

# Infrastructure preprocessor

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SeriesRoadRuralAccessIndex is obviously a series we need to look into. The World Bank no longer has this exact index however.

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## Sources

WDI, ITU, WHO, WSS/JMP

## Infrastructure series pulled into preprocessor

Copy Of DataDict

Table	Source	Last IFs Update	UsedInPreprocessorFileName
SeriesLandIrrPotential	<a href="#">AQU BATCH PULL</a>	2016/06/06	INFRA
<a href="#">SeriesLandIrrPotentialReached</a>	<a href="http://www.fao.org/nr/water/aquastat/dbase/index.stm">AQUASTAT, at http://www.fao.org/nr/water/aquastat/dbase/index.stm</a>	2011/11/16	INFRA
SeriesEnElecAccess%Urban	<a href="#">Data extracted from WDI</a>	2016/05/10	INFRA
SeriesEnElecAccess%Rural	Data extracted from WDI	2016/05/10	INFRA
SeriesEnElecAccess%National	Data extracted from WDI	2016/05/05	INFRA
SeriesEnElecTotalCapacityEIA	<a href="#">EIA; US Energy Information Administration;</a>	2016/04/22	INFRA
<a href="#">SeriesLandIrrAreaEquipFAO</a>	<a href="#">FAO</a>	2013/12/19	INFRA
SeriesLandTotal	FAO BATCH PULL	2015/04/10	INFRA
SeriesLandAgri	FAO BATCH PULL	2015/04/10	INFRA
SeriesICTInternetHousehold%	<a href="#">ITU</a>	2015/04/14	INFRA
<a href="#">SeriesHouseholds</a>	<a href="#">ITU 2011</a>	2011/08/19	INFRA
SeriesICTBroadbandMobileSubsPer100	ITU 2014 BATCH PULL	2015/02/03	INFRA
SeriesICTComputerHousehold%	ITU 2014 BATCH PULL	2015/01/28	INFRA
SeriesICTBroadbandSubscribersPer100ITU	ITU 2015	2016/05/18	INFRA
SeriesICTTelephoneCellSubscribersPer100	ITU 2015	2016/05/18	INFRA
SeriesICTTelephoneLinesPer100	ITU 2015	2016/05/18	INFRA
SeriesICTCYBICTDevelopmentIndexITU	ITU: Measuring the Information Society 2008, 2010-2014	2015/05/10	INFRA
<a href="#">SeriesRoadRuralAccessIndex</a>	<a href="#">The World Bank Rural Access Index</a>	2010/07/15	INFRA

SeriesPopulation	UNPD 2015 (DSR added Taiwan from WEO)	2015/09/18	INFRA
SeriesWasteWaterColConnect%	UNSD/ UNEP/ OECD/ EUROSTAT	2011/08/08	INFRA
SeriesWasteWaterTreatConnect%	UNSD/ UNEP/ OECD/ EUROSTAT	2011/08/08	INFRA
SeriesEnvSolidFuels	UNSTATS and WHO survey data and missing point estimation by DPHE, WHO and UC Berkley researchers	2013/07/03	INFRA
SeriesEnElecConsPerCap	WDI BATCH PULL	2015/07/14	INFRA
SeriesEnElecTransLoss%	WDI BATCH PULL	2015/07/14	INFRA
SeriesGDP2011PCPPP	WDI - calculated from WDI and other sources; extrapolated based on previous GDP_PCP2005 values in IFs; extrapolated based on CIA Factbook; taken directly from CIA Factbook; taken directly from previous GDP_PCP2005 values in IFs	2015/09/18	INFRA
SeriesRoadPavedKm	WDI 2013; WDI 2011; Calderon (communication to DR) and Canning, David (1998) with updates by Canning from WDI 2006	2013/12/17	INFRA
SeriesRoadsPaved%	WDI 2014 May BATCH PULL	2014/06/11	INFRA
SeriesEnConTotalWDI	WDI 2014 May BATCH PULL	2014/06/11	INFRA
SeriesRoadsTotalNetwork	WDI 2014 May BATCH PULL	2014/06/11	INFRA
SeriesEnProdElec	WDI 2014 May BATCH PULL	2014/06/11	INFRA
SeriesEnElecShrEnDem	WDI 2014 May BATCH PULL	2014/06/11	INFRA
SeriesIncBelow1D25c%WDI2011	WDI 2015 March WDI Website	2015/03/17	INFRA
SeriesICTExpend%GDP	WDI CD 2010 and existing IFs data	2011/05/28	INFRA
SeriesWHO2012WaterPipedFiltered	WHO: provided directly by Annette Pruss-Ustun of the WHO	2014/06/24	INFRA
SeriesWHO2012WaterUnImpNoFilter	WHO: provided directly by Annette Pruss-Ustun of the WHO	2014/06/25	INFRA
SeriesWHO2012WaterUnImpFiltered	WHO: provided directly by Annette Pruss-Ustun of the WHO	2014/06/25	INFRA
SeriesWHO2012WaterPipedNoFilter	WHO: provided directly by Annette Pruss-Ustun of the WHO	2014/06/24	INFRA
SeriesWHO2012WaterOthImpFiltered	WHO: provided directly by Annette Pruss-Ustun of the WHO	2014/06/25	INFRA
SeriesWHO2012WaterOthImpNoFilter	WHO: provided directly by Annette Pruss-Ustun of the WHO	2014/06/25	INFRA
SeriesGovernanceEffect	Worldwide_Governance_Indicators, <a href="http://info.worldbank.org/governance/wgi/index.asp">http://info.worldbank.org/governance/wgi/index.asp</a>	2016/04/07	INFRA
SeriesGovernanceRegQual	Worldwide Governance Indicators, <a href="http://info.worldbank.org/governance/wgi/index.asp">http://info.worldbank.org/governance/wgi/index.asp</a>	2016/04/07	INFRA
SeriesWSSJMPSanitationTotal%Shared	WSS JMP WHO/UNICEF JMP	2015/08/25	INFRA
SeriesWSSJMPWaterTotal%OtherUnimproved	WSS JMP WHO/UNICEF JMP	2015/08/25	INFRA
SeriesWSSJMPWaterTotal%OtherImproved	WSS JMP WHO/UNICEF JMP	2015/08/25	INFRA
SeriesWSSJMPSanitationTotal%Improved	WSS JMP WHO/UNICEF JMP	2015/08/25	INFRA
SeriesWSSJMPSanitationTotal%OpenDefecation	WSS JMP WHO/UNICEF JMP	2015/08/25	INFRA
SeriesWSSJMPWaterTotal%Surface	WSS JMP WHO/UNICEF JMP	2015/08/25	INFRA
SeriesWSSJMPSanitationTotal%OtherUnimproved	WSS JMP WHO/UNICEF JMP	2015/08/25	INFRA
SeriesWSSJMPWaterTotal%Piped	WSS JMP WHO/UNICEF JMP	2015/08/25	INFRA

## Irrigation

### Land equipped for irrigation

- Area equipped for irrigation (TLANDIRAREAEQUIP) is initialized using **SeriesLandIrAreaEquipFAO**
  - **Source:** FAO
  - **Definition:** Land Area Equipped for Irrigation
  - **Last IFs update:** 2013/12/19
  - **Note:** need to switch to AQUASTAT when it gets updated
  
- Potentially irrigable land reached (CLandIrPotReached) initialized

using **SeriesLandIrPotentialReached**

- **Source:** AQUASTAT, at <http://www.fao.org/nr/water/aquastat/dbase/index.stm>
- **Notes:** DSR; looked at FAO/Aquastat data to find countries with no growth/decline in the recent period

- If CLandIrPotReached is not null, and it is less than the area of land equipped for irrigation (TLANDIRAREAEQUIP)
  - Then set the saturation level (CLandIrAreaSat) as 10% above TLANDIRAREAEQUIP.
- Otherwise, CLandIrPotReached is the saturation level
- *Note: This is to ensure that the reached potential is not less than land equipped for irrigation, as that would lead to a transient in the first year*
  
- Potentially irrigable land (CLandIrPot) is initialized using **SeriesLandIrPotential**
  - **Source:** AQUASTAT
  - **Definition:** Irrigation potential (1000 ha)
- If null then
  - If land equipped for irrigation is null, then
    - Assume potentially irrigable land is 10% of agricultural land area (CLandAgri).
    - Land equipped for irrigation is 33% of potentially irrigable land
    - Saturation level is 29.7% of potentiall irrigable land
      - $CLandIRAreaSat(ICount\%) = (0.1 + 0.9 * (TLANDIRAREAEQUIP / CLandIrPot)) * CLandIrPot$
      - 39.7% because  $(TLANDIRAREAEQUIP/CLandIrPot) = .33$
      - **Note:** This seems wrong because saturation level (39.7% of potential) is only slightly higher than land equipped (33%)
  - If there is data on land equipped for irrigation then
    - If land equipped for irrigation is greater than 9% of agricultural land and less than 91% of agricultural land then
      - Saturation level (CLandIRAreaSat) is 10% higher than current level of land equipped for irrigation (LANDIRAREAEQUIP)
    - If land equipped for irrigation is less than 9% of agricultural land then
      - Potentially irrigable land is 10% of agricultural land
      - Saturation level is initialized using same equation above:  
 $CLandIRAreaSat(ICount\%) = (0.1 + 0.9 * (TLANDIRAREAEQUIP / CLandIrPot)) * CLandIrPot$
      - **Note:** This also sets the saturation level low (lower than potentially irrigable, which is 10% of agricultural land)
    - If land equipped for irrigation is greater than 91% of agricultural land then
      - Potentially irrigable land is set as agricultural land
      - Saturation level is again set as:  $CLandIRAreaSat(ICount\%) = (0.1 + 0.9 *$

$(TLANDIRAREAEQUIP / CLandIrPot) * CLandIrPot$

- **Note:** There is currently no country where this is the case i.e. this branch of the code is never activated
- If there is data for potentially irrigable land
  - But there isn't data on land equipped for irrigation
    - Land equipped for irrigation is 33% of potentially irrigable land
  - And there is data on land equipped for irrigation then
    - $CLandIRAreaSat(ICount\%) = Amin(cLandAgri, AMAX(TLANDIRAREAEQUIP * 1.01, (0.4 + 0.6 * (TLANDIRAREAEQUIP / CLandIrPot)) * CLandIrPot))$
    - 'If Potential is less than AreaEquip set the saturation at 1% higher than actual
    - **Note:** This is not true. If potential is less than equipped, then  $((0.4 + 0.6 * (TLANDIRAREAEQUIP / CLandIrPot)) * CLandIrPot)$  could actually be larger than  $(LANDIRAREAEQUIP * 1.01)$
- Set the land equipped for irrigation growth rate as
  - $CLandIrAreaEquipGR(ICount\%) = getAnnualGrowthRate(LandIrAreaEquipTbl, BaseYear, 0.08, -0.08, 3, 5, 15, 10)$
  - **Note:** this calculates a growth rate using historical values. The parameters are (max growth rate, min growth rate, minimum number of years needed to compute growth rate, maximum number of years to compute growth rate, maximum number of years to go backward from BaseYear, maximum number of years to go forward from BaseYear)
- If unable to calculate (no data) then
  - set as -9999 (which should get adjusted to 0.001)

\*\*\*INCOMPLETE DOCUMENTATION\*\*\*

## ICT

- ICT spending (CSpend) is initialized using **SeriesICTExpend%GDP**
  - **Source:** WDI CD 2010 and existing IFs data
  - **Definition:** ICT technology expenditure, % of GDP
  - **Last IFs update:** 2011/05/28
- If null, then estimate using: "GDP/Capita (PPP 2000) Versus ICT Expenditures % GDP (" & CStr(BaseYear) & ") Linear"
  - This uses the equation: "GDP/Capita (PPP 2000) Versus ICT Expenditures % GDP (2005) Linear" from TablFunc

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