

Benchmarking the level of ambition of cooling sector-related measures included in NDCs

NDC4 Webinar #2

13 December 2022 | 2-3 pm CET

Agenda

Topic	Speaker
Welcome Remarks	Philipp Denzinger, GIZ Proklima
Overview of the objective and approach of the NDC guidelines	Daniela Laßmann, Perspectives Climate Group
Benchmarking tool to evaluate a country's NDC ambitions and the RAC sector	Irene Papst, HEAT GmbH
Questions & Answers	All participants
Closing	Christin Johnen, GIZ Proklima

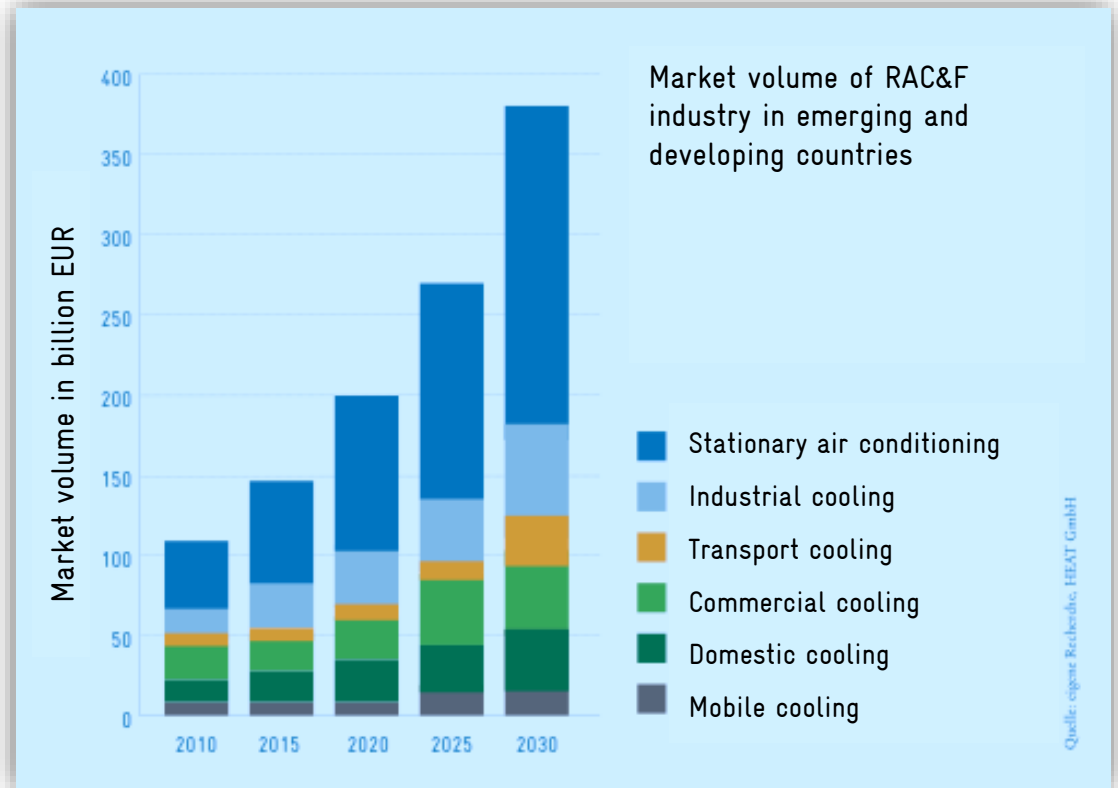
Welcome Remarks

Philipp Denzinger
GIZ Proklima

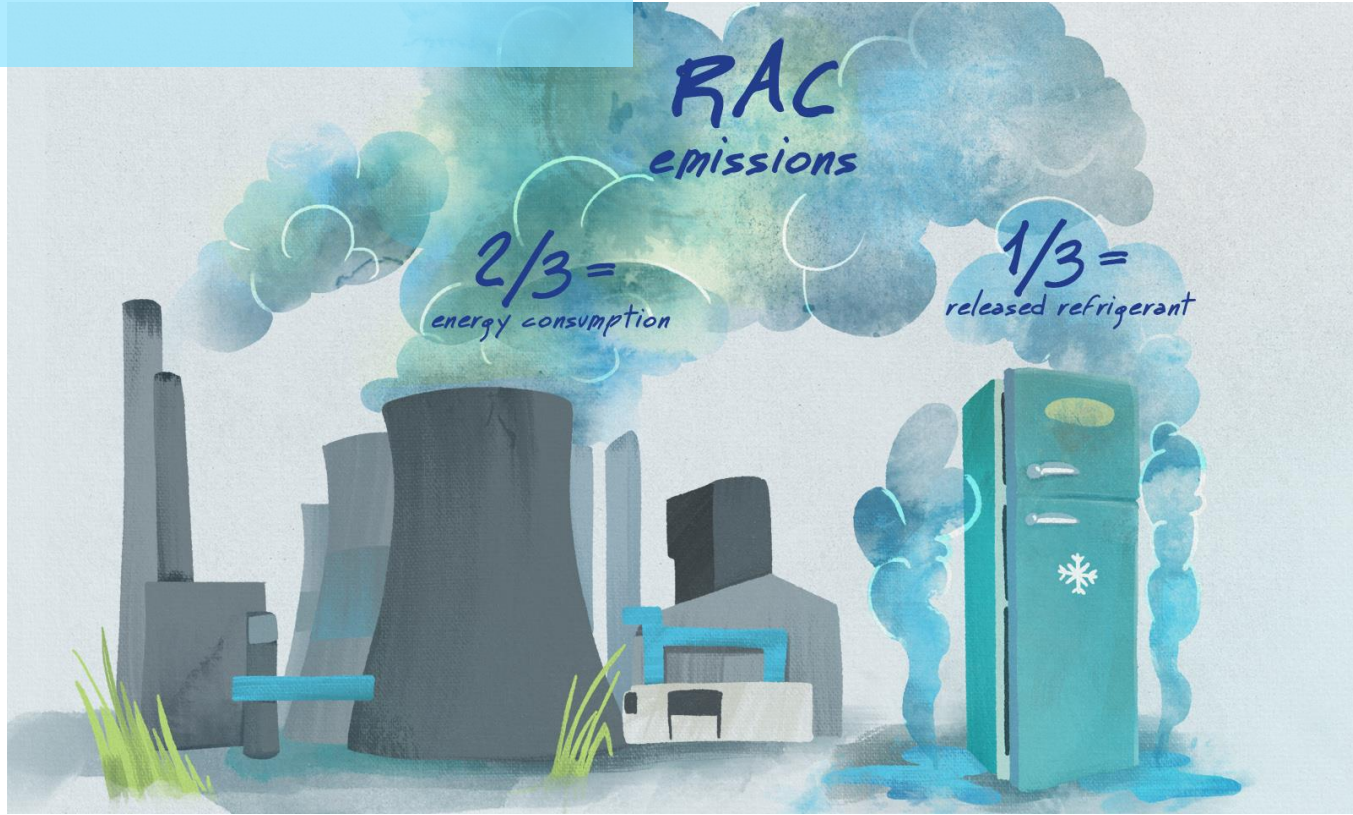
Philipp.Denzinger@giz.de

Why cooling concerns us all

- The RAC sector is responsible for over **10%** of global GHG emissions. (CAIT/GCI, 2016)
- The number of air conditioners worldwide is expected to increase from **1.6 billion** in 2016 to **5.5 billion** by 2050. (IEA, 2018)
- If not addressed, HFC emissions could cause a global temperature increase of **0.35 to 0.5°** Celsius. (Velders et al. 2015, Xu et al. 2013)



Emissions from the RAC sector



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GIZ Proklima – Making cooling a hot topic since 1995



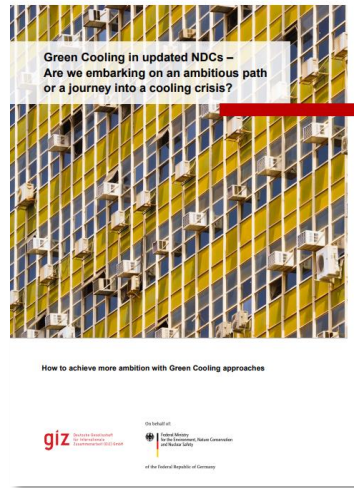
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- Programme established in 1995 in the context of implementing technical projects for **ozone protection** under the Montreal Protocol. In 2016, the Kigali Amendment broadened the focus from ozone to **climate protection**.
- Goal: promoting and introducing **Green Cooling = natural refrigerants and energy-efficient appliances** in the **RAC sector**.
- Proklima is working on behalf of **BMZ, BMUV** and other donors, e.g. EU, AFD, NAMA.





Enhancing NDCs with Green Cooling – Read our publications



Excel based RAC sector NDC Benchmarking tool
November 2011/

1	Type of policy instrument	Ambition level	
		A	B
2	Reference to Paris Agreement, no further differentiation or additional action. Increase of current levels of HFC consumption (no growth of HFC consumption)	Low	Low
3	Overall (economy-wide) declared HFC consumption reduction target	Medium	Medium
4	Sectoral target to reduce HFC consumption by 20% every 5 years, starting in 2025 with the first step of 20% to be achieved in 2030	High	High
5	No financial regulatory incentives to reduce HFCs and promote natural refrigerants	Low	Low
6	Low (big tax, fees) on the use of high GWP HFCs Financial incentives (e.g., import tax reduction, subsidy) ~20% of equipment cost to use natural refrigerants	Medium	Medium
7	Financial instruments to reduce HFC consumption	High	High
8	GWP weighted levy or carbon tax on all HFCs and HFCS (substances as defined in EU F-gas regulation)	High	High
9	Financial incentives (e.g., import tax reduction, subsidy) ~20% of equipment cost to use natural refrigerants	High	High
10	Reduction of mineral oil cool via bulk procurement programme	High	High

Guidance for policymakers on Advancing NDCs through climate friendly RAC
([Download](#))

Green Cooling in updated NDCs – Are we embarking on an ambitious path or a journey into a cooling crisis?
([Download](#))

Raising ambition in NDCs through holistic mitigation approaches in the cooling sector – Guidance for policymakers
([Download](#))

Excel-/Online-based RAC sector NDC benchmarking tool
([Download](#))

Overview of the objective and approach of the NDC guidelines

Daniela Laßmann
Perspectives Climate Group

Background

Integration of the RAC Sector in NDCs - Where do we stand?

1. Many countries have recognised the **importance of HFCs and the cooling sector** in the context of their climate targets.
2. **More than half of the enhanced NDCs** submitted to UNFCCC mention the **cooling sector**.
3. Still **few countries present detailed plans and measures** including holistic approaches in their climate targets.
4. There are **several good practice examples** that can be used as role models.
5. The **alignment of mitigation targets under the Paris Agreement and the Kigali Amendment is (still) not addressed** by most countries in their NDCs.



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Objectives of the NDC guidelines

The NDC guideline seeks to

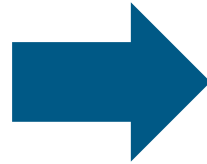
1. provide guidance on how to appropriately cover the cooling sector in a NDC;
2. address the question how the ambition of cooling sectors targets can be increased once the NDC is updated.



Key measures and technology options

Key measures to reduce direct and indirect emissions include

- Reducing cooling load (long-term) through adequate housing (insulation, shading, cool roofs, other passive cooling options)
- Shifting to natural refrigerants
- Using efficient cooling appliances, electrified by an increasing share of renewable energy
- Improving the management of HCFC and HFC banks to reduce emission during servicing and at end-of-life



Focus on mass-produced appliances for **room ACs, domestic refrigeration and commercial plug-in refrigerators**



Steps towards ambitious RAC sector NDC components

STEP 1

- **Solid data base**, ideally in the form of a detailed RAC sector GHG inventory

STEP 2

- **Comprehensive cooling sector mitigation approach** including long-term strategies and implementation plans

STEP 3

- **Anchoring of the cooling sector** in the NDC update process, based on **specific NDC components** developed by cooling sector representatives

STEP 4

- **Linkage of cooling sector related mitigation measures** and plans with other relevant sectors and targets and **coordination with the respective (govt.) actors.**

STEP 5

- Development of a **tracking and MRV systems for HFC emissions** that is in line with the requirements of both agreements, the Montreal Protocol and the Paris Agreement

Benchmarking of ambition

Toolbox of policy instruments to address RAC sector emissions

Policy instrument	Refrigerants	Energy efficiency
Regulatory instruments	Overall (economy-wide) declared HFC consumption reduction target	Regulatory instruments to promote higher energy efficiency of equipment
	Regulatory instruments to reduce HFC consumption	Enforcement of energy efficiency regulation
	Regulatory instruments to promote containment and re-use of HFC refrigerants	
	Regulatory instruments to manage end-of-life treatment of refrigerants (and appliances)	
Economic/ financial instruments	Financial instruments to reduce HFC consumption	Financial instruments to support higher energy efficiency of equipment
	Market-related instruments to reduce HFC consumption	
Enabling instruments	Capacity building for technicians	
	Tracking and MRV of HFC consumption and emissions	

Benchmarking of ambition

Country categories and corresponding levels of ambition (I)

Category A

- **Only imports refrigerants** and mainly
 - residential and commercial AC,
 - residential refrigeration and
 - few commercial refrigeration
- typically, but not limited to **low volume consuming (LVC) countries**

Category B

- **Only imports refrigerants** and
 - residential, commercial and industrial ACs and
 - residential, commercial and industrial refrigeration
- usually have a **higher refrigerant consumption than Category A countries**

Category C

- **Equipment manufacture** and
 - residential AC and refrigeration and
 - more commercial/ industrial applications
- usually have a **higher refrigerant consumption than Category A and B countries**

Benchmarking of ambition

Country categories and corresponding levels of ambition (II)

Policy instrument	Ambition level		
	Category A	Category B	Category C
No financial regulation/ incentives to reduce HFCs and promote natural refrigerants	Low	Low	Low
Levy (e.g., tax, fee) on the use of high GWP HFCs	Medium	Medium	Medium
Financial incentives (e.g., import tax reduction, subsidy) to use natural refrigerants			
<20% of equipment cost	Medium	Medium	Medium
>20% of equipment cost	High	High	High
GWP weighted levy or carbon tax on all HFCs and HFOs (substances as defined in EU F-gas regulation)	High	High	High
Reduction of investment cost via bulk procurement programme	High	High	High



Contact

Daniela Laßmann

Consultant – Perspectives Climate Group GmbH

lassmann@perspectives.cc

Benchmarking tool to evaluate a country's NDC ambition in the RAC sector

Irene Papst
Consultant, HEAT GmbH



Content

Aim of the tool

Scope

Structure

Using the tool

Aim of the benchmarking tool

Self-analysis of what can be regarded as an ambitious RAC sector target in the context of NDCs

Takes up the concepts described in the RAC NDC guideline

- Uses the toolbox
- Indicates ambition in relation to country group

Indication of ambition level per target or measure

- Each measure is rated individually

Result: a qualitative colour impression

Scope

Policy instruments that promote

- The market uptake of appliances with high energy efficiency
- The market uptake of appliances with natural refrigerants
- The containment of ODS and HFC refrigerants

Policy instruments that target

- Enforcement
- Tracking and MRV

Categories of policy instruments targeting refrigerant use and energy efficiency

Policy instruments	Refrigerants	Energy efficiency
Overall target	1	
Financial instruments	6	
Regulatory instruments	20	12
Market related instruments	6	7
Capacity building	3	
Tracking and MRV	5	
Enforcement		4

Structure of the benchmarking tool

Guidance

- Introduction
- Overview of sheets
- Instructions for use

Input and benchmark

- Define country group
- Select applying measures

Info sheets

- Reference for information regarding country groups and selectable measures

Colour coding

[grey]	Question focusing on specific policy instruments to be answered by the user
[white]	Data entry by the user by selecting answers from the drop-down menu
[red]	Result: ambition of mitigation measure considered low
[yellow]	Result: ambition of mitigation measure considered medium
[green]	Result: ambition of mitigation measure considered high

Using the tool – Step 1

Answer questions to choose a country group from drop-down menu

Results is automatically displayed in last column

Selection of country group			Country Group
	Criteria		
Refrigerant & equipment supply/ production	<i>Are there cooling equipment manufacturing companies in your country?</i>	Please select [yes/no]	
Key sub-sectors	<i>We assume that cooling and refrigeration is used in residential and commercial settings.</i>	No answer required	
	<i>Do you have applications in industrial refrigeration in your country?</i>	Please select [yes/no to very few]	

Using the tool – Step 1

Answer questions to choose a country group from drop-down menu

Results is automatically displayed in last column

Selection of country group			Country Group
	Criteria		
Refrigerant & equipment supply/ production	Are there cooling equipment manufacturing companies in your country?	No	Category_B
Key sub-sectors	We assume that cooling and refrigeration is used in residential and commercial settings.	<i>No answer required</i>	
	Do you have applications in industrial refrigeration in your country?	Yes	

Using the tool – Step 2

Select measures that are (to be) included in the NDC via a drop-down menu

Result is automatically displayed in the last column

Refrigerant targets/measures			
Type of policy instrument	Target/measure		Ambition level
Overall (economy-wide) declared HFC consumption reduction target	Did your country define an economy-wide HFC emission reduction target?	Please select all that applies	No further action specified
Regulatory instruments to reduce HFC production and consumption	Does the NDC include any regulation to control the production and/or use of HFC refrigerants?	Please select all that applies	No further action specified
		Please select all that applies	No further action specified
		Please select all that applies	No further action specified
		Please select all that applies	No further action specified



Drop-down menu appears when selecting the cell

Using the tool – Step 2

Select measures that are (to be) included in the NDC via a drop-down menu

Result is automatically displayed in last column

Refrigerant targets/measures		
Type of policy instrument	Target/measure	Ambition level
Overall (economy-wide) declared HFC consumption reduction target	Did your country define an economy-wide HFC emission reduction target? Please select all that applies	No further action specified

Refrigerant targets/measures		
Type of policy instrument	Target/measure	Ambition level
Overall (economy-wide) declared HFC consumption reduction target	Did your country define an economy-wide HFC emission reduction target? Reference to Kigali Amendment, no further differentiation or additional action	Low

Using the tool – Step 2

Select measures that are (to be) included in the NDC via a drop-down menu

Result is automatically displayed in the last column

Refrigerant targets/measures			
Type of policy instrument	Target/measure	Ambition level	
Regulatory instruments to reduce HFC production and consumption	Does the NDC include any regulation to control the production and/or use of HFC refrigerants?	Introduction of GWP limit of HFCs for certain appliances/ technologies based on thresholds as defined in current EU F-gas regulation	Medium
		Refrigerant assessment on its recyclability, with possible restrictions on blends that are difficult to recycle/reclaim	High
		Green public procurement to promote the availability of highly efficient equipment using natural refrigerants	High
		Please select all that applies	No further action specified



Drop-down menu appears when selecting the cell

Evaluate the colour impression

Qualitative assessment based on colour frequency

→ The greener the more ambitious

The number of slots corresponds with the number of ambitious measures that can be potentially selected

→ Too much white is not ambitious either

Refrigerants

Ambition level
Low
Low
No further action specified
No further action specified
Medium
High
High
No further action specified
Low
No further action specified
No further action specified
Low
No further action specified
No further action specified
Medium
Low
No further action specified
Medium

Energy efficiency

Ambition level
Medium
Medium
Medium
No further action specified
No further action specified
No further action specified
High
High
Low
No further action specified
No further action specified

Soon to come...

Online teaser version

Refrigerant targets/measures

Overall (economy-wide) declared HFC consumption reduction target

Did your country define an economy-wide HFC emission reduction target?

- Reference to Kigali Amendment, no further differentiation or additional action **Low**
- Freeze of current levels of HFC consumption (no growth of HFC consumption) **Medium**
- Sectoral target to reduce HFC consumption by 25% every 5 years, starting in 2025 with the first step of -25% to be achieved in 2030

Financial Instruments to reduce HFC consumption

Does the NDC foresee any financial instruments to support the reduction of HFC use or to promote natural refrigerants?

- No financial regulation/ incentives to reduce HFCs and promote natural refrigerants **Low**
- Levy (e.g. tax, fee) on the use of high GWP HFCs **Medium**
- Financial incentives (e.g., import tax reduction, subsidy), less than 20% of equipment cost, to use natural refrigerants **Medium**
- GWP weighted levy or carbon tax on all HFCs and HFOs (substances as defined in EU F-gas regulation)
- Financial incentives (e.g., import tax reduction, subsidy), more than 20% of equipment cost, to use natural refrigerants
- Reduction of investment cost via bulk procurement programme.

Regulatory Instruments to reduce HFC production and consumption

Does the NDC include any regulation to control the production and/or use of HFC refrigerants?

- No regulation to reduce HFC use
- Green public procurement with GWP limits for refrigerants based on current EU F-gas regulation

Tool Download



Source: GIZ Proklima / Excel based RAC sector NDC benchmarking tool - Green Cooling Initiative (green-cooling-initiative.org)



Contact

Irene Papst

Consultant – HEAT GmbH

Irene.Papst@heat-international.de

Questions & Answers

NDC4 Call for Proposals

- **Objective:** Identify and support additional ambitious countries interested in advancing green cooling policy development
- **Target Group:** National Ozone Units, climate change and energy departments, training institutes
- **Modalities of support:** technical assistance in the preparation and application of best practices related to RAC-specific NDC strategies, National Cooling Action Plans, RAC GHG inventories, national GHG inventories, templates for RAC policies and measures aiming at climate mitigation in the RAC sector.



More information:
[NDC4 Call for Proposals](#)

Application deadline
16 January, 2023

Contact:
ndc4@giz.de

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are all committed to energy-efficient and climate-friendly
refrigeration & air conditioning.

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community today!

www.green-cooling-initiative.org/network

Become a COPA member



The **Climate and Ozone Protection Alliance (COPA)**
is open to all countries and organisations willing to support
the global shift to sustainable refrigerant management and
closing the loop to a circular economy in the cooling sector.

Find more Information on our Website:

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Christin Johnen

Communication specialist

GIZ Proklima

christin.johnen@giz.de



www.giz.de

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**Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH**

Registered offices
Bonn and Eschborn

Friedrich-Ebert-Allee 36 + 40
53113 Bonn, Germany
T +49 228 44 60 - 0
F +49 228 44 60 - 17 66

Dag-Hammarskjöld-Weg 1 - 5
65760 Eschborn, Germany
T +49 61 96 79 - 0
F +49 61 96 79 - 11 15

E info@giz.de
I www.giz.de