

**CDM-MP96-A04**

## Draft methodological tool

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# Default values for common parameters

Version 03.0



**United Nations**  
Framework Convention on  
Climate Change

## COVER NOTE

### 1. Procedural background

1. The Executive Board of the clean development mechanism (CDM) (hereinafter referred to as the Board), at its 116<sup>th</sup> meeting, considered the information on development of accurate and reliable region-specific default values for fraction of non-renewable biomass (fNRB) that can be applied in methodologies for clean cooking and requested the MP to develop national, subnational/regional values of fNRB.
2. The “Information note: Development of default values for fraction of non-renewable biomass” contained in Annex 3 of MP 96 meeting report proposes the default fNRB values at national, sub-national, regional and global level. The MP 96 agreed to include these default values in the TOOL33: Default values for common parameters.

### 2. Purpose

3. The purpose of this draft revision is to add national, sub-national, regional and global default values of fNRB to the tool, following the recommendations made in Annex 3 “Information note: Development of default values for fraction of non-renewable biomass” of MP 96 meeting report.

### 3. Key issues and proposed solutions

4. It became apparent that the universal default value of 0.3 for fNRB has seldom been applied in CDM projects and PoAs. Instead, most projects used the other option provided in the “TOOL30: Calculation of the fraction of non-renewable biomass” which yielded much higher and therefore less conservative values of the fNRB. In addition, the data used to establish that default value, by now over a decade old, are likely to be outdated as well as some of the data is based on very limited study and anecdotal reporting.
5. The proposed sub-national, national, regional and global default values of fNRB are provided in the Annex 3 “Information note: Development of default values for fraction of non-renewable biomass” of MP 96 meeting report.

### 4. Impacts

6. The sub-national, national, regional and global default values of fNRB will ensure the reliability of calculating emission reductions, reduce transaction cost and facilitate the implementation of CDM project activities and PoAs in the household cookstove or water purification sector

### 5. Subsequent work and timelines

7. The draft methodological tool is recommended by the MP for consideration by the Board at its 124<sup>th</sup> meeting. No further work is envisaged.

**6. Recommendations to the Board**

8. The MP recommends that the Board approve the draft version of the tool, to be made effective at the time of the Board's approval.

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## 1. Introduction

1. This tool serves as a repository of default values<sup>1</sup> of common parameters which are applied in methodologies that refer to this tool.

## 2. Scope, applicability, and entry into force

### 2.1. Scope

2. This tool includes default values for the parameters listed under section 5 below.
3. The appendix 1 of this tool specifies the validity, process for update and timelines for the update of the default values.
4. The appendix 2 of this tool provides guiding principles of conservativeness that were applied to determine the default values included in this tool considering the level of uncertainty of underlying data.

### 2.2. Applicability

5. This tool shall be applied in conjunction with the methodologies which refer to this tool to source the default values to estimate the baseline emissions (e.g. from the use of diesel for off-grid power generation, from the use of kerosene for lighting, from the use of woody biomass for cooking).
6. The default values as contained in section 5 of this tool are valid up to 10 March 2025 **except the default values for fraction of non-renewable biomass (fNRB), which are valid up to 31 December 2030**. Notwithstanding the provisions on the validity of new, revised and previous versions of methodologies and methodological tools in the “Procedure: Development, revision and clarification of baseline and monitoring methodologies and methodological tools”, there will be no grace period for the application of this tool and the validity of the default values after this date, including in cases where further default values are added to this tool through revisions of this tool before this date.

### 2.3. Entry into force

7. The date of entry into force is the date of the publication of the EB **124** meeting report on **# Month** 2025.

## 3. Normative references

8. Not applicable.

## 4. Definitions

9. The definitions contained in the Glossary of CDM terms shall apply.

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<sup>1</sup> The background information on the rationale for the default values is included under Annex 3 of MP87 meeting report and Annex 19 of MP88 meeting report.

10. For the purpose of this tool, the following definition shall apply:
- a) **Mini-grid system** – An integrated energy system consisting of interconnected loads and one or more energy resources with a total capacity not exceeding 15 MW (i.e. the sum of installed capacities of all electricity generating units connected to the mini-grid is equal to or less than 15 MW), which is not connected to a national or a regional grid.

## 5. Parameters

11. This tool provides default values for following parameters:
- a) CO<sub>2</sub> emission factor for diesel generating system used for off-grid power generation purposes;
- b) CO<sub>2</sub> emission factor for kerosene used for lighting applications;
- c) Wood-to-charcoal conversion factor;
- d) Average annual consumption of woody biomass per person for cooking;
- e) Fraction of non-renewable biomass;
- f) Efficiency of pre-project cooking device.

### 5.1. Carbon dioxide emission factor for diesel generating system used for off-grid power generation purposes

12. For a baseline electricity generating system including the mini-grid system where all generators use exclusively fuel oil and/or diesel fuel, the CO<sub>2</sub> emission factor for a diesel generating system of the relevant capacity operating at optimal load as given in Table 1 shall be considered.

**Table 1. Emission factors for diesel generator systems (in kg CO<sub>2</sub>/kWh<sup>(a)</sup>)**

Cases	Mini-grid with 24 hour service	(a) Mini-grid with temporary service (4–6 hr/day); (b) Productive applications; (c) Water pumps	Mini-grid with storage
Load factors [%]			
Size	25%	50%	100%
<15 kilowatts (kW)	1.0	0.9	0.8
>=15 <35 kW	1.0	0.8	0.8
>=35 <135 kW	1.0	0.8	0.8
>=135 <200 kW	0.9	0.8	0.8
> 200 kW	0.8	0.8	0.8

<sup>(a)</sup> A conversion factor of 3.2 kgCO<sub>2</sub> per kg of diesel has been used (following 2006 IPCC Guidelines for National Greenhouse Gas Inventories).

## 5.2. Carbon dioxide emission factor for kerosene used for lighting applications

13. In methodologies where, in the baseline, kerosene usage for lighting purposes and usage of diesel generating system for meeting electricity demand is envisaged, the default emission factor is provided as follows:
- For the first 55 kWh of electricity supplied to the user by the project electricity generating system in a given year, the emission factor is 2.72 kg CO<sub>2</sub>/kWh (i.e. 2.72 t CO<sub>2</sub>/MWh);
  - For the electricity supplied to the user by the project electricity generating system in a given year that is above 55 kWh, the emission factor is as specified in Table 1 above based on the diesel generator capacity and the load.

## 5.3. Wood-to-charcoal conversion factor

14. The default value for wood-to-charcoal conversion factor is 4.0 kg of fuelwood (wet basis) per kg of charcoal (dry basis).

## 5.4. Average annual consumption of woody biomass per person for cooking

15. The default value for the average annual consumption of woody biomass is 0.4 tonnes/person/year (wet basis).

## 5.5. Fraction of non-renewable biomass

16. The default value for the fraction of non-renewable biomass (f<sub>NRB</sub>) is 0.3
17. The project participants, in principle, shall use sub-national values for f<sub>NRB</sub>, unless the applied methodology/ies specifies other level (e.g. national). In addition, where sub-national values are not listed, the national value should be used. In cases where neither the sub-national or national values are listed, the regional default value may be used.
18. The default f<sub>NRB</sub> at the sub-national level are listed below in Table 2.

**Table 2. Default sub-national<sup>2</sup> f<sub>NRB</sub> values<sup>3</sup>**

Country	Sub-national	f <sub>NRB</sub> (%)
Afghanistan	Badakhshan	33
Afghanistan	Badghis	26
Afghanistan	Baghlan	12
Afghanistan	Balkh	1
Afghanistan	Bamyan	46
Afghanistan	Daykundi	44
Afghanistan	Farah	3

<sup>2</sup> Where sub-national values are not available for a particular country, project participants may refer to the the relevant National values in Table 3.

<sup>3</sup> Source: [MoFuSS global simulations 1km 2010-2050 Values for 2020-2030 summary\\_adm0\\_fr.csv](#).

Country	Sub-national	fNRB (%)
Afghanistan	Faryab	5
Afghanistan	Ghazni	11
Afghanistan	Ghor	51
Afghanistan	Hilmand	3
Afghanistan	Hirat	4
Afghanistan	Jawzjan	1
Afghanistan	Kabul	1
Afghanistan	Kandahar	1
Afghanistan	Kapisa	3
Afghanistan	Khost	8
Afghanistan	Kunar	34
Afghanistan	Kunduz	0
Afghanistan	Laghman	11
Afghanistan	Logar	0
Afghanistan	Nangarhar	3
Afghanistan	Nimroz	0
Afghanistan	Nuristan	36
Afghanistan	Paktika	3
Afghanistan	Paktya	6
Afghanistan	Panjshir	21
Afghanistan	Parwan	7
Afghanistan	Samangan	20
Afghanistan	Sari Pul	24
Afghanistan	Takhar	2
Afghanistan	Uruzgan	26
Afghanistan	Wardak	13
Afghanistan	Zabul	11
Angola	Bengo	26
Angola	Benguela	28
Angola	Bié	28
Angola	Cabinda	30
Angola	Cuando Cubango	25
Angola	Cuanza Norte	28
Angola	Cuanza Sul	30
Angola	Cunene	20
Angola	Huambo	25
Angola	Huíla	22
Angola	Luanda	23
Angola	Lunda Norte	30
Angola	Lunda Sul	34
Angola	Malanje	31



Country	Sub-national	fNRB (%)
Angola	Moxico	36
Angola	Namibe	26
Angola	Uíge	28
Angola	Zaire	22
Armenia	Aragatsotn	0
Armenia	Ararat	0
Armenia	Armavir	0
Armenia	Erevan	0
Armenia	Gegharkunik	0
Armenia	Kotayk	0
Armenia	Lori	1
Armenia	Shirak	0
Armenia	Syunik	1
Armenia	Tavush	4
Armenia	Vayots Dzor	0
Azerbaijan	Absheron	0
Azerbaijan	Aran	0
Azerbaijan	Daglig-Shirvan	1
Azerbaijan	Ganja-Qazakh	1
Azerbaijan	Kalbajar-Lachin	7
Azerbaijan	Lankaran	3
Azerbaijan	Nakhchivan	0
Azerbaijan	Quba-Khachmaz	2
Azerbaijan	Shaki-Zaqatala	4
Azerbaijan	Yukhari-Karabakh	2
Bangladesh	Barisal	46
Bangladesh	Chittagong	72
Bangladesh	Dhaka	0
Bangladesh	Khulna	40
Bangladesh	Mymensingh	2
Bangladesh	Rajshahi	0
Bangladesh	Rangpur	1
Bangladesh	Sylhet	21
Benin	Alibori	25
Benin	Atakora	32
Benin	Atlantique	30
Benin	Borgou	31
Benin	Collines	43
Benin	Donga	37
Benin	Kouffo	28
Benin	Littoral	0

Country	Sub-national	fNRB (%)
Benin	Mono	28
Benin	Ouémé	30
Benin	Plateau	39
Benin	Zou	34
Bhutan	Bumthang	33
Bhutan	Chhukha	33
Bhutan	Dagana	32
Bhutan	Gasa	16
Bhutan	Haa	24
Bhutan	Lhuentse	30
Bhutan	Monggar	34
Bhutan	Paro	26
Bhutan	Pema Gatshel	37
Bhutan	Punakha	28
Bhutan	Samdrup Jongkhar	37
Bhutan	Samtse	31
Bhutan	Sarpang	34
Bhutan	Thimphu	25
Bhutan	Trashigang	28
Bhutan	Trashigang	30
Bhutan	Trongsa	32
Bhutan	Tsirang	36
Bhutan	Wangdue Phodrang	28
Bhutan	Zhemgang	39
Botswana	Central	27
Botswana	Chobe	19
Botswana	Francistown	10
Botswana	Gaborone	18
Botswana	Ghanzi	50
Botswana	Jwaneng	25
Botswana	Kgalagadi	49
Botswana	Kgatleng	43
Botswana	Kweneng	44
Botswana	Lobatse	7
Botswana	North-East	18
Botswana	North-West	24
Botswana	Selibe Phikwe	10
Botswana	South-East	41
Botswana	Southern	45
Botswana	Sowa	9
Burkina Faso	Boucle du Mouhoun	28

Country	Sub-national	fNRB (%)
Burkina Faso	Cascades	26
Burkina Faso	Centre	30
Burkina Faso	Centre-Est	29
Burkina Faso	Centre-Nord	55
Burkina Faso	Centre-Ouest	28
Burkina Faso	Centre-Sud	29
Burkina Faso	Est	35
Burkina Faso	Haut-Bassins	25
Burkina Faso	Nord	47
Burkina Faso	Plateau-Central	33
Burkina Faso	Sahel	63
Burkina Faso	Sud-Ouest	26
Burundi	Bubanza	37
Burundi	Bujumbura Mairie	14
Burundi	Bujumbura Rural	38
Burundi	Bururi	38
Burundi	Cankuzo	35
Burundi	Cibitoke	35
Burundi	Gitega	31
Burundi	Karuzi	35
Burundi	Kayanza	31
Burundi	Kirundo	29
Burundi	Makamba	39
Burundi	Muramvya	31
Burundi	Muyinga	36
Burundi	Mwaro	31
Burundi	Ngozi	37
Burundi	Rutana	38
Burundi	Ruyigi	42
Brazil	Acre	14
Brazil	Alagoas	9
Brazil	Amapá	15
Brazil	Amazonas	17
Brazil	Bahia	12
Brazil	Ceará	11
Brazil	Distrito Federal	3
Brazil	Espírito Santo	12
Brazil	Goiás	8
Brazil	Maranhão	15
Brazil	Mato Grosso	12
Brazil	Mato Grosso do Sul	10

Country	Sub-national	fNRB (%)
Brazil	Minas Gerais	13
Brazil	Pará	16
Brazil	Paraíba	11
Brazil	Paraná	17
Brazil	Pernambuco	11
Brazil	Piauí	13
Brazil	Rio de Janeiro	13
Brazil	Rio Grande do Norte	11
Brazil	Rio Grande do Sul	17
Brazil	Rondônia	12
Brazil	Roraima	18
Brazil	Santa Catarina	21
Brazil	São Paulo	11
Brazil	Sergipe	9
Brazil	Tocantins	10
Cambodia	Bântéay Méanchey	11
Cambodia	Batdâmbâng	15
Cambodia	Kâmpóng Cham	14
Cambodia	Kâmpóng Chhnang	13
Cambodia	Kâmpóng Spœ	16
Cambodia	Kâmpóng Thum	20
Cambodia	Kâmpôt	17
Cambodia	Kândal	10
Cambodia	Kaôh Kong	41
Cambodia	Kep	10
Cambodia	Kràchéh	27
Cambodia	Krong Pailin	23
Cambodia	Krong Preah Sihanouk	33
Cambodia	Môndól Kiri	40
Cambodia	Otdar Mean Chey	17
Cambodia	Phnom Penh	6
Cambodia	Pouthisat	19
Cambodia	Preah Vihéar	29
Cambodia	Prey Vêng	14
Cambodia	Rôtânôkiri	38
Cambodia	Siemréab	17
Cambodia	Stœng Trêng	31
Cambodia	Svay Rieng	34
Cambodia	Takêv	11
Cambodia	Tbong Khmum	24
Cameroon	Adamaoua	40

Country	Sub-national	fNRB (%)
Cameroon	Centre	43
Cameroon	Est	43
Cameroon	Extrême-Nord	33
Cameroon	Littoral	44
Cameroon	Nord	32
Cameroon	Nord-Ouest	26
Cameroon	Ouest	26
Cameroon	Sud	45
Cameroon	Sud-Ouest	45
Central African Republic	Bamingui-Bangoran	40
Central African Republic	Bangui	25
Central African Republic	Basse-Kotto	26
Central African Republic	Haut-Mbomou	51
Central African Republic	Haute-Kotto	52
Central African Republic	Kémo	45
Central African Republic	Lobaye	39
Central African Republic	Mambéré-Kadéï	43
Central African Republic	Mbomou	41
Central African Republic	Nana-Grébizi	48
Central African Republic	Nana-Mambéré	47
Central African Republic	Ombella-M'Poko	39
Central African Republic	Ouaka	35
Central African Republic	Ouham	47
Central African Republic	Ouham-Pendé	45
Central African Republic	Sangha-Mbaéré	42
Central African Republic	Vakaga	25
Chad	Barh el Ghazel	59
Chad	Batha	62
Chad	Borkou	0
Chad	Chari-Baguirmi	33
Chad	Ennedi Est	0
Chad	Ennedi Ouest	1
Chad	Guéra	28
Chad	Hadjer-Lamis	62
Chad	Kanem	56
Chad	Lac	65
Chad	Logone Occidental	27
Chad	Logone Oriental	28
Chad	Mandoul	26
Chad	Mayo-Kebbi Est	21
Chad	Mayo-Kebbi Ouest	22

Country	Sub-national	fNRB (%)
Chad	Moyen-Chari	21
Chad	Ouaddaï	65
Chad	Salamat	17
Chad	Sila	39
Chad	Tandjilé	21
Chad	Tibesti	0
Chad	Ville de N'Djamena	30
Chad	Wadi Fira	51
China	Anhui	12
China	Beijing	13
China	Chongqing	6
China	Fujian	12
China	Gansu	5
China	Guangdong	9
China	Guangxi	6
China	Guizhou	7
China	Hainan	12
China	Hebei	12
China	Heilongjiang	6
China	Henan	15
China	Hong Kong	11
China	Hubei	11
China	Hunan	9
China	Jiangsu	10
China	Jiangxi	11
China	Jilin	6
China	Liaoning	10
China	Macau	6
China	Nei Mongol	5
China	Ningxia Hui	5
China	Qinghai	1
China	Shaanxi	15
China	Shandong	15
China	Shanghai	7
China	Shanxi	13
China	Sichuan	7
China	Tianjin	6
China	Xinjiang Uygur	0
China	Xinjiang Uygur	0
China	Xinjiang Uygur	0
China	Xizang	1

Country	Sub-national	fNRB (%)
China	Xizang	0
China	Xizang	0
China	Yunnan	10
China	Zhejiang	12
Costa Rica	Alajuela	9
Costa Rica	Cartago	15
Costa Rica	Guanacaste	8
Costa Rica	Heredia	13
Costa Rica	Limón	12
Costa Rica	Puntarenas	12
Costa Rica	San José	10
Colombia	Amazonas	7
Colombia	Antioquia	10
Colombia	Arauca	7
Colombia	Atlántico	3
Colombia	Bogota	3
Colombia	Bolívar	5
Colombia	Boyacá	7
Colombia	Caldas	10
Colombia	Caquetá	9
Colombia	Caquetá	3
Colombia	Casanare	9
Colombia	Cauca	4
Colombia	Cesar	14
Colombia	Chocó	2
Colombia	Córdoba	7
Colombia	Cundinamarca	7
Colombia	Guainía	9
Colombia	Guaviare	8
Colombia	Huila	4
Colombia	La Guajira	2
Colombia	Magdalena	2
Colombia	Meta	5
Colombia	Nariño	9
Colombia	Norte de Santander	10
Colombia	Putumayo	12
Colombia	Quindío	8
Colombia	Risaralda	12
Colombia	San Andrés	8
Colombia	Santander	9
Colombia	Sucre	1

Country	Sub-national	fNRB (%)
Colombia	Tolima	6
Colombia	Valle del Cauca	7
Colombia	Vaupá	7
Colombia	Vichada	3
Congo	Bouenza	13
Congo	Brazzaville	4
Congo	Cuvette	16
Congo	Cuvette-Ouest	18
Congo	Kouilou	22
Congo	Lékoumou	21
Congo	Likouala	24
Congo	Niari	16
Congo	Plateaux	11
Congo	Pointe Noire	0
Congo	Pool	9
Congo	Sangha	24
Côte d'Ivoire	Abidjan	14
Côte d'Ivoire	Bas-Sassandra	18
Côte d'Ivoire	Comoé	17
Côte d'Ivoire	Denguélé	19
Côte d'Ivoire	Gôh-Djiboua	19
Côte d'Ivoire	Lacs	18
Côte d'Ivoire	Lagunes	19
Côte d'Ivoire	Montagnes	23
Côte d'Ivoire	Sassandra-Marahoué	20
Côte d'Ivoire	Savanes	19
Côte d'Ivoire	Vallée du Bandama	19
Côte d'Ivoire	Woroba	19
Côte d'Ivoire	Yamoussoukro	19
Côte d'Ivoire	Zanzan	17
Democratic Republic of the Congo	Bas-Uele	49
Democratic Republic of the Congo	Équateur	50
Democratic Republic of the Congo	Haut-Katanga	49
Democratic Republic of the Congo	Haut-Lomami	37
Democratic Republic of the Congo	Haut-Uele	43
Democratic Republic of the Congo	Ituri	41
Democratic Republic of the Congo	Kasaï	39
Democratic Republic of the Congo	Kasaï-Central	36
Democratic Republic of the Congo	Kasaï-Oriental	34
Democratic Republic of the Congo	Kinshasa	26
Democratic Republic of the Congo	Kongo-Central	27



Country	Sub-national	fNRB (%)
Democratic Republic of the Congo	Kwango	34
Democratic Republic of the Congo	Kwilu	32
Democratic Republic of the Congo	Lomami	28
Democratic Republic of the Congo	Lualaba	44
Democratic Republic of the Congo	Mai-Ndombe	43
Democratic Republic of the Congo	Maniema	44
Democratic Republic of the Congo	Mongala	47
Democratic Republic of the Congo	Nord-Kivu	42
Democratic Republic of the Congo	Nord-Ubangi	37
Democratic Republic of the Congo	Sankuru	46
Democratic Republic of the Congo	Sud-Kivu	42
Democratic Republic of the Congo	Sud-Ubangi	39
Democratic Republic of the Congo	Tanganyika	39
Democratic Republic of the Congo	Tshopo	50
Democratic Republic of the Congo	Tshuapa	51
Djibouti	Ali Sabieh	0
Djibouti	Arta	0
Djibouti	Dikhil	1
Djibouti	Djibouti	0
Djibouti	Obock	0
Djibouti	Tadjoura	3
Dominican Republic	Azua	46
Dominican Republic	Bahoruco	46
Dominican Republic	Barahona	46
Dominican Republic	Dajabón	62
Dominican Republic	Distrito Nacional	11
Dominican Republic	Duarte	31
Dominican Republic	El Seybo	13
Dominican Republic	Espailat	34
Dominican Republic	Hato Mayor	23
Dominican Republic	Independencia	59
Dominican Republic	La Altagracia	11
Dominican Republic	La Estrelleta	56
Dominican Republic	La Romana	17
Dominican Republic	La Vega	52
Dominican Republic	María Trinidad Sánchez	26
Dominican Republic	Monseñor Nouel	41
Dominican Republic	Monte Cristi	50
Dominican Republic	Monte Plata	34
Dominican Republic	Pedernales	47
Dominican Republic	Peravia	37

Country	Sub-national	fNRB (%)
Dominican Republic	Puerto Plata	45
Dominican Republic	Salcedo	33
Dominican Republic	Samaná	4
Dominican Republic	San Cristóbal	38
Dominican Republic	San José de Ocoa	39
Dominican Republic	San Juan	48
Dominican Republic	San Pedro de Macorís	28
Dominican Republic	Sánchez Ramírez	35
Dominican Republic	Santiago	46
Dominican Republic	Santiago Rodríguez	47
Dominican Republic	Santo Domingo	39
Dominican Republic	Valverde	50
Ecuador	Azuay	29
Ecuador	Bolívar	33
Ecuador	Cañar	30
Ecuador	Carchi	34
Ecuador	Chimborazo	29
Ecuador	Cotopaxi	32
Ecuador	El Oro	21
Ecuador	Esmeraldas	29
Ecuador	Galápagos	18
Ecuador	Guayas	21
Ecuador	Imbabura	34
Ecuador	Loja	18
Ecuador	Los Ríos	25
Ecuador	Manabí	23
Ecuador	Morona Santiago	45
Ecuador	Napo	39
Ecuador	Orellana	36
Ecuador	Pastaza	43
Ecuador	Pichincha	31
Ecuador	Santa Elena	21
Ecuador	Santo Domingo de los Tsáchilas	33
Ecuador	Sucumbios	38
Ecuador	Tungurahua	31
Ecuador	Zamora Chinchipe	34
Equatorial Guinea	Annobón	0
Equatorial Guinea	Bioko Norte	26
Equatorial Guinea	Bioko Sur	31
Equatorial Guinea	Centro Sur	32
Equatorial Guinea	Kié-Ntem	29

Country	Sub-national	fNRB (%)
Equatorial Guinea	Litoral	32
Equatorial Guinea	Wele-Nzas	31
Eritrea	Anseba	24
Eritrea	Debub	18
Eritrea	Debubawi Keyih Bahri	3
Eritrea	Gash Barka	53
Eritrea	Maekel	15
Eritrea	Semenawi Keyih Bahri	18
Eswatini	Hhohho	17
Eswatini	Lubombo	14
Eswatini	Manzini	17
Eswatini	Shiselweni	16
Ethiopia	Afar	50
Ethiopia	Amhara	23
Ethiopia	Benshangul-Gumaz	29
Ethiopia	Dire Dawa	19
Ethiopia	Gambela Peoples	40
Ethiopia	Harari People	18
Ethiopia	Oromia	30
Ethiopia	Somali	56
Ethiopia	Southern Nations Nationalities	29
Ethiopia	Tigray	29
Gabon	Addis Ababa	9
Gabon	Haut-Ogooué	17
Gabon	Moyen-Ogooué	14
Gabon	Ngounié	16
Gabon	Nyanga	15
Gabon	Ogooué-Ivindo	18
Gabon	Ogooué-Lolo	18
Gabon	Ogooué-Maritime	13
Gabon	Wouleu-Ntem	24
Georgia	Abkhazia	2
Georgia	Ajaria	1
Georgia	Guria	1
Georgia	Imereti	1
Georgia	Kakheti	0
Georgia	Kvemo Kartli	1
Georgia	Mtskheta-Mtianeti	1
Georgia	Racha-Lechkhumi-Kvemo Svaneti	0
Georgia	Samegrelo-Zemo Svaneti	0
Georgia	Samtskhe-Javakheti	0

Country	Sub-national	fNRB (%)
Georgia	Shida Kartli	0
Georgia	Tbilisi	4
Ghana	Ahafo	34
Ghana	Ashanti	37
Ghana	Bono	30
Ghana	Bono East	39
Ghana	Central	33
Ghana	Eastern	36
Ghana	Greater Accra	28
Ghana	North East	36
Ghana	Northern	41
Ghana	Oti	32
Ghana	Savannah	33
Ghana	Upper East	30
Ghana	Upper West	27
Ghana	Volta	33
Ghana	Western	32
Ghana	Western North	31
Gambia	Banjul	39
Gambia	Lower River	60
Gambia	Maccarthy Island	50
Gambia	North Bank	64
Gambia	Upper River	48
Gambia	Western	59
Guatemala	Alta Verapaz	30
Guatemala	Baja Verapaz	31
Guatemala	Chimaltenango	52
Guatemala	Chiquimula	33
Guatemala	El Progreso	39
Guatemala	Escuintla	30
Guatemala	Guatemala	36
Guatemala	Huehuetenango	42
Guatemala	Izabal	31
Guatemala	Jalapa	35
Guatemala	Jutiapa	35
Guatemala	Petén	28
Guatemala	Quezaltenango	47
Guatemala	Quiché	45
Guatemala	Retalhuleu	36
Guatemala	Sacatepéquez	56
Guatemala	San Marcos	47

Country	Sub-national	fNRB (%)
Guatemala	Santa Rosa	32
Guatemala	Sololá	54
Guatemala	Suchitepéquez	33
Guatemala	Totonicapán	62
Guatemala	Zacapa	36
Guinea	Boké	32
Guinea	Conakry	42
Guinea	Faranah	41
Guinea	Kankan	39
Guinea	Kindia	28
Guinea	Labé	42
Guinea	Mamou	38
Guinea	Nzérékoré	37
Guinea-Bissau	Bafatá	33
Guinea-Bissau	Biombo	35
Guinea-Bissau	Bissau	18
Guinea-Bissau	Bolama	23
Guinea-Bissau	Cacheu	34
Guinea-Bissau	Gabú	38
Guinea-Bissau	Oio	36
Guinea-Bissau	Quinara	23
Guinea-Bissau	Tombali	28
Guyana	Barima-Waini	0
Guyana	Cuyuni-Mazaruni	0
Guyana	Demerara-Mahaica	0
Guyana	East Berbice-Corentyne	0
Guyana	Essequibo Islands-West Demerara	0
Guyana	Mahaica-Berbice	0
Guyana	Pomeroon-Supenaam	0
Guyana	Potaro-Siparuni	0
Guyana	Upper Demerara-Berbice	0
Guyana	Upper Takutu-Upper Essequibo	0
Haiti	Centre	61
Haiti	Grand'Anse	65
Haiti	L'Artibonite	43
Haiti	Nippes	69
Haiti	Nord	71
Haiti	Nord-Est	64
Haiti	Nord-Ouest	63
Haiti	Ouest	25
Haiti	Sud	61

Country	Sub-national	fNRB (%)
Haiti	Sud-Est	66
Honduras	Atlántida	34
Honduras	Choluteca	31
Honduras	Colón	30
Honduras	Comayagua	34
Honduras	Copán	31
Honduras	Cortés	32
Honduras	El Paraíso	31
Honduras	Francisco Morazán	34
Honduras	Gracias a Dios	26
Honduras	Intibucá	36
Honduras	Islas de la Bahía	33
Honduras	La Paz	35
Honduras	Lempira	33
Honduras	Ocotepeque	34
Honduras	Olancho	32
Honduras	Santa Bárbara	34
Honduras	Valle	31
Honduras	Yoro	35
India	Andaman and Nicobar	28
India	Andhra Pradesh	6
India	Arunachal Pradesh	27
India	Arunachal Pradesh	28
India	Assam	24
India	Bihar	5
India	Chandigarh	2
India	Chhattisgarh	12
India	Dadra and Nagar Haveli	19
India	Daman and Diu	4
India	Goa	33
India	Gujarat	1
India	Haryana	0
India	Himachal Pradesh	17
India	Himachal Pradesh	0
India	Himachal Pradesh	0
India	Jammu and Kashmir	10
India	Jharkhand	16
India	Karnataka	5
India	Kerala	34
India	Lakshadweep	0
India	Madhya Pradesh	4

Country	Sub-national	fNRB (%)
India	Maharashtra	4
India	Manipur	25
India	Meghalaya	28
India	Mizoram	31
India	Nagaland	27
India	NCT of Delhi	0
India	Odisha	19
India	Puducherry	13
India	Punjab	1
India	Rajasthan	0
India	Sikkim	23
India	Tamil Nadu	6
India	Telangana	2
India	Tripura	22
India	Uttar Pradesh	2
India	Uttarakhand	23
India	Uttarakhand	0
India	Uttarakhand	0
India	West Bengal	15
Indonesia	Aceh	10
Indonesia	Bali	6
Indonesia	Bangka Belitung	11
Indonesia	Banten	9
Indonesia	Bengkulu	11
Indonesia	Gorontalo	8
Indonesia	Jakarta Raya	0
Indonesia	Jambi	12
Indonesia	Jawa Barat	9
Indonesia	Jawa Tengah	8
Indonesia	Jawa Timur	8
Indonesia	Kalimantan Barat	11
Indonesia	Kalimantan Selatan	9
Indonesia	Kalimantan Tengah	12
Indonesia	Kalimantan Timur	11
Indonesia	Kalimantan Utara	12
Indonesia	Kepulauan Riau	8
Indonesia	Lampung	7
Indonesia	Maluku	12
Indonesia	Maluku Utara	12
Indonesia	Nusa Tenggara Barat	6
Indonesia	Nusa Tenggara Timur	3

Country	Sub-national	fNRB (%)
Indonesia	Papua	10
Indonesia	Papua Barat	12
Indonesia	Riau	12
Indonesia	Sulawesi Barat	11
Indonesia	Sulawesi Selatan	7
Indonesia	Sulawesi Tengah	11
Indonesia	Sulawesi Tenggara	10
Indonesia	Sulawesi Utara	11
Indonesia	Sumatera Barat	11
Indonesia	Sumatera Selatan	10
Indonesia	Sumatera Utara	10
Indonesia	Yogyakarta	7
Islamic Republic of Iran	Alborz	8
Islamic Republic of Iran	Ardebil	9
Islamic Republic of Iran	Bushehr	0
Islamic Republic of Iran	Chahar Mahall and Bakhtiari	8
Islamic Republic of Iran	East Azarbaijan	9
Islamic Republic of Iran	Esfahan	2
Islamic Republic of Iran	Fars	1
Islamic Republic of Iran	Gilan	18
Islamic Republic of Iran	Golestan	7
Islamic Republic of Iran	Hamadan	10
Islamic Republic of Iran	Hormozgan	0
Islamic Republic of Iran	Ilam	3
Islamic Republic of Iran	Kerman	1
Islamic Republic of Iran	Kermanshah	7
Islamic Republic of Iran	Khuzestan	1
Islamic Republic of Iran	Kohgiluyeh and Buyer Ahmad	2
Islamic Republic of Iran	Kordestan	10
Islamic Republic of Iran	Lorestan	8
Islamic Republic of Iran	Markazi	9
Islamic Republic of Iran	Mazandaran	18
Islamic Republic of Iran	North Khorasan	6
Islamic Republic of Iran	Qazvin	10
Islamic Republic of Iran	Qom	2
Islamic Republic of Iran	Razavi Khorasan	4
Islamic Republic of Iran	Semnan	2
Islamic Republic of Iran	Sistan and Baluchestan	0
Islamic Republic of Iran	South Khorasan	0
Islamic Republic of Iran	Tehran	5
Islamic Republic of Iran	West Azarbaijan	9



Country	Sub-national	fNRB (%)
Islamic Republic of Iran	Yazd	0
Islamic Republic of Iran	Zanjan	11
Iraq	Al-Anbar	0
Iraq	Al-Basrah	0
Iraq	Al-Muthannia	0
Iraq	Al-Qadisiyah	0
Iraq	An-Najaf	0
Iraq	Arbil	2
Iraq	As-Sulaymaniyah	2
Iraq	At-Ta'mim	1
Iraq	Babil	0
Iraq	Baghdad	0
Iraq	Dhi-Qar	0
Iraq	Dihok	6
Iraq	Diyala	1
Iraq	Karbala'	0
Iraq	Maysan	0
Iraq	Ninawa	1
Iraq	Sala ad-Din	0
Iraq	Wasit	0
Jamaica	Clarendon	34
Jamaica	Hanover	39
Jamaica	Kingston	41
Jamaica	Manchester	35
Jamaica	Portland	47
Jamaica	Saint Andrew	44
Jamaica	Saint Ann	38
Jamaica	Saint Catherine	39
Jamaica	Saint Elizabeth	34
Jamaica	Saint James	38
Jamaica	Saint Mary	43
Jamaica	Saint Thomas	44
Jamaica	Trelawny	39
Jamaica	Westmoreland	34
Jordan	Ajlun	8
Jordan	Amman	1
Jordan	Aqaba	0
Jordan	Balqa	1
Jordan	Irbid	1
Jordan	Jarash	8
Jordan	Karak	0

Country	Sub-national	fNRB (%)
Jordan	Ma'an	0
Jordan	Madaba	2
Jordan	Ma'raq	0
Jordan	Tafilah	0
Jordan	Zarqa	0
Kazakhstan	Almaty	17
Kazakhstan	Aqmola	0
Kazakhstan	Aqtöbe	0
Kazakhstan	Atyrau	0
Kazakhstan	East Kazakhstan	7
Kazakhstan	Mangghystau	0
Kazakhstan	North Kazakhstan	11
Kazakhstan	Pavlodar	0
Kazakhstan	Qaraghandy	0
Kazakhstan	Qostanay	1
Kazakhstan	Qyzylorda	0
Kazakhstan	South Kazakhstan	8
Kazakhstan	West Kazakhstan	0
Kazakhstan	Zhambyl	8
Kenya	Baringo	21
Kenya	Bomet	26
Kenya	Bungoma	22
Kenya	Busia	18
Kenya	Elgeyo-Marakwet	22
Kenya	Embu	34
Kenya	Garissa	47
Kenya	Homa Bay	19
Kenya	Isiolo	46
Kenya	Kajiado	30
Kenya	Kakamega	21
Kenya	Kericho	23
Kenya	Kiambu	23
Kenya	Kilifi	22
Kenya	Kirinyaga	26
Kenya	Kisii	20
Kenya	Kisumu	26
Kenya	Kitui	45
Kenya	Kwale	20
Kenya	Laikipia	17
Kenya	Lamu	20
Kenya	Machakos	25

Country	Sub-national	fNRB (%)
Kenya	Makueni	34
Kenya	Mandera	50
Kenya	Marsabit	46
Kenya	Meru	27
Kenya	Migori	22
Kenya	Mombasa	13
Kenya	Murang'a	25
Kenya	Nairobi	11
Kenya	Nakuru	21
Kenya	Nandi	24
Kenya	Narok	22
Kenya	Nyamira	21
Kenya	Nyandarua	21
Kenya	Nyeri	25
Kenya	Samburu	24
Kenya	Siaya	22
Kenya	Taita Taveta	49
Kenya	Tana River	42
Kenya	Tharaka-Nithi	49
Kenya	Trans Nzoia	20
Kenya	Turkana	42
Kenya	Uasin Gishu	21
Kenya	Vihiga	20
Kenya	Wajir	50
Kenya	West Pokot	22
Kyrgyzstan	Batken	34
Kyrgyzstan	Biškeek	2
Kyrgyzstan	Chüy	15
Kyrgyzstan	Jalal-Abad	30
Kyrgyzstan	Naryn	19
Kyrgyzstan	Osh	30
Kyrgyzstan	Osh city	4
Kyrgyzstan	Talas	22
Kyrgyzstan	Ysyk-Köl	16
Lao People's Democratic Republic	Attapu	54
Lao People's Democratic Republic	Bokeo	48
Lao People's Democratic Republic	Bolikhamxai	50
Lao People's Democratic Republic	Champasak	46
Lao People's Democratic Republic	Houaphan	56
Lao People's Democratic Republic	Khammouan	49
Lao People's Democratic Republic	Louang Namtha	55

Country	Sub-national	fNRB (%)
Lao People's Democratic Republic	Louangphrabang	47
Lao People's Democratic Republic	Oudômxai	53
Lao People's Democratic Republic	Phôngsali	53
Lao People's Democratic Republic	Saravan	40
Lao People's Democratic Republic	Savannakhét	37
Lao People's Democratic Republic	Vientiane	45
Lao People's Democratic Republic	Vientiane [prefecture]	45
Lao People's Democratic Republic	Xaignabouri	46
Lao People's Democratic Republic	Xaisômboun	55
Lao People's Democratic Republic	Xékong	54
Lao People's Democratic Republic	Xiangkhoang	54
Liberia	Bomi	41
Liberia	Bong	40
Liberia	Gbapolu	41
Liberia	Grand Bassa	40
Liberia	Grand Cape Mount	40
Liberia	Grand Gedeh	40
Liberia	Grand Kru	37
Liberia	Lofa	42
Liberia	Margibi	37
Liberia	Maryland	34
Liberia	Montserrado	39
Liberia	Nimba	39
Liberia	River Gee	39
Liberia	Rivercess	41
Liberia	Sinoe	40
Madagascar	Antananarivo	26
Madagascar	Antsiranana	32
Madagascar	Fianarantsoa	32
Madagascar	Mahajanga	33
Madagascar	Toamasina	36
Madagascar	Toliary	54
Malawi	Balaka	62
Malawi	Blantyre	55
Malawi	Chikwawa	38
Malawi	Chiradzulu	49
Malawi	Chitipa	35
Malawi	Dedza	49
Malawi	Dowa	61
Malawi	Karonga	43
Malawi	Kasungu	55

Country	Sub-national	fNRB (%)
Malawi	Likoma	0
Malawi	Lilongwe	55
Malawi	Machinga	46
Malawi	Mangochi	45
Malawi	Mchinji	60
Malawi	Mulanje	36
Malawi	Mwanza	52
Malawi	Mzimba	45
Malawi	Neno	53
Malawi	Nkhata Bay	56
Malawi	Nkhotakota	54
Malawi	Nsanje	33
Malawi	Ntcheu	54
Malawi	Ntchisi	52
Malawi	Phalombe	39
Malawi	Rumphi	41
Malawi	Salima	56
Malawi	Thyolo	40
Malawi	Zomba	49
Malaysia	Johor	38
Malaysia	Kedah	32
Malaysia	Kelantan	35
Malaysia	Kuala Lumpur	0
Malaysia	Labuan	19
Malaysia	Melaka	29
Malaysia	Negeri Sembilan	39
Malaysia	Pahang	47
Malaysia	Perak	40
Malaysia	Perlis	18
Malaysia	Pulau Pinang	12
Malaysia	Putrajaya	3
Malaysia	Sabah	47
Malaysia	Sarawak	46
Malaysia	Selangor	29
Malaysia	Trengganu	44
Mali	Bamako	4
Mali	Gao	28
Mali	Kayes	39
Mali	Kidal	1
Mali	Koulikoro	45
Mali	Mopti	70

Country	Sub-national	fNRB (%)
Mali	Ségou	46
Mali	Sikasso	35
Mali	Timbuktu	54
Mauritania	Adrar	0
Mauritania	Assaba	67
Mauritania	Brakna	54
Mauritania	Dakhlet Nouadhibou	0
Mauritania	Gorgol	66
Mauritania	Guidimaka	71
Mauritania	Hodh ech Chargui	67
Mauritania	Hodh el Gharbi	69
Mauritania	Inchiri	0
Mauritania	Nouakchott	0
Mauritania	Tagant	29
Mauritania	Tiris Zemmour	0
Mauritania	Trarza	64
Mexico	Aguascalientes	19
Mexico	Baja California	15
Mexico	Baja California Sur	5
Mexico	Campeche	40
Mexico	Chiapas	34
Mexico	Chihuahua	21
Mexico	Coahuila	13
Mexico	Colima	32
Mexico	Distrito Federal	27
Mexico	Durango	27
Mexico	Guanajuato	17
Mexico	Guerrero	39
Mexico	Hidalgo	32
Mexico	Jalisco	27
Mexico	México	36
Mexico	Michoacán	34
Mexico	Morelos	31
Mexico	Nayarit	35
Mexico	Nuevo León	22
Mexico	Oaxaca	38
Mexico	Puebla	33
Mexico	Querétaro	25
Mexico	Quintana Roo	45
Mexico	San Luis Potosí	31
Mexico	Sinaloa	22

Country	Sub-national	fNRB (%)
Mexico	Sonora	14
Mexico	Tabasco	29
Mexico	Tamaulipas	29
Mexico	Tlaxcala	35
Mexico	Veracruz	36
Mexico	Yucatán	30
Mexico	Zacatecas	19
Mongolia	Arhangay	9
Mongolia	Bayan-Ölgiy	10
Mongolia	Bayanhongor	9
Mongolia	Bulgan	10
Mongolia	Darhan-Uul	0
Mongolia	Dornod	1
Mongolia	Dornogovi	0
Mongolia	Dundgovi	0
Mongolia	Dzavhan	12
Mongolia	Govi-Altay	5
Mongolia	Govisumber	0
Mongolia	Hentiy	15
Mongolia	Hovd	5
Mongolia	Hövsgöl	15
Mongolia	Ömnögovi	0
Mongolia	Orhon	13
Mongolia	Övörhangay	8
Mongolia	Selenge	7
Mongolia	Sühbaatar	0
Mongolia	Töv	17
Mongolia	Ulaanbaatar	28
Mongolia	Uvs	6
Myanmar	Ayeyarwady	33
Myanmar	Bago	33
Myanmar	Chin	36
Myanmar	Kachin	49
Myanmar	Kayah	32
Myanmar	Kayin	36
Myanmar	Magway	26
Myanmar	Mandalay	33
Myanmar	Mon	34
Myanmar	Naypyitaw	37
Myanmar	Rakhine	32
Myanmar	Sagaing	35

Country	Sub-national	fNRB (%)
Myanmar	Shan	41
Myanmar	Tanintharyi	40
Myanmar	Yangon	25
Mozambique	Cabo Delgado	43
Mozambique	Gaza	29
Mozambique	Inhambane	33
Mozambique	Manica	33
Mozambique	Maputo	36
Mozambique	Maputo City	34
Mozambique	Nampula	39
Mozambique	Nassa	46
Mozambique	Sofala	36
Mozambique	Tete	38
Mozambique	Zambezia	38
Namibia	!Karas	15
Namibia	Erongo	41
Namibia	Hardap	43
Namibia	Kavango	23
Namibia	Khomas	33
Namibia	Kunene	31
Namibia	Ohangwena	16
Namibia	Omaheke	53
Namibia	Omusati	18
Namibia	Oshana	18
Namibia	Oshikoto	20
Namibia	Otjozondjupa	46
Namibia	Zambezi	17
Nepal	Central	45
Nepal	East	43
Nepal	Far-Western	45
Nepal	Mid-Western	47
Nepal	West	47
Nicaragua	Atlántico Norte	27
Nicaragua	Atlántico Sur	19
Nicaragua	Boaco	24
Nicaragua	Carazo	32
Nicaragua	Chinandega	23
Nicaragua	Chontales	20
Nicaragua	Estelí	25
Nicaragua	Granada	31
Nicaragua	Jinotega	26



Country	Sub-national	fNRB (%)
Nicaragua	Lago Nicaragua	17
Nicaragua	León	26
Nicaragua	Madriz	29
Nicaragua	Managua	27
Nicaragua	Masaya	37
Nicaragua	Matagalpa	25
Nicaragua	Nueva Segovia	28
Nicaragua	Río San Juan	20
Nicaragua	Rivas	28
Niger	Agadez	10
Niger	Diffa	65
Niger	Dosso	64
Niger	Maradi	76
Niger	Niamey	6
Niger	Tahoua	70
Niger	Tillabéry	53
Niger	Zinder	66
Nigeria	Abia	23
Nigeria	Adamawa	32
Nigeria	Akwa Ibom	28
Nigeria	Anambra	20
Nigeria	Bauchi	38
Nigeria	Bayelsa	40
Nigeria	Benue	35
Nigeria	Borno	54
Nigeria	Cross River	33
Nigeria	Delta	29
Nigeria	Ebonyi	19
Nigeria	Edo	30
Nigeria	Ekiti	34
Nigeria	Enugu	29
Nigeria	Federal Capital Territory	41
Nigeria	Gombe	36
Nigeria	Imo	23
Nigeria	Jigawa	53
Nigeria	Kaduna	44
Nigeria	Kano	34
Nigeria	Katsina	46
Nigeria	Kebbi	48
Nigeria	Kogi	38
Nigeria	Kwara	42

Country	Sub-national	fNRB (%)
Nigeria	Lagos	25
Nigeria	Nasarawa	47
Nigeria	Niger	48
Nigeria	Ogun	28
Nigeria	Ondo	34
Nigeria	Osun	33
Nigeria	Oyo	25
Nigeria	Plateau	33
Nigeria	Rivers	30
Nigeria	Sokoto	59
Nigeria	Taraba	38
Nigeria	Yobe	67
Nigeria	Zamfara	47
Pakistan	Azad Kashmir	44
Pakistan	Balochistan	1
Pakistan	Federally Administered Tribal Ar	13
Pakistan	Gilgit-Baltistan	39
Pakistan	Islamabad	6
Pakistan	Khyber-Pakhtunkhwa	22
Pakistan	Punjab	1
Pakistan	Sindh	0
Panama	Bocas del Toro	32
Panama	Chiriquí	21
Panama	Coclé	21
Panama	Colón	25
Panama	Darién	28
Panama	Emberá	38
Panama	Herrera	21
Panama	Kuna Yala	37
Panama	Los Santos	21
Panama	Ngöbe Buglé	27
Panama	Panamá	19
Panama	Panamá Oeste	20
Panama	Veraguas	20
Papua New Guinea	Bougainville	1
Papua New Guinea	Central	2
Papua New Guinea	Chimbu	0
Papua New Guinea	East New Britain	1
Papua New Guinea	East Sepik	18
Papua New Guinea	Eastern Highlands	0
Papua New Guinea	Enga	0

Country	Sub-national	fNRB (%)
Papua New Guinea	Gulf	59
Papua New Guinea	Hela	0
Papua New Guinea	Jiwaka	0
Papua New Guinea	Madang	9
Papua New Guinea	Manus	3
Papua New Guinea	Milne Bay	1
Papua New Guinea	Morobe	4
Papua New Guinea	National Capital District	12
Papua New Guinea	New Ireland	3
Papua New Guinea	Oro	0
Papua New Guinea	Sandaun	4
Papua New Guinea	Southern Highlands	4
Papua New Guinea	West New Britain	1
Papua New Guinea	Western	2
Papua New Guinea	Western Highlands	0
Peru	Amazonas	10
Peru	Ancash	2
Peru	Apurímac	1
Peru	Arequipa	1
Peru	Ayacucho	1
Peru	Cajamarca	5
Peru	Callao	0
Peru	Cusco	5
Peru	Huancavelica	1
Peru	Huánuco	2
Peru	Ica	0
Peru	Junín	5
Peru	La Libertad	2
Peru	Lambayeque	4
Peru	Lima	3
Peru	Lima Province	0
Peru	Loreto	9
Peru	Madre de Dios	4
Peru	Moquegua	1
Peru	Pasco	2
Peru	Piura	6
Peru	Puno	8
Peru	San Martín	7
Peru	Tacna	0
Peru	Tumbes	5
Peru	Ucayali	4

Country	Sub-national	fNRB (%)
Philippines	Abra	63
Philippines	Agusan del Norte	49
Philippines	Agusan del Sur	49
Philippines	Aklan	53
Philippines	Albay	53
Philippines	Antique	48
Philippines	Apayao	55
Philippines	Aurora	57
Philippines	Basilan	49
Philippines	Bataan	70
Philippines	Batanes	48
Philippines	Batangas	70
Philippines	Benguet	64
Philippines	Biliran	49
Philippines	Bohol	47
Philippines	Bukidnon	46
Philippines	Bulacan	50
Philippines	Cagayan	56
Philippines	Camarines Norte	55
Philippines	Camarines Sur	52
Philippines	Camiguin	49
Philippines	Capiz	52
Philippines	Catanduanes	49
Philippines	Cavite	41
Philippines	Cebu	49
Philippines	Compostela Valley	54
Philippines	Davao del Norte	51
Philippines	Davao del Sur	53
Philippines	Davao Oriental	52
Philippines	Dinagat Islands	49
Philippines	Eastern Samar	49
Philippines	Guimaras	46
Philippines	Ifugao	62
Philippines	Ilocos Norte	60
Philippines	Ilocos Sur	64
Philippines	Iloilo	53
Philippines	Isabela	55
Philippines	Kalinga	63
Philippines	La Union	71
Philippines	Laguna	57
Philippines	Lanao del Norte	49

Country	Sub-national	fNRB (%)
Philippines	Lanao del Sur	54
Philippines	Leyte	49
Philippines	Maguindanao	47
Philippines	Marinduque	49
Philippines	Masbate	40
Philippines	Metropolitan Manila	0
Philippines	Misamis Occidental	52
Philippines	Misamis Oriental	46
Philippines	Mountain Province	63
Philippines	Negros Occidental	50
Philippines	Negros Oriental	46
Philippines	North Cotabato	50
Philippines	Northern Samar	49
Philippines	Nueva Ecija	58
Philippines	Nueva Vizcaya	61
Philippines	Occidental Mindoro	49
Philippines	Oriental Mindoro	49
Philippines	Palawan	50
Philippines	Pampanga	28
Philippines	Pangasinan	60
Philippines	Quezon	62
Philippines	Quirino	59
Philippines	Rizal	59
Philippines	Romblon	49
Philippines	Samar	49
Philippines	Sarangani	42
Philippines	Siquijor	43
Philippines	Sorsogon	51
Philippines	South Cotabato	47
Philippines	Southern Leyte	50
Philippines	Sultan Kudarat	48
Philippines	Sulu	50
Philippines	Surigao del Norte	49
Philippines	Surigao del Sur	49
Philippines	Tarlac	65
Philippines	Tawi-Tawi	50
Philippines	Zambales	66
Philippines	Zamboanga del Norte	47
Philippines	Zamboanga del Sur	45
Philippines	Zamboanga Sibugay	51
Plurinational State of Bolivia	Beni	15

Country	Sub-national	fNRB (%)
Plurinational State of Bolivia	Chuquisaca	9
Plurinational State of Bolivia	Cochabamba	21
Plurinational State of Bolivia	La Paz	18
Plurinational State of Bolivia	Oruro	10
Plurinational State of Bolivia	Pando	26
Plurinational State of Bolivia	Potosí	10
Plurinational State of Bolivia	Santa Cruz	11
Plurinational State of Bolivia	Tarija	11
Rwanda	Amajyaruguru	36
Rwanda	Amajyepfo	31
Rwanda	Iburasirazuba	35
Rwanda	Iburengerazuba	35
Rwanda	Umujyi wa Kigali	21
Senegal	Dakar	5
Senegal	Diourbel	12
Senegal	Fatick	59
Senegal	Kaffrine	66
Senegal	Kaolack	65
Senegal	Kédougou	46
Senegal	Kolda	53
Senegal	Louga	87
Senegal	Matam	84
Senegal	Saint-Louis	87
Senegal	Sédhiou	55
Senegal	Tambacounda	52
Senegal	Thiès	45
Senegal	Ziguinchor	55
Sierra Leone	Eastern	52
Sierra Leone	Northern	37
Sierra Leone	Southern	39
Sierra Leone	Western	35
Somalia	Awdal	39
Somalia	Bakool	66
Somalia	Bari	14
Somalia	Bay	68
Somalia	Galguduud	62
Somalia	Gedo	66
Somalia	Hiiraan	64
Somalia	Jubbada Dhexe	68
Somalia	Jubbada Hoose	65
Somalia	Mudug	37

Country	Sub-national	fNRB (%)
Somalia	Nugaal	44
Somalia	Sanaag	23
Somalia	Shabeellaha Dhexe	52
Somalia	Shabeellaha Hoose	71
Somalia	Sool	41
Somalia	Togdheer	53
Somalia	Banaadir	0
South Africa	Eastern Cape	21
South Africa	Free State	14
South Africa	Gauteng	10
South Africa	KwaZulu-Natal	19
South Africa	Limpopo	14
South Africa	Mpumalanga	15
South Africa	North West	23
South Africa	Northern Cape	28
South Africa	Western Cape	16
South Sudan	Central Equatoria	37
South Sudan	Eastern Equatoria	40
South Sudan	Jungoli	28
South Sudan	Lakes	34
South Sudan	North Bahr-al-Ghazal	25
South Sudan	Unity	23
South Sudan	Upper Nile	33
South Sudan	Warap	27
South Sudan	West Bahr-al-Ghazal	32
South Sudan	West Equatoria	37
Sri Lanka	Ampara	40
Sri Lanka	Anuradhapura	44
Sri Lanka	Badulla	43
Sri Lanka	Batticaloa	48
Sri Lanka	Colombo	36
Sri Lanka	Galle	46
Sri Lanka	Gampaha	49
Sri Lanka	Hambantota	28
Sri Lanka	Jaffna	25
Sri Lanka	Kalutara	45
Sri Lanka	Kandy	47
Sri Lanka	Kegalle	47
Sri Lanka	Kilinochchi	23
Sri Lanka	Kurunegala	48
Sri Lanka	Mannar	28

Country	Sub-national	fNRB (%)
Sri Lanka	Matale	49
Sri Lanka	Matara	49
Sri Lanka	Moneragala	38
Sri Lanka	Mullaitivu	35
Sri Lanka	Nuwara Eliya	51
Sri Lanka	Polonnaruwa	45
Sri Lanka	Puttalam	41
Sri Lanka	Ratnapura	47
Sri Lanka	Trincomalee	48
Sri Lanka	Vavuniya	44
Sudan	Al Jazirah	65
Sudan	Al Qadarif	63
Sudan	Blue Nile	59
Sudan	Central Darfur	49
Sudan	East Darfur	53
Sudan	Kassala	46
Sudan	Khartoum	2
Sudan	North Darfur	53
Sudan	North Kurdufan	54
Sudan	Northern	0
Sudan	Red Sea	2
Sudan	River Nile	7
Sudan	Sennar	67
Sudan	South Darfur	43
Sudan	South Kurdufan	54
Sudan	West Darfur	53
Sudan	West Kurdufan	53
Sudan	White Nile	65
Syrian Arab Republic	Al Hasakah	0
Syrian Arab Republic	Aleppo	2
Syrian Arab Republic	Ar Raqqah	0
Syrian Arab Republic	As Suwayda'	7
Syrian Arab Republic	Damascus	1
Syrian Arab Republic	Dar`a	2
Syrian Arab Republic	Dayr Az Zawr	1
Syrian Arab Republic	Hamah	3
Syrian Arab Republic	Hims	4
Syrian Arab Republic	Idlib	6
Syrian Arab Republic	Lattakia	13
Syrian Arab Republic	Quneitra	6
Syrian Arab Republic	Rif Dimashq	4



Country	Sub-national	fNRB (%)
Syrian Arab Republic	Tartus	14
Tajikistan	Districts of Republican Subordin	26
Tajikistan	Dushanbe	7
Tajikistan	Gorno-Badakhshan	13
Tajikistan	Khatlon	12
Tajikistan	Sughd	28
Thailand	Amnat Charoen	13
Thailand	Ang Thong	17
Thailand	Bangkok Metropolis	15
Thailand	Bueng Kan	28
Thailand	Buri Ram	11
Thailand	Chachoengsao	17
Thailand	Chai Nat	10
Thailand	Chaiyaphum	16
Thailand	Chanthaburi	25
Thailand	Chiang Mai	36
Thailand	Chiang Rai	29
Thailand	Chon Buri	13
Thailand	Chumphon	33
Thailand	Kalasin	15
Thailand	Kamphaeng Phet	15
Thailand	Kanchanaburi	21
Thailand	Khon Kaen	13
Thailand	Krabi	30
Thailand	Lampang	33
Thailand	Lamphun	33
Thailand	Loei	30
Thailand	Lop Buri	12
Thailand	Mae Hong Son	39
Thailand	Maha Sarakham	11
Thailand	Mukdahan	21
Thailand	Nakhon Nayok	25
Thailand	Nakhon Pathom	23
Thailand	Nakhon Phanom	36
Thailand	Nakhon Ratchasima	15
Thailand	Nakhon Sawan	11
Thailand	Nakhon Si Thammarat	27
Thailand	Nan	41
Thailand	Narathiwat	31
Thailand	Nong Bua Lam Phu	29
Thailand	Nong Khai	36

Country	Sub-national	fNRB (%)
Thailand	Nonthaburi	24
Thailand	Pathum Thani	23
Thailand	Pattani	22
Thailand	Phangnga	36
Thailand	Phatthalung	23
Thailand	Phayao	31
Thailand	Phetchabun	20
Thailand	Phetchaburi	26
Thailand	Phichit	11
Thailand	Phitsanulok	21
Thailand	Phra Nakhon Si Ayutthaya	17
Thailand	Phrae	29
Thailand	Phuket	35
Thailand	Prachin Buri	23
Thailand	Prachuap Khiri Khan	32
Thailand	Ranong	37
Thailand	Ratchaburi	16
Thailand	Rayong	17
Thailand	Roi Et	11
Thailand	Sa Kaeo	17
Thailand	Sakon Nakhon	27
Thailand	Samut Prakan	23
Thailand	Samut Sakhon	19
Thailand	Samut Songkhram	18
Thailand	Saraburi	16
Thailand	Satun	31
Thailand	Si Sa Ket	12
Thailand	Sing Buri	13
Thailand	Songkhla	26
Thailand	Sukhothai	16
Thailand	Suphan Buri	15
Thailand	Surat Thani	30
Thailand	Surin	10
Thailand	Tak	35
Thailand	Trang	30
Thailand	Trat	27
Thailand	Ubon Ratchathani	16
Thailand	Udon Thani	28
Thailand	Uthai Thani	17
Thailand	Uttaradit	28
Thailand	Yala	33

Country	Sub-national	fNRB (%)
Thailand	Yasothon	12
Timor-Leste	Aileu	40
Timor-Leste	Ainaro	43
Timor-Leste	Ambeno	28
Timor-Leste	Baucau	34
Timor-Leste	Bobonaro	39
Timor-Leste	Covalima	43
Timor-Leste	Dili	24
Timor-Leste	Ermera	42
Timor-Leste	Lautém	40
Timor-Leste	Liquiçá	33
Timor-Leste	Manatuto	39
Timor-Leste	Manufahi	43
Timor-Leste	Viqueque	42
Togo	Centre	48
Togo	Kara	48
Togo	Maritime	39
Togo	Plateaux	45
Togo	Savanes	51
Türkiye	Adana	9
Türkiye	Adiyaman	9
Türkiye	Afyon	10
Türkiye	Agri	11
Türkiye	Aksaray	6
Türkiye	Amasya	13
Türkiye	Ankara	13
Türkiye	Antalya	12
Türkiye	Ardahan	8
Türkiye	Artvin	18
Türkiye	Aydin	10
Türkiye	Balikesir	14
Türkiye	Bartın	28
Türkiye	Batman	4
Türkiye	Bayburt	11
Türkiye	Bilecik	20
Türkiye	Bingöl	12
Türkiye	Bitlis	9
Türkiye	Bolu	25
Türkiye	Burdur	15
Türkiye	Bursa	20
Türkiye	Çanakkale	15

Country	Sub-national	fNRB (%)
Türkiye	Çankiri	13
Türkiye	Çorum	12
Türkiye	Denizli	15
Türkiye	Diyarbakir	4
Türkiye	Düzce	28
Türkiye	Edirne	7
Türkiye	Elazığ	11
Türkiye	Erzincan	11
Türkiye	Erzurum	11
Türkiye	Eskisehir	11
Türkiye	Gaziantep	6
Türkiye	Giresun	25
Türkiye	Gümüşhane	13
Türkiye	Hakkari	12
Türkiye	Hatay	10
Türkiye	Iğdır	6
Türkiye	Isparta	12
Türkiye	Istanbul	23
Türkiye	Izmir	13
Türkiye	K Maras	11
Türkiye	Karabük	28
Türkiye	Karaman	9
Türkiye	Kars	8
Türkiye	Kastamonu	24
Türkiye	Kayseri	12
Türkiye	Kilis	7
Türkiye	Kinkkale	9
Türkiye	Kirklareli	13
Türkiye	Kirsehir	9
Türkiye	Kocaeli	22
Türkiye	Konya	8
Türkiye	Kütahya	15
Türkiye	Malatya	11
Türkiye	Manisa	11
Türkiye	Mardin	4
Türkiye	Mersin	10
Türkiye	Mugla	11
Türkiye	Mus	10
Türkiye	Nevsehir	10
Türkiye	Nigde	11
Türkiye	Ordu	26

Country	Sub-national	fNRB (%)
Türkiye	Osmaniye	13
Türkiye	Rize	32
Türkiye	Sakarya	23
Türkiye	Samsun	15
Türkiye	Sanliurfa	2
Türkiye	Siirt	8
Türkiye	Sinop	22
Türkiye	Sirnak	9
Türkiye	Sivas	12
Türkiye	Tekirdag	9
Türkiye	Tokat	15
Türkiye	Trabzon	25
Türkiye	Tunceli	11
Türkiye	Usak	10
Türkiye	Van	10
Türkiye	Yalova	27
Türkiye	Yozgat	9
Türkiye	Zinguldak	28
Türkmenistan	Ahal	0
Türkmenistan	Aşgabat	0
Türkmenistan	Balkan	1
Türkmenistan	Daşoguz	0
Türkmenistan	Lebap	1
Türkmenistan	Mary	0
Uganda	Adjumani	48
Uganda	Apac	36
Uganda	Arua	42
Uganda	Bugiri	35
Uganda	Bundibugyo	46
Uganda	Bushenyi	37
Uganda	Busia	36
Uganda	Gulu	42
Uganda	Hoima	29
Uganda	Iganga	36
Uganda	Jinja	36
Uganda	Kabale	35
Uganda	Kabarole	40
Uganda	Kaberamaido	40
Uganda	Kalangala	11
Uganda	Kampala	0
Uganda	Kamuli	35

Country	Sub-national	fNRB (%)
Uganda	Kamwenge	32
Uganda	Kanungu	35
Uganda	Kapchorwa	41
Uganda	Kasese	36
Uganda	Katakwi	65
Uganda	Kayunga	34
Uganda	Kibale	46
Uganda	Kiboga	34
Uganda	Kisoro	33
Uganda	Kitgum	57
Uganda	Kotido	40
Uganda	Kumi	52
Uganda	Kyenjojo	40
Uganda	Lake Albert	0
Uganda	Lake Victoria	41
Uganda	Lira	52
Uganda	Luwero	40
Uganda	Masaka	29
Uganda	Masindi	35
Uganda	Mayuge	34
Uganda	Mbale	31
Uganda	Mbarara	34
Uganda	Moroto	46
Uganda	Moyo	52
Uganda	Mpigi	35
Uganda	Mubende	34
Uganda	Mukono	42
Uganda	Nakapiripirit	45
Uganda	Nakasongola	37
Uganda	Nebbi	44
Uganda	Ntungamo	34
Uganda	Pader	59
Uganda	Pallisa	36
Uganda	Rakai	33
Uganda	Rukungiri	37
Uganda	Sembabule	36
Uganda	Sironko	37
Uganda	Soroti	45
Uganda	Tororo	32
Uganda	Wakiso	35
Uganda	Yumbe	49

Country	Sub-national	fNRB (%)
United Republic of Tanzania	Arusha	63
United Republic of Tanzania	Dar es Salaam	31
United Republic of Tanzania	Dodoma	71
United Republic of Tanzania	Geita	43
United Republic of Tanzania	Iringa	51
United Republic of Tanzania	Kagera	34
United Republic of Tanzania	Kaskazini Pemba	26
United Republic of Tanzania	Kaskazini Unguja	26
United Republic of Tanzania	Katavi	45
United Republic of Tanzania	Kigoma	49
United Republic of Tanzania	Kilimanjaro	67
United Republic of Tanzania	Kusini Pemba	25
United Republic of Tanzania	Kusini Unguja	34
United Republic of Tanzania	Lindi	43
United Republic of Tanzania	Manyara	70
United Republic of Tanzania	Mara	56
United Republic of Tanzania	Mbeya	41
United Republic of Tanzania	Mjini Magharibi	23
United Republic of Tanzania	Morogoro	42
United Republic of Tanzania	Mtwara	38
United Republic of Tanzania	Mwanza	41
United Republic of Tanzania	Njombe	34
United Republic of Tanzania	Pwani	53
United Republic of Tanzania	Rukwa	30
United Republic of Tanzania	Ruvuma	38
United Republic of Tanzania	Shinyanga	44
United Republic of Tanzania	Simiyu	71
United Republic of Tanzania	Singida	68
United Republic of Tanzania	Songwe	40
United Republic of Tanzania	Tabora	40
United Republic of Tanzania	Tanga	58
Uzbekistan	Andijon	27
Uzbekistan	Buxoro	0
Uzbekistan	Farg'ona	20
Uzbekistan	Jizzax	24
Uzbekistan	Namangan	25
Uzbekistan	Navoiy	15
Uzbekistan	Qaraqalpaqstan	0
Uzbekistan	Qashqadaryo	8
Uzbekistan	Samarqand'	22
Uzbekistan	Sirdaryo	5

Country	Sub-national	fNRB (%)
Uzbekistan	Surxondaryo	7
Uzbekistan	Toshkent	19
Uzbekistan	Toshkent Shahri	0
Uzbekistan	Xorazm	0
Viet Nam	An Giang	15
Viet Nam	Bà Rịa - Vũng Tàu	34
Viet Nam	Bắc Giang	45
Viet Nam	Bắc Kạn	45
Viet Nam	Bạc Liêu	39
Viet Nam	Bắc Ninh	1
Viet Nam	Bến Tre	18
Viet Nam	Bình Định	43
Viet Nam	Bình Dương	35
Viet Nam	Bình Phước	39
Viet Nam	Bình Thuận	34
Viet Nam	Cà Mau	52
Viet Nam	Cần Thơ	20
Viet Nam	Cao Bằng	30
Viet Nam	Đà Nẵng	36
Viet Nam	Đắk Lắk	31
Viet Nam	Đắk Nông	35
Viet Nam	Điện Biên	41
Viet Nam	Đồng Nai	40
Viet Nam	Đồng Tháp	26
Viet Nam	Gia Lai	40
Viet Nam	Hà Giang	44
Viet Nam	Hà Nam	33
Viet Nam	Hà Nội	22
Viet Nam	Hà Tĩnh	40
Viet Nam	Hải Dương	25
Viet Nam	Hải Phòng	11
Viet Nam	Hậu Giang	24
Viet Nam	Hồ Chí Minh	27
Viet Nam	Hoà Bình	43
Viet Nam	Hưng Yên	2
Viet Nam	Khánh Hòa	34
Viet Nam	Kiên Giang	27
Viet Nam	Kon Tum	46
Viet Nam	Lai Châu	44
Viet Nam	Lâm Đồng	39
Viet Nam	Lạng Sơn	43



Country	Sub-national	fNRB (%)
Viet Nam	Lào Cai	44
Viet Nam	Long An	41
Viet Nam	Nam Định	10
Viet Nam	Nghệ An	43
Viet Nam	Ninh Bình	41
Viet Nam	Ninh Thuận	32
Viet Nam	Phú Thọ	44
Viet Nam	Phú Yên	33
Viet Nam	Quảng Bình	47
Viet Nam	Quảng Nam	43
Viet Nam	Quảng Ngãi	41
Viet Nam	Quảng Ninh	42
Viet Nam	Quảng Trị	39
Viet Nam	Sóc Trăng	18
Viet Nam	Sơn La	42
Viet Nam	Tây Ninh	32
Viet Nam	Thái Bình	6
Viet Nam	Thái Nguyên	46
Viet Nam	Thanh Hóa	42
Viet Nam	Thừa Thiên Huế	41
Viet Nam	Tiền Giang	22
Viet Nam	Trà Vinh	20
Viet Nam	Tuyên Quang	45
Viet Nam	Vĩnh Long	19
Viet Nam	Vĩnh Phúc	45
Viet Nam	Yên Bái	43
Zambia	Central	42
Zambia	Copperbelt	52
Zambia	Eastern	34
Zambia	Luapula	44
Zambia	Lusaka	37
Zambia	Muchinga	38
Zambia	North-Western	55
Zambia	Northern	38
Zambia	Southern	30
Zambia	Western	38
Zimbabwe	Bulawayo	11
Zimbabwe	Harare	6
Zimbabwe	Manicaland	21
Zimbabwe	Mashonaland Central	22
Zimbabwe	Mashonaland East	21

Country	Sub-national	fNRB (%)
Zimbabwe	Mashonaland West	21
Zimbabwe	Masvingo	21
Zimbabwe	Matabeleland North	21
Zimbabwe	Matabeleland South	20
Zimbabwe	Midlands	21

19. The default  $f_{NRB}$  values at the national level are listed below in Table 3.

**Table 3. National<sup>4</sup> fNRB values<sup>5</sup>**

Country	fNRB (%)
Afghanistan	10
Angola	27
Armenia	1
Azerbaijan	1
Bangladesh	39
Benin	34
Bhutan	30
Plurinational State of Bolivia	14
Botswana	35
Brazil	13
Burkina Faso	36
Burundi	35
Côte d'Ivoire	19
Cambodia	20
Cameroon	38
Central African Republic	42
Chad	37
China	10
Colombia	7
Costa Rica	10
Democratic Republic of the Congo	42
Djibouti	1
Dominican Republic	43
Ecuador	28
Equatorial Guinea	31
Eritrea	30

<sup>4</sup> Where national values are not available for a particular country, project participants may refer to the relevant regional values in Table 4.

<sup>5</sup> Source: [MoFuSS global simulations 1km 2010-2050](#) File: 2020-2030 values [summary\\_adm0\\_fr.csv](#).

Country	fNRB (%)
Eswatini	16
Ethiopia	33
Gabon	18
Gambia	55
Georgia	1
Ghana	35
Guatemala	41
Guinea	37
Guinea-Bissau	34
Guyana	0
Haiti	59
Honduras	33
India	7
Indonesia	9
Islamic Republic of Iran	5
Iraq	1
Jamaica	38
Jordan	1
Kazakhstan	7
Kenya	29
Kyrgyzstan	25
Lao People's Democratic Republic	47
Liberia	40
Mexico	30
Madagascar	36
Malawi	48
Malaysia	39
Mali	45
Mauritania	65
Mongolia	12
Mozambique	38
Myanmar	36
Namibia	28
Nepal	45
Nicaragua	26
Niger	61
Nigeria	38
Pakistan	8
Panama	21
Papua New Guinea	8
Peru	4

Country	fNRB (%)
Philippines	55
Republic of the Congo	16
Rwanda	33
Senegal	61
Sierra Leone	41
Somalia	64
South Africa	18
South Sudan	35
Sri Lanka	45
Sudan	50
Syrian Arab Republic	3
Tajikistan	19
United Republic of Tanzania	51
Thailand	20
Timor-Leste	39
Togo	46
Türkiye	13
Turkmenistan	0
Uganda	39
Uzbekistan	15
Viet Nam	36
Zambia	40
Zimbabwe	21

20. The default  $f_{NRB}$  values at the regional level are listed below in Table 4.

**Table 4. Regional fNRB values**

Region	fNRB (%)
Asia	17
Latin America	33
Sub-Saharan Africa	39

21. The default  $f_{NRB}$  value at the global level is 32%.

## 5.6. Efficiency of pre-project cooking device

22. The default values for the efficiency of pre-project device used for cooking and/or water boiling applications are as follows:

- a) For a three-stone fire using firewood (not charcoal), or a cookstove with no improved combustion air supply or flue gas ventilation (i.e. without a grate or a chimney), the default value is 0.15;
- b) For other type of devices, the default value is 0.25.

## **Appendix 1. Process, criteria and timeline for the update of the default values**

1. The validity of the default values included in this tool shall be re-assessed by the Methodologies Panel (MP) every three years.
2. The MP shall initiate the analysis of the default values at least 365 days prior to the expiry date of the default values as referred to in paragraph 6 of this tool.
3. The MP shall review relevant information pertaining to the default values and prepare a recommendation on the continuation or update to the default values for consideration by the Board.
4. The Board shall decide on the continuation or update to the default values.
5. The Board may include additional default values in this tool at any point in time. In such cases, the validity of the default values added is limited to the remaining valid period of the default values as indicated in paragraph 6 of this tool and those default values are subject to review as indicated in paragraphs 1–3 of this appendix.
6. Stakeholders may propose addition of default values in this tool following the process in section 6 'Revision of approved methodology or methodological tool' of the "Procedure: Development, revision and clarification of baseline and monitoring methodologies and methodological tools".

## Appendix 2. Principles of conservativeness

### 1. Background

1. This appendix provides guiding principles of conservativeness that were applied to determine the default values included in this tool considering the level of uncertainty of underlying data.

### 2. Principles of conservativeness

2. When defining default factors in the CDM context, the principle of conservativeness seeks to ensure environmental integrity and avoid the overestimation of emission reductions, while considering the most up-to-date information available that are of unbiased sources and seeking to reflect conditions that are grounded in reality.
3. In developing and proposing default values, a literature review of relevant information is undertaken. The preferred information sources are trusted sources such as the IPCC literature, databases and reports of UN Agencies, the World Bank, International Energy Agency, International Renewable Energy Agency and other comparable sources including publications from scientific journals with high impact factor.
4. Where feasible, data that fulfils the requirements and quality assurance and quality control (QA/QC) for primary data specified under the standardised baseline framework is used (refer to, QA/QC guidelines at <https://cdm.unfccc.int/Reference/Guidclarif/index.html>).
5. In some cases there is a need to take a pragmatic approach without compromising the environmental integrity of the values developed. Noting the wide heterogeneity of data and information the original values require some process of transformation, i.e. conversion to a common format, using conversion factors and assumptions, etc.
6. After converting into the common format, the values from the most suitable dataset(s) that are relevant, complete, consistent, reliable, current, accurate and objective is considered. Where relevant, standard deviation of the data set is considered and adjustments to use the lower or higher bound values for conservative estimate of default values is undertaken.

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### Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	6 March 2025	MP 96, Annex 4 To be considered by the Board at EB 124. The draft tool includes updated default sub-national, national, regional, and global fNRB values.
02.0	8 September 2022	EB 115, Annex 5 Revision to: <ul style="list-style-type: none"><li>• Elaborate the principles of conservativeness of values that will be applied depending on the level of uncertainty of underlying data;</li></ul> Include new default values for: wood-to-charcoal conversion factor, average annual consumption of woody biomass per person for cooking, fraction of non-renewable biomass, and efficiency of pre-project cooking device.
01.0	11 March 2022	EB 113, Annex 9 Initial adoption

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