metadata_docid * 1000 + cowcode

5. **treaty_basin** New unique ID for treaty-basin

    - Type: Numeric-categorical
    - Coding: treaty_metadata_docid * 1000 + basinid

6. **treaty_country_year** New unique ID for treaty-country-year

    - Type: Numeric-categorical
    - Coding: treaty_metadata_docid * 10000000 + cowcode * 10000 + year

7. **dyadid** New unique ID for country dyads

    - Type: Numeric-categorical
    - Coding: cowcode1 * 1000 + cowcode2

8. **dyadid_year** New unique ID for dyad-years

    - Type: Numeric-categorical
    - Coding: dyadid * 10000 + year

Datasets and levels of analysis

1. Treaty-basin-country: *rtd_treaty-basin-country.csv*

The level of analysis is the treaty-basin-country. This file is the original cleaned and expanded TFDD. 1228 observations.

treaty_metadata_docid	basinid	cowcode	yearsigned	treatymembers

131	253	640	1946	2
131	253	645	1946	2
133	518	160	1946	2
133	518	165	1946	2
135	350	220	1947	2
135	350	325	1947	2

Table 1: First 5 lines of *rtd_treaty-basin-country.csv*

2. Treaty: *rtd_treaty.csv*

The level of analysis is the treaty. 374 Observations.

treaty_metadata_docid	yearsigned	treatymembers
131	1946	2
133	1946	2
135	1947	2
138	1948	2
139	1948	2
141	1948	5

Table 2: First 5 lines of *rtd_treaty.csv*

3. Treaty-year: *rtd_treaty-year.csv*

The level of analysis is the treaty-year. 12495 observations.

treaty_metadata_docid	year	yearsigned	treatymembers
131	1946	1946	2
131	1947	1946	2
131	1948	1946	2
131	1949	1946	2
131	1950	1946	2
131	1951	1946	2

Table 3: First 5 lines of *rtd_treaty-year.csv*

4. Treaty-country-year: *rtd_treaty-country-year.csv*

The level of analysis is the treaty-country-year. 35060 observations.

treaty_metadata_docid	cowcode	year	yearsigned	treatymembers
131	640	1946	1946	2
131	640	1947	1946	2
131	640	1948	1946	2
131	640	1949	1946	2
131	640	1950	1946	2
131	640	1951	1946	2

Table 4: First 5 lines of *rtd_treaty-country-year.csv*

5. Treaty-dyad-year: *rtd_treaty-dyad-year.csv*

The level of analysis is the treaty-dyad-year. 45408 observations.

treaty_metadata_docid	dyadid	cowcode1	cowcode2	year	yearsigned	treatymembers
131	640645	640	645	1946	1946	2
131	640645	640	645	1947	1946	2
131	640645	640	645	1948	1946	2
131	640645	640	645	1949	1946	2
131	640645	640	645	1950	1946	2
131	640645	640	645	1951	1946	2

Table 5: First 5 lines of *rtd_treaty-dyad-year.csv*

6. Dyad-year: *rtd_dyad-year.csv*

The level of analysis is the treaty-dyad-year. 13251 observations. This required choosing how to aggregate treaty features. For this version, I chose the maximum value of the respective treaty features & indices:

```
dat.dyad.year <- summarise(group_by(dat.treaty.dyad.year, dyadid, year, add = FALSE),
                      cowcode1 = mean(cowcode1, na.rm = TRUE),
                      cowcode2 = mean(cowcode2, na.rm = TRUE),
                      treatyinst.ind.max = max(treatyinst.ind, na.rm = TRUE),
                      treatyinst.ind2.max = max(treatyinst.ind2, na.rm = TRUE),
                      legalspec.ind.max = max(treatyinst.ind2, na.rm = TRUE),
                      issues.ind.max = max(issues.ind, na.rm = TRUE),
                      flexibility.ind.max = max(flexibility.ind, na.rm = TRUE),
                      information.ind.max = max(information.ind, na.rm = TRUE),
```

```
        domestic.ind.max = max(domestic.ind, na.rm = TRUE),
        normative.ind.max = max(normative.ind, na.rm = TRUE),
        treatymembers.ind.max = max(treatymembers, na.rm = TRUE),
        basinscovered.ind.max = max(basinscovered, na.rm = TRUE),
  monitoring_n = max(ifelse(is.na(monitoring_n) == FALSE, monitoring_n, 0)),
enforcement_n = max(ifelse(is.na(enforcement_n) == FALSE, monitoring_n, 0)),
   jointmgmt_n = max(ifelse(is.na(jointmgmt_n) == FALSE, monitoring_n, 0)),
        rbo_n = max(ifelse(is.na(rbo_n) == FALSE, monitoring_n, 0)),
        treatymembers.max = max(treatymembers, na.rm = TRUE)
)
```

dyadid	cowcode1	cowcode2	year	treatyinst.ind.max	treatymembers.max
2020	2	20	1950	1	2
2020	2	20	1951	1	2
2020	2	20	1952	1	2
2020	2	20	1953	1	2
2020	2	20	1954	1	2
2020	2	20	1955	1	2

Table 6: First 5 lines of *rtd_dyad-year.csv*